November 10, 2024

Submitted via U.S. Air Force web portal at https://www.arizonaregionalairspaceeis.com/comments/; sent hard copy, including thumb drive with references cited, via Federal Express overnight service.

Arizona Regional Airspace EIS
c/o Stantec
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Re: Comments on Draft Environmental Impact Statement (EIS) for Regional Special Use Airspace Optimization to Support Air Force Missions in Arizona

Submitted by:

Advocates for Snake Preservation

Albuquerque Center for Peace and Justice

Archaeology Southwest

Arizona Trail Association

Audubon Southwest

Bird Alliance of Southwestern New Mexico

Center for Biological Diversity

Chiricahua Regional Council

Citizens for Alternatives to Radioactive Dumping

Coalición de Derechos Humanos

Coalition for Sonoran Desert Protection

Concerned Citizens for Nuclear Safety

Defenders of Wildlife

Gila Back Country Horsemen

Gila Native Plant Society

Gila Resources Information Project

Gila Conservation Coalition

Global Network Against Weapons and Nuclear Power in Space

Great Old Broads for Wilderness

Heart of the Gila

National Parks Conservation Association

New Mexico Sportsmen

New Mexico Wildlife Federation

New Mexico Wild

Peaceful Chiricahua Skies

Peaceful Gila Skies

Physicians for Social Responsibility – AZ Chapter

The Rewilding Institute

Rio Grande Indivisible

San Xavier District of the Tohono O'odham Nation

Sierra Club – Grand Canyon (Arizona) Chapter

Sierra Club – Rio Grande (New Mexico) Chapter

Sky Island Alliance

Stop the War Machine

Tucson Audubon

Upper Gila Watershed Alliance

Veterans for Peace (Chapter 63)

WildEarth Guardians

Wild Arizona

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I. EXECUTIVE SUMMARY

The proposed action in the Draft Environmental Impact Statement for Regional Special Use Airspace Optimization to Support Air Force Missions in Arizona (DEIS) would turn an enormous swath of public, Tribal, and private lands in southern Arizona and southwest New Mexico into a low-elevation military training ground without regard for the environmental, economic, social, and cultural impacts on these communities.

Since scoping was initiated, the National Environmental Policy Act (NEPA) process for this Proposed Action has been riddled with flaws. The Department of Air Force (DAF) has refused to hold a single public meeting in any of the sovereign Indigenous Nations that would be directly and severely harmed by the Proposed Action, effectively excluding Tribal members from participating in this process. DAF has also systematically excluded the most significantly impacted populations in Cochise County, which will see the most substantial increases in harmful impacts.

The DEIS is inadequate in almost every respect, as described throughout each section of these comments. It fails to articulate a clear purpose and need, fails to consider and adequately analyze reasonable alternatives, and negligently dismisses impacts to Indigenous Nations, local communities, designated Wilderness Areas, national park units, wildlife refuges, threatened and endangered species, outdoor recreation and tourism, general aviation, livestock, and rivers and streams. The Proposed Action would dramatically and unacceptably increase the intensity of combat training over the Gila Wilderness and Chiricahua National Monument, both of which are celebrating their centennial anniversaries this year. This comment letter details the flawed and inadequate nature of each of these topics in the following pages.

To cure these significant inadequacies, DAF should abandon this DEIS or choose the No Action Alternative, and restrict its low-elevation and supersonic flights, and other combat training, such as dropping chaff and flares, to the Barry M. Goldwater Range (BMGR) where these activities already occur, mitigation processes are in place, and additional training could be accommodated by adding weekend hours.

If DAF does not abandon the DEIS or choose the No Action Alternative, the DEIS must be rewritten or supplemented as soon as possible, and this process must include an extended comment period with additional public hearings in directly affected communities and Tribal Nations and other areas of high public interest including Tucson, Arizona.

II. THE DEIS SHOULD APPLY AND FOLLOW THE 2024 NEPA REGULATIONS

The DEIS does not specify which set of Council on Environmental Quality (CEQ) regulations interpreting NEPA it is applying. DEIS at 1-2. When the scoping process began, the 2020 CEQ regulations were in effect, but those regulations were amended in April 2022, and substantially rewritten in May 2024, before the DEIS was issued in August 2024. 89 Fed. Reg. 35442 (May 1, 2024). The DEIS includes only a few specific citations to subsections of the CEQ

regulations (*e.g.* 1503.1 at DEIS 1-12; 1502.14(c) at DEIS 2-8; 1501.9(a) at DEIS 3-1; 1502.16 and 1508.1(g) at DEIS 3-3; 1502.16(b) and 1508.1(m) at DEIS 3-109), some of which appear in both the 2020 and 2024 regulations or which appear in different sections of the new regulations (*e.g.* 40 C.F.R. § 1508.1(m) (2020) now appears as 40 C.F.R. § 1508.1(r) (2024)).

An agency "may apply the [2024] regulations . . . to ongoing activities and environmental documents begun before July 1, 2024." 40 C.F.R. § 1506.12 (2024). The 2024 CEQ regulations were revised to address "the recent amendments to NEPA in the Fiscal Responsibility Act," "to improve implementation of [NEPA]," and "are grounded in NEPA's statutory text and purpose, including making decisions informed by science; CEQ's extensive experience implementing NEPA; CEQ's perspective on how NEPA can best inform agency decision making; longstanding Federal agency experience and practice; and case law interpreting NEPA's requirements. 89 Fed. Reg. at 35442. Accordingly, we request that the Air Force apply and comply with the 2024 regulations in any subsequent Supplemental DEISs it issues and in the Final Environmental Impact Statement (EIS). At a minimum, any subsequent NEPA document must disclose its choice of law and explain that choice to the public. All subsequent citations to the CEQ regulations below are to the 2024 CEQ regulations.

III. PURPOSE AND NEED AS DESCRIBED BY DAF IS INADEQUATE

The purpose and need for the Proposed Action are incomplete, poorly presented, and misleading to the public. The stated purpose of the Proposed Action is to "alleviate training shortfalls and address evolving training needs for aircrews stationed at Davis-Monthan Air Force Base (AFB), Luke AFB, and Morris Air National Guard Base (ANGB)" (DEIS 1-1). DAF claims in this section that it lacks adequate airspace to schedule required training but fails to support this claim.

The Davis-Monthan Air Force Base is currently in the middle of a separate but related EIS process – the 492nd Special Operations Wing Beddown Environmental Impact Statement. This forthcoming EIS will evaluate the retirement of A-10s and addition of aircraft that don't require extreme low-altitude or supersonic airspace capabilities. It is misleading for DAF to omit this information about future training needs in the DEIS. Such an omission interferes with the public's ability to properly evaluate airspace needs in relation to expected future airspace capacity at BMGR and across all 10 MOAs.

The DEIS disingenuously includes thousands of A-10 Warthog sorties in its analysis, despite DAF knowing these planes will soon be retired. In Table 1.2-2 of the DEIS (embedded in these comments below as *Figure 1*), the total hours of training from all planes and all bases included in the DEIS analysis amounts to 64,600 hours. A-10 training accounts for 18,900 of these hours, or nearly 30% of all flight hours. Since these A-10s will no longer be part of the mission at Davis-Monthan, it is irrelevant and misleading to include them in this analysis. Including the soon-to-be-retired A-10s in this analysis suggests that DAF is attempting to knowingly mislead the public by exaggerating airspace constraints by as much as 30%, when DAF knows that these sorties will soon be retired. These A-10s will be replaced by aircraft that

do not require the extreme low-elevation training parameters, thus, DAF's stated purpose and need does not accurately describe the Proposed Action.

Table 1.2-2 Average Annual Sorties and Hours of Flight by Base and Aircraft Type[1]

	Total Annual Sorties	Total Hours of Flight
Davis-Monthan AFB		
A-10	9,700	18,900
Other[2]	3,200	11,100
Luke AFB		
F-16	6,500	8,100
F-35	11,000	15,400
Morris ANGB		
F-16	8,600	11,100
TOTAL	**39,000**	**64,600**

Notes: [1]A sortie is the flight of a single aircraft consisting of takeoff, mission, and landing. Annual sorties and hours in this table are based on Fiscal Year 2019 data which is representative of an average year of data available at the time of preparation of this document. Annual sorties can fluctuate year to year. This data was confirmed as still accurate by the Major Commands prior to publication of the Draft EIS.
[2]Other aircraft stationed at Davis-Monthan AFB include HH-60, HC-130, and EC-130.
Legend: AFB = Air Force Base; ANGB = Air National Guard Base.

Figure 1: *Average Annual Sorties and Hours of Flight by Base and Aircraft Type. Table extracted from page 1-6 in DEIS.*

Nearly 10,000 sorties, amounting to 18,900 flight hours (illustrated in Figure 1, above), will soon be cut from the annual training schedule with the retirement of the A-10s. The replacement aircraft, such as the propeller-driven MC-130J(s) and OA-1K(s), do not require the same low altitude jet maneuver training or low-altitude supersonic airspace, which is stated as the major purpose in the proposal.

This misleading analysis creates a sleight of hand, stating that more airspace is needed and therefore MOA capabilities must be expanded, while misrepresenting the data by including A-10 sorties and failing to illustrate the airspace and flight hours that will be freed up when they are retired.

NEPA regulations require that "[t]he agency shall evaluate, in a single review, proposals or parts of proposals that are related closely enough to be, in effect, a single course of action." 40 C.F.R. § 1501.3(b) Likewise, "[t]he agency also shall consider whether there are connected actions, which are closely related Federal activities or decisions that should be considered in the same NEPA review that: (1) Automatically trigger other actions that may require NEPA review; (2) Cannot or will not proceed unless other actions are taken previously or simultaneously; or (3) Are interdependent parts of a larger action and depend on the larger action for their justification." 40 C.F.R. 1501.3(b).

Because these two proposals are connected and interdependent, DAF must either start from scratch or issue a Supplemental Draft EIS that (a) eliminates the A-10 from consideration and evaluation in the EIS – or, at a bare minimum, describes the sequence of reduced impacts as fewer and fewer A-10s are operated and trained with over the course of several years – and (b) combines in the same EIS (or Supplement to this DEIS) the analysis of the bed-down of the 492 Special Operations Wing and the operations of its OA-1K and MC-130J aircraft within the same

MOAs. These are actions that are connected and should be reviewed in a single EIS. The scoping brochure for the 492 SOW bed-down EIS (http://www.492sow-beddown-eis.com/documents/4153056_492SOWEIS_Scoping_Brochure_vFweb2_051524.pdf) even describes that the baseline conditions for that EIS are "other ongoing rotary and fixed-wing aircraft missions"—i.e. the other training missions that are being evaluated in the AZ/NM MOAs DEIS. There's no intelligible way for the baseline in that EIS to be determined without knowing what the intensity of training missions in this EIS are decided upon.

Going back to the drawing board and evaluating alternatives without the A-10 operations (but with the more "benign" cargo aircraft and two-seater turboprops of the 492 Special Operations Wing) is also critical to provide the public, and the decisionmakers, with accurate information regarding the true actions that are being proposed. As drafted, the DEIS proposes to double the number of authorized combat training flights over the Tombstone MOA, expand its area, lower the flight floor to 100 feet AGL, and approve 6,600 sorties into that airspace for an aircraft that could be retired less than one year from now. DEIS at 1-2 (retirement could be "in fiscal year 2026"), 2-11.

The concern is that, once the Air Force has analyzed the impacts of the proposed total number of sorties (for all aircraft, see DEIS at 2-11), and determined that there will be no significant impacts, it is possible that the agency could try to increase the sorties of other types of aircraft (F-16s, F-35s) to replace the A-10s within the parameters approved for all of the MOAs, and claim that "since there were no significant impacts associated with the Proposed Action, no further NEPA analysis is required" for such adjustments. The Air Force gives this away in its cumulative impacts table in Appendix G, where it states:

> "As A-10s are retired, they would likely be replaced by other fighter aircraft that would use the airspace addressed in this EIS. The analysis in this EIS includes a modest increase in operations to account for year-to-year fluctuations and variations of use throughout the MOAs. It is expected that replacement aircraft use of the airspace would be similar to A-10s and not present a cumulative effect." (DEIS G-2)

In essence, the DEIS is not disclosing the actual impacts of what the Air Force is proposing this airspace will be used for in the coming years, making any impacts analysis a theoretical exercise but one that might cause mischief in the future.

DAF also has arbitrarily excluded an alternative examining the expansion of sorties at BMGR in its analysis, while exaggerating the problem of a shortage of airspace for training, as evidenced by the inclusion of the A-10 sorties. The DEIS states:

> "BMGR East range assets and restricted airspace support training for military units throughout the southwestern U.S. Because of the high demand of this finite resource, the 56 RMO must reduce the amount of time each unit can schedule the range and the units currently receive only 78 percent of their requested time. This means certain aspects of training syllabi are either curtailed, delayed, or restructured to occur over several training events requiring more time and at a greater cost but with reduced quality of training. As

Luke AFB reaches full capacity for their F-35 fleet, it is anticipated that access to BMGR East by all the units will decrease to 67 percent of requested time." (1-9)

If 78% of training is already being scheduled at BMGR as the DEIS confirms, how much more could be accommodated with the addition of weekend training hours? Luke, Davis-Monthan, and the Air National Guard currently fly only five days a week, but this, of course, could be extended into weekends to provide for additional sorties.

Additionally, without the nearly 19,000 hours of A-10 pilot training, which according to DAF consists of almost 30% of current flight training hours, DAF should actually have a surplus of training hours once the retirement of the A-10 is factored in and training at BMGR is limited to low-altitude and supersonic fighter-jet maneuvers. With only F-16 and F-35 training remaining for low-altitude missions, DAF has not demonstrated why all supersonic and low-altitude training cannot be accommodated at BMGR, especially with the addition of weekend training hours. Considering this, the need statement is flawed because the need could be fulfilled by adjusting the usage framework at BMGR, including expanding weekend training opportunities.

We also note that DAF has failed to provide critical information on current sorties at BMGR in response to repeated Freedom of Information Act (FOIA) requests, despite the fact that NEPA's regulations state that agencies "*shall* … [m]ake environmental impact statements, the comments received, and *any underlying documents* available to the public pursuant to the provisions of the Freedom of Information Act, as amended (5 U.S.C. 552), and without charge to the extent practicable." 40 C.F.R. § 1501.9(c)(6) (2024) (emphasis added). See also 40 C.F.R. 1506.6(f) (2020 & 2019) (similar provisions). Despite this clear mandate, this is now the subject of litigation. DAF's refusal to provide details regarding how many sorties are currently flown at BMGR and the nature of those sorties makes it impossible to meaningfully analyze airspace needs. While the DEIS argues that extending training hours to weekends at BMGR would "substantially increase costs" (2-15), moving low-level combat training to populated areas, Tribal Nations, National Park units, and designated Wilderness Areas for the purposes of saving money will substantially increase the damage and harm to those communities and resources, precisely the kind of tradeoff that must be explored in a NEPA alternatives analysis. This is especially so when DAF has not failed to quantify the alleged increase in costs of expanding weekend or night hours at BMGR.

The alternative that proposed using BMGR during scoping was dropped without full analysis. While discussion of this potential alternative was present during the scoping process, it was arbitrarily excluded from analysis in the DEIS without adequate explanation. This unreasonably narrows the agency's consideration of alternatives, particularly given that a BMGR alternative meets most of the selection standards presented on page 1-10 and 1-11 of the DEIS.

Based on the Table 1.2-2 in the DEIS (included above), the anticipated retirement of the A-10s, and the possibility of initiating weekend training sorties at BMGR, it appears that BMGR could accommodate the remaining supersonic and low-elevation training airspace needed to meet DAF's stated need. At the very least, DAF must analyze this clearly reasonable alternative in a supplemental DEIS to explore the tradeoffs of more financial costs to the DAF vs. more damage to communities and resources. This analysis should also evaluate the relative emergency

response capabilities of small remote communities that would be impacted by the Proposed Action, versus BMGR, where extensive safety measures are already in place.

The DEIS also contains misleading information regarding DAF's articulated need for supersonic airspace. The DEIS states "Currently, only three DAF-managed MOAs in the region allow supersonic flight: Sells, Bagdad, and Gladden MOAs" (1-9). This statement is false. As demonstrated throughout the DEIS, supersonic flight is already authorized in the Air Traffic Control Assigned Airspaces (ATCAAs) of eight of the ten MOAs considered in the DEIS (all but Ruby and Fuzzy). In this case, the DEIS does not distinguish between low-altitude and high-altitude supersonic flight but makes a demonstrably false blanket-statement that supersonic sorties are only permitted in three MOAs, which once again appears to exaggerate the need for additional supersonic airspace. In reality, DAF has more supersonic airspace available than the DEIS claims. This is misleading and precludes the public's ability to understand and accurately comment on the DEIS.

In addition, DAF's statements purpose and need are too vague for the public and the agency decisionmaker to evaluate whether the Proposed Action or any of the alternatives will satisfy the purpose and need. Statements such as a purpose to "alleviate training shortfalls and address evolving training needs" (DEIS at 1-1) and "the need for aircrews to be able to conduct flight training near their home base; and the need to conduct required training to ensure readiness and increase survivability. As currently configured, there is not enough airspace that provides the appropriate altitudes (down to 500 feet AGL and lower), terrain variety, and attributes (ability to fly supersonic at lower altitude and use of chaff and flares) to support required training" (DEIS at 1-10) do not state in any sort of quantifiable way *what the DAF actually "needs"* to accomplish these vague goals.

How many flights does the DAF actually need? For which purposes? Based on how many aircraft and pilots, and how many of each type of sortie, at what altitudes? At certain points the DEIS states that flights at 100 feet AGL will be "extremely rare" (*e.g.* DEIS at 3-30) but nowhere does the DEIS provide any detail of just what the "need" really is or what the numbers of such very-low elevation flights might be. At another point (DEIS at 3-32), the DEIS states that there will be "very few events *in the training syllabus* requiring performance at such a very low altitude"—so the DAF <u>does</u> have this information! It has simply failed to disclose it to the public to allow meaningful evaluation of the Proposed Action and the DEIS's analyses. The result is that analyses—such as the "Percent Chance of Direct Low-Level Overflights Per Week" table at 3-32—are unsupported by data in the record and such data needed to evaluate the analysis has not been disclosed to the public, which is a violation of NEPA.

The DEIS says (at 3-32) that "The number of sorties by individual aircraft, and the time spent at lower altitude along with their speed, was used to calculate the total area covered by these low altitude flights (see Appendix J, Noise Study, for a detailed breakdown of sorties by altitude band, by aircraft, by MOA)." But the closest that the DAF comes to providing this information in Appendix J is at J-12 to J-14 for the No Action alternative and J-22 and J-25 for the Proposed Action – and these simply contain the total numbers of sorties, how many will be at night, how many will be supersonic. There is no detail about how many flights need to be at what levels and speeds to satisfy the supposed "appropriate altitudes" and "attributes" for individual

flights. The DAF provides some additional data in the "Model Input Data" in the appendices (At the end of DEIS App'x J, on the unnumbered pages after J-52) – for example, for the A-10s in the Tombstone MOA, there is a figure for Alternative 2 (the Proposed Action) that 5% of the time planes will be between 100 and 500 feet AGL at the MIL (military-rated thrust) power setting and going 300 knots. But this model input data does not tie back to any detailed information regarding what the "need" for the Proposed Action actually is.

"In order to decide what kind of an environmental impact statement need be prepared, it is necessary first to describe accurately the 'federal action' being taken." *Aberdeen & Rockfish R.R. Co. v. Students Challenging Regulatory Agency Proc. (S.C.R.A.P.)*, 422 U.S. 289, 322 (1975). The DEIS does not do that in the Purpose and Need section nor in describing the Proposed Action as it relates to fulfilling the nebulous "need." And a project's scope and purpose define the reasonable range of alternatives that must be analyzed. *See Westlands Water Dist. v. U.S. Dep't of Interior*, 376 F.3d 853, 868 (9th Cir. 2004). Without details about exactly the DAF actually needs (in terms of number of flights and at what elevations and *why*), there is no way to determine whether the Proposed Action, or any other alternative, meets the purpose and need.

The DEIS has failed to provide an accurate, legally sufficient analysis in the purpose and need statement due to each of these significant failures. It should be abandoned, or at the very least immediate supplementation is necessary.

IV. DAF FAILED TO CONSIDER AND ADEQUATELY ANALYZE REASONABLE ALTERNATIVES

A. The DEIS Fails to Consider a Reasonable Range of Alternatives

NEPA requires federal agencies to "study, develop, and describe appropriate alternatives to recommended courses of action." 42 U.S.C. § 4332(2)(H) (2023); see also 40 C.F.R. § 1502.14 (2024). The alternatives analysis is "the heart of the [EIS]," and DAF must "[r]igorously explore and objectively evaluate all reasonable alternatives." 40 C.F.R. § 1502.14 & (a) (2024). "[C]onsideration of alternatives is critical to the goals of NEPA even where a proposed action does not trigger the EIS process." *Bob Marshall Alliance v. Hodel*, 852 F.2d 1223, 1228–29 (9th Cir. 1988); *see also Citizens for a Better Henderson v. Hodel*, 768 F.2d 1051, 1057 (9th Cir. 1985) (an EIS must consider "every" reasonable alternative).

The underlying scope, purpose and need for a Proposed Action defines the range of reasonable alternatives. *League of Wilderness Defs. v. U.S. Forest Serv.*, 689 F.3d 1060, 1069 (9th Cir. 2012); *Westlands Water Dist. v. U.S. Dep't of Interior*, 376 F.3d 853, 868 (9th Cir. 2004). "In order to decide what kind of an environmental impact statement need be prepared, it is necessary first to describe accurately the 'federal action' being taken." *S.C.R.A.P.*, 422 U.S. at 322. As described above in the section addressing Purpose and Need, the DEIS does not accurately describe the Proposed Action. In effect, DAF is claiming that only the Proposed Action will meet the nebulous "need" it has articulated. But a statement of purpose and need "will fail if it unreasonably narrows the agency's consideration of alternatives so that the

outcome is preordained." *Alaska Survival v. Surface Trasp. Bd.*, 705 F.3d 1073, 1084 (9th Cir. 2013).

The vague statements of need for alleviating training shortfalls, addressing evolving training needs, the "need to conduct required training to ensure readiness and increase survivability," including the need to fly at altitudes as low as 500 feet AGL and ability to fly at supersonic speeds at lower altitudes and drop more chaff and flares (DEIS at 1-10) do not explain how many flights with each variant of flight parameter (flights at 100 feet AGL; flights at 500 feet AGL; supersonic flights at 5,000 feet AGL; how many flights dropping chaff/flares) are actually "needed." Instead, the DEIS proposed a certain number of total sorties in each MOA, with authorizations of times of use, and minimum flight levels that would be available for *all* of the sorties, along with the number of nighttime and supersonic flights—but the DEIS never lays out an accurate description of how many of each type of training flights at which flight levels DAF actually is proposing. *See* DEIS at 2-2, 2-4, 2-7, 2-11.

The "Model Input Data" in the DEIS's Appendix J, purporting to show the data that was input to produce the noise study, includes figures for the percentage of time that various aircraft would be at various levels in the various MOAs—but this model input data is not related to any other information disclosed in the DEIS about what DAF is actually proposing to do. Without details about exactly what is *needed* (in terms of types of training flights), there is no way to determine whether the Proposed Action, or any other alternative, meets the purpose and need.

Despite this fundamental flaw in DAF's analysis, it nevertheless evaluated four alternatives: Alternative 1, no action (maintaining the status quo for training within the MOAs); Alternative 2, the Proposed Action; Alternative 3, a version of the Proposed Action that eliminates the geographical expansion of the Tombstone MOA; and Alternative 4, a version of the Proposed Action that would differ only in authorizing supersonic flights only down to 10,000 feet AGL (DEIS at 2-8 to 2-15). Despite the clear differences among Alternatives 2, 3, and 4, DAF claims that these would all somehow meet the "need" for the project. At the same time, the DEIS also purports to have considered but eliminated five other alternatives that, it claims, do not meet the vague and undefined "need." DEIS at 2-15, 2-18.

Courts have consistently described that an agency's failure to consider a reasonable alternative is fatal to its NEPA analysis. "The existence of a viable, but unexamined alternative renders an environmental impact statement inadequate." *W. Watersheds Proj. v. Abbey*, 719 F.3d 1035, 1050 (9th Cir. 2013) (quoting *Westlands*, 376 F.3d at 868); *see also Or. Nat. Desert Ass'n v. Bureau of Land Mgmt.*, 625 F.3d 1092, 1100 (9th Cir. 2010) (also quoting *Westlands*). Viable alternatives are feasible, meet the stated goals of the project, or are reasonably related to the purposes of the project. *See W. Watersheds Proj.*, 719 F.3d at 1052 ("Feasible alternatives should be considered in detail.").[1] Similarly, where an agency considered only a no-action alternative

[1] *See also* Forty Most Asked Questions Concerning CEQ's NEPA Regulations, 48 Fed. Reg. 18,026 (Mar. 16, 1981) ("In determining the scope of alternatives to be considered, the emphasis is on what is 'reasonable' rather than on whether the proponent or applicant likes or is itself capable of carrying out the particular alternative. Reasonable alternatives include those that are practical or feasible from a technical

along with "two virtually identical alternatives," the agency "failed to consider an adequate range of alternatives." *Muckleshoot Indian Tribe v. U.S. Forest Serv*., 177 F.3d 800, 813 (9th Cir. 1999).

In this instance, the alternatives presented are in no way a "full range" of viable options, and DAF failed to provide a reasoned explanation for eliminating the alternative of expanding use of the BMGR to accommodate the additional training needs

1. The DEIS Improperly Eliminates from Detailed Consideration Several Reasonable Alternatives

The BMGR alternative defined below best provides for and optimizes for the purpose and need while minimizing and eliminating impacts to rural communities, Tribes, wildlife and landowners. Commenters support a modified version of the BMGR Alternative that was not analyzed in the DEIS. This alternative would involve expanding training hours at BMGR to meet DAF's stated need of the Proposed Action, and analysis of this alternative must include the phasing out of the A-10 sorties, which would free up airspace.

a. The DEIS Improperly Eliminates the "Barry M. Goldwater Range Alternative," a Reasonable Alternative of Conducting the Necessary Training at BMGR Without Providing a Reasoned Explanation and Supporting Facts.

"[F]or alternatives that the agency eliminated from detailed study," the agency must "briefly discuss the reasons for their elimination." 40 C.F.R § 1502.14(a). The "existence of a viable but unexamined alternative renders an [EIS] inadequate." *W. Watersheds Proj. v. Abbey*, 719 F.3d 1035, 1052 (9th Cir. 2013). An agency must consider feasible alternatives that "might operate in a more friendly way toward the protected objects" the agency manages, *id*., or are "more consistent with its basic policy objectives than the alternatives [considered]." *Muckleshoot*, 177 F.3d at 813. Those cases hold that a brief explanation for eliminating alternatives is acceptable only if it is well-reasoned and supported by the facts in the record. It cannot be irrational or arbitrary. *N. Alaska Env't Ctr. v. Kempthorne*, 457 F.3d 969, 978 (9th Cir. 2006) ("An agency must, however, explain its reasoning for eliminating an alternative.").

For example, a district court held that an EIS violated NEPA when it briefly rejected an alternative for relocating operations of EA-18G "Growler" aircraft to a different airbase in El Centro, California, "out of hand, summarily concluding that such a move would cost too much and that moving the operation to that location would have its own environmental challenges." *Wash. v. U.S. Dep't of the Navy*, No. 219CV01059RAJJRC, 2021 WL 8445582, at *2 (W.D. Wash. Dec. 10, 2021), *report and recommendation adopted*, No. 2:19-CV-01059-RAJ, 2022 WL 3042001 (W.D. Wash. Aug. 2, 2022). The Court held that "[t]he Navy's cursory rationale was arbitrary and capricious and does not provide a valid basis to reject the El Centro alternative." *Id*. The court concluded that the cursory rationale that the relocation would "cost too much" was not a sufficient justification for eliminating that alternative from detailed consideration.

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and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.").

Instead, "the prospect of increased cost or obtaining appropriations should be considered as part of the detailed objective evaluation of alternative sites—not cited as the basis for a cursory rejection of an alternative." *Id*. at *10. A further specious rationale for eliminating the Growler relocation alternative from consideration was that the El Centro airbase had other training activities "all of whom depend on El Centro's current capabilities and continued availability." *Id*. But the Court held that this was not a reason "that El Centro is, on its face, unfeasible or to reject El Centro out of hand. These are reasons to engage in a more detailed consideration of the costs and benefits of moving Growler aircraft to El Centro. Again, these were arbitrary and capricious reasons to reject more detailed consideration of the El Centro alternative." *Id*.

The "brief reasons" that the DEIS offers for the elimination of the alternative of expanding the hours of operation for the BMGR East Range to support more training missions smack of the same set of cursory rationales that the district court rejected in *Washington v. U.S. Department of the Navy*. In effect, they boil down to "we cannot add more weekend training because it requires increasing range support personnel and making the home bases for the air crews also work on the weekends," as well as the specific rationale that district court rejected, that it "would substantially increase costs" (DEIS at 2-15):

> *"Expand hours of operation for BMGR East to support more training missions.* Normal hours for BMGR East are Monday through Friday, 0730 to 2330 Local. The range is open one to two weekends per month from 0800 to 1700 Local to support ANG and Air Force Reserve flying schedules. Expanding the hours of operation to support more training missions would only be possible by opening more weekends, essentially making BMGR operational 7 days a week with a commensurate increase in range support personnel. The aircrews in Arizona must train during the operational hours for their home bases, which currently are limited to weekdays. In addition to the pilots, a significant number of maintenance and other support staff must be present when the aircraft are operational. An alternative for a wholesale change of hours of pilot and ground support personnel and range support personnel would substantially increase costs. Expanding the hours of operation at BMGR to include more weekends would not fully alleviate the current capacity issues or the anticipated future capacity issues once all of the F-35s are based at Luke AFB. Also, expanding the hours of BMGR to support more operations would not meet the selection standard to reduce use of BMGR for non-hazardous training. Therefore, this was not considered a viable alternative."

The statement that "[t]he aircrews in Arizona must train during the operational hours for their home bases, which currently are limited to weekdays" appears to be incorrect, as the No Action and Proposed Action provide for weekend training in the Tombstone, Outlaw, Jackal, and Fuzzy MOAs (DEIS at 2-2). And, since there is no supporting detail regarding how many existing sorties occur at BMGR East, or how many are "needed" to achieve DAF's training goals, there is no way to evaluate whether or not an expansion of use of BMGR East would meet DAF's training needs.

It is essential that DAF disclose this supporting detail in a Supplemental DEIS or in a new EIS that accurately describes what DAF intends the MOA airspace to be used for, once the A-10s are retired and the 492 Special Operations Wing is "bedded down." Similarly, information regarding the costs of the various alternatives (both to DAF, and to the general public if use of the MOAs is intensified via the Proposed Action) must be disclosed to allow the public, and the decisionmaker, to allow a transparent and democratic evaluation of the alternatives. Because the DEIS fails to provide a reasonable basis for dismissing the BMGR alternative, and because (as discussed above) this alternative would allow the USAF to meet what we can infer are the project's purposes and needs, any subsequently prepared NEPA analysis must explore this alternative in detail.

In addition, the "Alternatives Considered but Eliminated" section (DEIS at 2-15, 2-18) only discusses BMGR East—presumably because BMGR West (about 40% of the Range) is administered by the Marines. But an agency may "include reasonable alternatives not within the jurisdiction of the lead agency." 40 C.F.R. § 1502.14(a); *see Muckleshoot Indian Tribe*, 177 F.3d at 814. DAF NEPA regulations state: "Reasonable alternatives are not limited to those directly within the power of the Air Force to implement. *They may involve another government agency or military service* to assist in the project or even to become the lead agency." 32 C.F.R. § 989.8(b). DAF should evaluate whether the BMGR West portion of the Range would be a feasible alternative for some or all of the expansion and intensification of combat training activities that DAF is considering. DAF must evaluate in detail the alternative of using the BMGR (East and/or West) to provide whatever expanded, intensified training DAF is actually seeking to achieve through this proposal.

b. The DEIS Improperly Eliminates Other Reasonable Alternatives Without Providing Any Reasoned Explanation and Must Consider These Reasonable Alternatives in Detail.

In DEIS Appendix D2, DAF lists a series of citizen-proposed alternatives and, for each one, provides a "DAF evaluation." For several of the reasonable alternatives, DAF provides no explanation for not considering it in detail, or an explanation that is so unreasoned that it fails to meet the requirement that the agency explain why it eliminated that alternative.

For example, one alternative proposed the avoidance of specific locations, including designated protected areas of public land or sensitive wildlife habitats, migration corridors, and the Chiricahua Mountains (DEIS Appendix D at D2-5). The "DAF evaluation" does not actually provide any rationale for why this alternative was not considered: it mentions Federal Aviation Administration (FAA) guidance and regulations regarding avoidance of noise sensitive areas and designated protected areas of public lands, but ultimately says nothing about why this alternative was not considered. Failure to consider this reasonable alternative in detail, and failure to provide *any* explanation for not considering this alternative, violates NEPA. *W. Watersheds Proj.*, 719 F.3d at 1052; *N. Alaska Env't Ctr.*, 457 F.3d at 978.

It is evident that such an alternative *is* feasible because DAF claims in that "evaluation" that its training must adhere to "all standard aircraft safety procedures," which includes

"avoidance of noise sensitive areas" and recommendations concerning National Parks, National Monuments, Wilderness Areas, and other protected federal lands (DEIS Appendix D at D2-5). In addition, the DEIS claims that DAF *already* complies with "defined avoidance areas associated with Mexican spotted owl and Bald and Golden Eagle nests beneath most of the airspace" (DEIS at 1-10). However, no details are provided in the DEIS or its appendices regarding these avoidance areas or other compliance with "standard aircraft safety procedures" or "avoidance of noise sensitive areas."

Despite the acknowledgement that DAF is capable of avoiding key ecological and federally designated protected areas, and indeed may already be doing so, this alternative is not considered in detail. DAF must evaluate an alternative that would avoid any expansion or intensification of combat training activities (e.g. lower elevation flights, more flights, more chaff or flare releases) over ecologically and culturally sensitive areas.

For example, an alternative that avoided National Monuments and designated Wilderness Areas, roadless areas, Wilderness Study Areas, designated critical habitat for threatened and endangered birds, Bald and Golden Eagle nesting areas, and the Chiricahua Mountains (designated as an Important Bird Area by the National Audubon Society) should be considered. The DEIS's references to existing bird avoidance areas and avoidance of noise in sensitive areas demonstrates that this alternative is feasible and reasonable to avoid harm to protected bird species and areas with high concentrations of birds and of recreationists (including birders, birdwatchers, hikers, hunters, and anglers) who depend on quiet ambient noise levels for their recreational activities.

Similarly, the basis offered for declining to consider an alternative that eliminates the Tombstone A MOA is not valid under NEPA (DEIS Appendix D at D2-6). As noted above, the DEIS never provides detail about what it actually *needs* in terms of the number of flights at what levels. Without that detail, DAF's evaluation that "removing a significant portion of this low-altitude training airspace would not meet the selection standard to improve low-altitude training in the area, thus eliminating Tombstone A is not a viable alternative" lacks a reasoned basis and supporting information. Tombstone A is a small fraction of the area available for low elevation flights (DEIS at 1-5 showing that the much larger Tombstone B, Jackal Low, and Fuzzy MOAs are available for flights at or below the 500 feet AGL level). Therefore, the elimination of the Tombstone A MOA and allocation of whatever flights might be necessary (for which DAF must provide more detail) is a reasonable alternative that must be considered in detail.

These reasonable alternatives and other viable alternatives should have been "considered in detail," but were not. *W. Watersheds Proj.*, 719 F.3d at 1052; *Nat. Res. Def. Council. v. U.S. Forest Serv.*, 421 F.3d 797, 813–14 (9th Cir. 2005) (agency violated NEPA by excluding viable alternatives allocating less than 50% of currently unspoiled areas to development and logging based on "market demand"); *California v. Block*, 690 F.2d 753, 767 (9th Cir. 1982) (although the EIS "pose[d] the question whether development should occur at all, it uncritically assume[d] that a substantial portion of the [roadless] areas should be developed and consider[ed] only those alternatives with that end result," in violation of NEPA); *see* 40 C.F.R. § 1500.2(e) (requiring agencies to "[u]se the NEPA process to identify and assess the reasonable alternatives to proposed actions that will avoid or minimize adverse effects of these actions upon the quality of

the human environment").

V. LACK OF ACCOUNTABILITY, SIGNIFICANT ISSUES WITH DAF PUBLIC AND AGENCY INPUT PROCESS

A. The Public Hearing Process Was Inadequate

The public hearing process for the DEIS was a failure, as DAF excluded the most directly impacted communities from its outreach. DAF refused to hold a single public meeting on the San Carlos Apache Nation, the White Mountain Apache Nation, or the Tohono O'odham Nation—each of which would be significantly impacted by the Proposed Action. The seemingly systematic exclusion of tribal voices in this process is inadequate and shameful.

No public hearings were held anywhere in Cochise County, AZ, despite this area being the most severely impacted by the Proposed Action. When hearings in this area were requested, the answer was "We are not able to add other in-person Hearing locations at this stage. Two Virtual Hearings are being conducted to ensure members of the public who are unable to attend the in-person Hearings for any reason have the opportunity to hear the same DAF presentation and provide verbal comment for the record" (Grace Keesling email, August 9, 2024).

The attempt to substitute in-person hearings with virtual hearings ignores the realities of broadband in rural and tribal areas. This is inequitable for these areas.[2] As such, an extension to the comment period is necessary after public hearings are held in Tribal communities, Cochise County, and Tucson, Arizona. DAF should also hold a hearing in Tucson, Arizona, where a significant number of stakeholders who recreate, hunt, enjoy, and use these lands for spiritual and cultural purposes live.

DAF has chronically and systematically excluded the most significantly impacted populations in areas that will see the most substantial increase in impacts under the Proposed Action.

B. Public Comments During Scoping Were Not Disclosed or Appropriately Considered

It is the general process under NEPA to disclose public comments. In the scoping phase of this project, according to the DEIS, 6,667 comments were made by members of the public, Tribes or Pueblos, federal agencies, state and local agencies, elected officials, aviation groups or private pilots, airports, and non-governmental organizations. None of these comments were disclosed publicly.

In Appendix D, the DEIS says "Since a large number of substantive scoping comments were submitted, the DAF elected to summarize the comments." The DEIS instead tallied the comments, classified them as "non-substantive" or "substantive," and provided a summary table

[2] Federal Communications Commission. 2021. FOURTEENTH BROADBAND DEPLOYMENT REPORT. GN Docket No. 20-269. Released: January 19, 2021. https://docs.fcc.gov/public/attachments/FCC-21-18A1.pdf

of only those they judged to be "substantive." Without access to the actual comments, there is no way to verify or assess what is presented in the DEIS. This is a gross breach of the NEPA process. As U.S. Air Force NEPA regulations mandate: "Air Force personnel will … [m]ake environmental documents, *comments*, and responses, including those of other federal agencies, state, Tribal, and local governments, and the public, part of the record available for review and use *at all levels of decisionmaking*." 32 C.F.R. § 989.4(a) (emphasis added). The most effective way to make those documents available is via the DEIS.

To comply with NEPA, it is also critical to know who made which comments. Which were from members of the public, tribes or pueblos, federal agencies, state and local agencies, elected officials, aviation groups or private pilots, airports, and non-governmental organizations?

All of these comments were made in the spirit of being "public comments." There is no privacy excuse that explains why they were not disclosed, as DAF's regulations make clear. This information has been requested under FOIA, was not released, and is now the subject of current litigation.

In addition to the above concerns, the "responses" presented in Appendix D, Table 8 were inadequate, incomplete, and dismissive. Here are just a few examples:

- A comment that scoping meeting locations were inadequate was responded to with: "*The scoping meeting locations provided sufficient geographic coverage for the areas most likely to be impacted by the proposal. Meeting location requests received during the scoping comment period were taken into consideration when determining the locations for Public Hearings*."

  This is factually inaccurate. The areas most severely impacted by the Proposed Action are the Tombstone MOA and tribal lands. These locations were not the site of meetings either during scoping or two years later during the DEIS comment period, despite repeated requests made to DAF's EIAP/NEPA Division staff (sent via email to Grace Keesling in 2022 and 2024), and dozens of public comments during virtual hearings voicing these concerns.

- A request for interaction with DAF representatives was answered with "*Virtual Public Hearings will be held during the Draft EIS comment period*."

  Neither those virtual hearings, nor the in-person hearings, provided any opportunity for interaction. In fact, it was explicitly stated that there would be no question and answers.

- A comment that meetings were not held on Tribal lands was answered, "*The DAF has consulted with government leaders of potentially affected Tribes in accordance with Section 106 of the National Historic Preservation Act. In-person meetings with Tribal leaders were held at their request*."

Private meetings with Tribal leadership is no substitute for the request for public hearings on Tribal lands and for the exclusion of Tribal members of the public who will be directly impacted by the Proposed Action.

- Nearly all comments voicing concern over the lack of information, purpose and need, and other substantive issues were answered with short referrals to pages in the DEIS, which did not adequately address the concerns or comments.

Overall, the DEIS did not adequately address the issues raised during scoping. We request that DAF comply with its own regulations by disclosing in full all scoping comments.

C. Input from Cooperating Agencies was not Adequately Disclosed or Included in the DEIS

According to NEPA, "A cooperating agency has the responsibility to:

- assist the lead agency by participating in the NEPA process at the earliest possible time
- participate in the scoping process
- develop information and prepare environmental analysis that the agency has special expertise in
- make staff support available"

40 CFR § 1501.6; 40 CFR § 1508.5.

The DEIS contains little or no information on the participation by the National Park Service or the United States Forest Service and fails to include these agencies comments during the scoping process. It is unknown what the degree of participation was by the Arizona Game and Fish Department. When information was requested from these agencies, it was not made available. FOIAs are pending but have not been answered promptly. We request that all public agency comments be disclosed and included in any subsequently prepared NEPA analysis.

D. DAF Has Consistently Failed to Respond to Concerns Regarding Current Violations of FAA Regulations, Which Continue to Persist

The DEIS does not respond to comments requesting the disclosure of violations of FAA regulations that call for avoiding overflights of persons, vehicles, or structures in un-congested areas by 500 feet (14 CFR § 91.119). Instead, the DEIS cites these regulations as though they are being followed, though it is clear they are not. DAF has been unresponsive to reports of noise and disturbances from communities below their airspace, despite repeated requests for response. See Appendix C: Nuisance Flight Reports and comments below for more information.

When flight information was requested of DAF to corroborate these problems under FOIA, DAF failed to supply that information . This failure to provide information is now the subject of litigation. This shows a consistent disregard for existing violations and a lack of regard for public input and concerns. As such, we request that historical flight information be disclosed and that past violations be responded to in any subsequently prepared NEPA document. In

addition, the degree of past violations should be considered in terms of how expanded regulations may lead to even more egregious violations.

Throughout the DEIS, DAF acknowledges Code of Federal Regulations Section 91.119 which defines FAA minimum safe altitudes for all flights. For example, the DEIS says "In accordance with FAA minimum safe altitudes (14 CFR § 91.119), aircraft must avoid congested areas of a city, town, or settlement or any open-air assembly of people by 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft. Outside congested areas, aircraft must avoid persons, vessels, vehicles, or structures by 500 feet."

In fact, this is part of the rationale DAF uses for its unsupported claims that there are no significant impacts of noise, dangerous aircraft crashes, and other safety risks as a result of this proposal.

However, these existing regulations have been routinely violated over the past two years. This is documented by hundreds of nuisance flight reports made to DAF and Air National Guard (See Appendix C: Nuisance Flight Reports.)

Data on actual military flights have been requested from DAF under FOIA to corroborate these violations. However, those requests were denied, and there is a pending lawsuit on that issue. Why is DAF declining to respond to these complaints or to provide data on these flights?

Because this issue has an overall effect on the entire DEIS, it is requested that any subsequently prepared NEPA analysis disclose and analyze military flight data from between January 1, 2022, and October 9, 2024, for FAA and airspace violations, and that DAF an enforcement plan be developed to stem future violations. The DEIS must include this information to allow for accurate analysis.

VI. DAF FAILED TO ADEQUATELY ASSESS CUMULATIVE IMPACTS

A. The DEIS Discussion of Intensity, Regularity, or Repetitive Events is Not Accurate.

The DEIS repeatedly states that negative consequences of the Proposed Action "would not occur with any sort of regularity or be a repetitive situation in any location." (3-104, 3-106, 3-117, etc.) As has been documented across many MOA's, and especially in the Tombstone MOA, this statement is not accurate (even at current conditions). Current military training activities have been concentrated in areas, such as canyons in the Chiricahuas, Aravaipa Canyon, and other areas with critical environmental, recreational and cultural values, and with demonstrated harmful consequences.

We request that DAF provide historical flight records and analyze them for intensity, regularity, or repetitive events in specified areas of the Tombstone MOA and other MOAs, especially in relation to DAF's flawed claim that flights are not sufficiently repetitive to lead to cumulative impacts. This flawed claim that sorties are not repetitive or concentrated enough to lead to negative consequences underlies the entire DEIS. This means the existing analysis is inadequate.

We request a supplemental DEIS that discloses and analyzes data on actual sorties and the intensity, regularity, and repetitiveness in specific areas, including the canyons and mountains of the Tombstone MOA and Aravaipa Canyon.

B. The DEIS Does Not Include Sufficient Information on the Introduction of F-35s to Adequately Analyze Cumulative Impacts.

The DEIS states that, "The F-35 basing was addressed in a previous NEPA decision document (DAF, 2012), but the basing was not fully complete at the time of preparation of this EIS; therefore, the additional F-35 sorties are not accounted for in the current operations data presented." (2-8) The F-35s are known to be considerably louder than current aircraft flying in the MOAs. This is a significant and a substantive omission. Additional information on the introduction of F-35s must be disclosed and analyzed as a part of this proposal and this EIS. We request that this information be disclosed, analyzed, and included in a supplemental DEIS.

VII. DAF FAILED TO ADEQUATELY ASSESS AND TAKE A "HARD LOOK" AT THE FOLLOWING ISSUES

A. The DEIS uses flawed and outdated standards to assess the impacts of noise pollution on people; the DEIS should have used noise metrics that are predictive of adverse health outcomes; the old methodologies used are especially inadequate to protect quiet natural areas; the DEIS fails to use recent epidemiological evidence that demonstrates the adverse impacts of aircraft noise on public health.

Analyses in the DEIS regarding the effects of noise on people and wilderness are misleading, and fail to take the "hard look" that NEPA mandates. The analysis is misleading because the DEIS uses outdated metrics that are not suitable for use to assess the impacts of noise pollution on people and in naturally quiet areas and fails to provide local evidence to support its assertions of no impact. The DEIS analysis should have used noise metrics that are predictive of relevant health outcomes.

Moreover, the DEIS fails to use the growing body of epidemiological evidence that demonstrates the relationship of environmental noise exposure and public health to assess the impacts of the proposed action and alternatives on rural and tribal communities.

1. The analysis of noise impacts in the DEIS uses a flawed measurement standard.

c. The DEIS inappropriately uses DNL/Annoyance Correlation for noise impact analysis.

The DEIS asserts that the changes in flight standards proposed for the existing Special Use Airspace (SUA) "would not be significant nor would they result in noise exposure

considered generally incompatible with FICUN standards[3] for residential, public use, or recreational and entertainment areas." (3-56). However, this approach is outdated and flawed and should not be used to assess the impacts of noise on people and Wilderness Areas.

The approach used in the DEIS is consistent with the federal approach to noise impact analysis developed in the early 1980s. Beginning in 1981, the Federal Aviation Agency (FAA) adopted Day-Night Average Sound Level (DNL) as the most suitable descriptor of noise in urban areas based on a report by the Federal Interagency Committee on Urban Noise (FICUN). The FICUN Report also provided specific guidelines to correlate compatible land use and/or noise mitigation strategies with DNL measurements. Noise below the 65 DNL threshold was deemed insignificant to all urban land uses. Above DNL 65 dBA an urban neighborhood was deemed uninhabitable without noise mitigations such as special insulation for housing units, for example.

In 1992, the Federal Interagency Committee on Noise (FICON) recommended using DNL measurements and the statistical and graphic correlation of "highly annoyed" (commonly known as the "Schultz Curve") to assess community response to aircraft noise. These standards were developed to address urban noise issues, especially in the vicinity of airports. They were adopted at a time when there was very little research on noise impacts outside of industrial workplaces. The 1992 FICON expressly recommended that research not be supported on the topic of noise impacts of DNL 60 dBA or lower. Notably, no health organizations were included as members of FICUN or FICON.

The guidelines that FICUN published in 1980 specifically recommended that residential land use be prohibited in areas that were exposed to DNL higher than 65 dBA and that all other uses be allowed below that threshold. This specific metric may stem from the work of T.J. Schultz. He wrote an analysis published in the *Journal of the Acoustical Society of America* by T.J. Schultz 1978, in which he reviewed community surveys performed in the 1960s and 1970s that had asked people to rank what degree of annoyance they felt as they heard increasing levels of noise from various modes of transportation. He matched increasing levels of annoyance with increasing DNL in a famous graph known today as the Schultz Curve shown in Figure 2 below.

[3] FICUN stands for Federal Interagency Committee for Urban Noise. This committee, organized in 1980, published "Guidelines for Considering Noise in Land Use Planning and Control" in June 1980. These guidelines were formalized as regulations by the Federal Aviation Administration (FAA) in 1981.

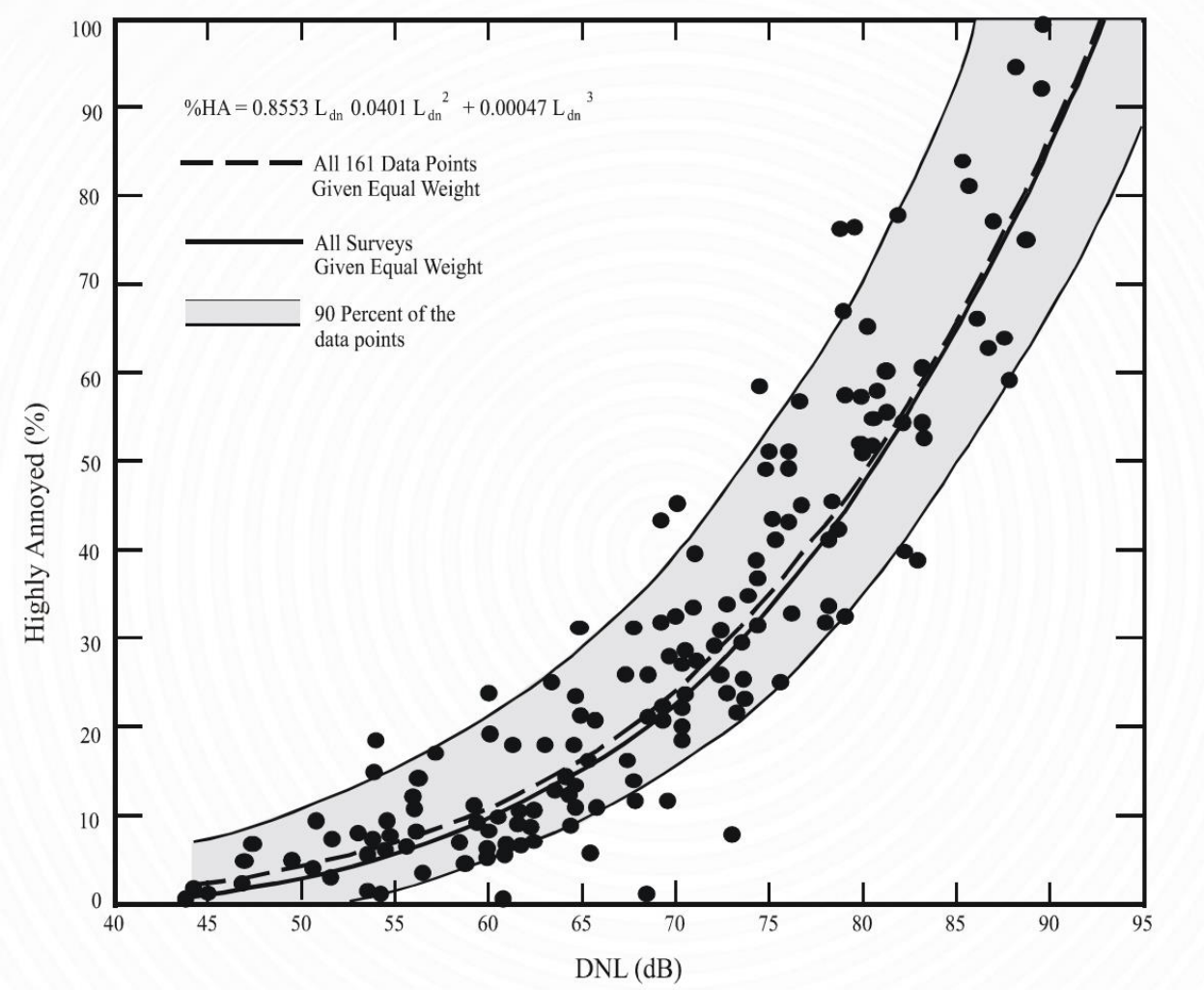

***Figure 2**. Schultz Curve from Department of Defense Noise Working Group. Technical Bulletin. "Community Annoyance Caused by Noise from Military Aircraft Operations." December 2009.*

Schultz concluded that a 65 dBA DNL was the "threshold of significance" beyond which many of the people surveyed had become "highly annoyed" by transportation noise.

The DEIS specifically notes that: "The resulting DNL and CDNL does not exceed significance thresholds, thus there are no land use restrictions or mitigations required for noise exposure" (3-56).

However, over the last 20+ years experts have identified substantial problems with the universal validity of correlating DNL with "annoyed" responses as represented by the Schultz curve. See the following excerpts:

Journal of the Acoustical Society of America: " …the accuracy and precision of estimates of the prevalence of a consequential degree of noise-induced annoyance yielded by functions of noise exposure leave much to be desired."[4]

National Aeronautics and Space Administration (NASA): "The synthesis curve does not have a clear, definite meaning because it is not based on objective, reproducible study techniques. The curve is NOT a measurement of the relationship between DNL and the percentage of the population that would describe themselves as "highly annoyed"."[5]

International Civil Aviation Organization: "…noise exposure alone accounts for only about a third of the variance of individual responses. Since the aggregate influence of these non-acoustic factors varies from one airport community to the next, it may be irrelevant to seek a single function that accurately describes the relationship between noise exposure and prevalence of annoyance in all airport communities. In fact, such attempts ignore the effect of non-acoustic factors and effectively prevent us from finding out how they affect the annoyance response."[6]

"None of the interpretations of compatibility made in the FICUN report were supported by any form of comprehensive, community- or theory-based, peer-reviewed or otherwise objective study, and none have been meaningfully revised. What informally seemed to some to be an acceptable level of noise pollution near military airfields six decades ago is not necessarily acceptable in modern society."[7]

"Both the Schultz (1978) and FICON (1992) dosage-response relationships are demonstrably incorrect and do not yield reliable or credible predictions of the prevalence of aircraft noise-induced annoyance. They are both based on limited sets of dated field observations; exclude data from some surveys documenting high annoyance prevalence rates at modest noise-exposure levels; and considerably underestimate the annoyance of aircraft noise exposure in many communities."[8]

"In hindsight, the purely descriptive and exclusively acoustic approach to the problem of predicting community reaction to noise that Schultz pioneered has not been as much of a panacea as once hoped because the resulting relationships fail to take into account or explain the great variability of community reaction. A less than compelling dosage-effect relationship provides the appearance but not the substance of a systematic basis for policy

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[4] Fidell, Stephen. "The Schultz curve 25 years later: A research perspective" *Journal of the Acoustical Society of America*. Volume 114, Issue 6 December 2003 https://pubs.aip.org/asa/jasa/article-abstract/114/6/3007/544386/The-Schultz-curve-25-years-later-A-research?redirectedFrom=PDF

[5] Fields, James M. A Review of an Updated Synthesis of Noise/Annoyance Relationships, July 1994 prepared for NASA. https://ntrs.nasa.gov/api/citations/19940029797/downloads/19940029797.pdf

[6] Gjestland, Truls. In International Civil Aviation Organization 2019 Environment Report. Pp89-92. https://www.icao.int/environmental-protection/Documents/EnvironmentalReports/2019/ENVReport2019_pg89-92.pdf

[7] Fidell, Sanford. A Review of US Aircraft Noise Regulatory Policy *Acoustics Today*, Fall 2015, p. 28 https://acousticstoday.org/wp-content/uploads/2015/11/Aircraft-Noise-Regs.pdf

[8] *Ibid.*

interpretations which in reality reflect the charters and interests of regulatory agencies at least as much as information about actual noise effects."[9]

The DEIS does not disclose the shortcomings and controversial nature of the use of DNL to assess the impacts of noise from the proposed action. The public is largely unaware of the technical complexities of noise exposure assessment and is led to believe by the DEIS that the DNL metric as it relates to "annoyance" is the only adverse effect from aircraft noise.

Note that CEQ NEPA regulations require agencies to "discuss any responsible opposing view that was not adequately discussed in the draft." 40 C.F.R. § 1502.9(c) (2024). Accordingly, an agency must "disclose and respond to" "evidence and opinions directly challeng[ing] the scientific basis upon which the Final EIS rests and which is central to it." *Ctr. for Biological Diversity v. U.S. Forest Serv.*, 349 F.3d 1157, 1167 (9th Cir. 2003). That includes scientific criticism of models the agency relies on. *Id*. at 1160-67. Here, the DEIS relies heavily on the assumption that the DNL metric captures and adequately discloses noise annoyance factors when experts have challenged that assumption. Any subsequently prepared NEPA document therefore must disclose and respond to that criticism, and explain why DAF can continue to rely on a discredited model.

d. The DEIS analysis should have used noise metrics that are predictive of adverse health outcomes.

There are many serious adverse health outcomes associated with environmental noise in general and aircraft noise in particular, as well as other noise indicators that are better predictors of health endpoints given their consistency across studies and presence of an exposure–response relationship and the magnitude of the effect.

For example, the World Health Organization Regional Office for Europe developed environmental noise guidelines for the European Region recognizing that environmental noise is "among the top environmental risks to physical and mental health and wellbeing, with a substantial associated burden of disease in Europe."[10] The guidelines use the day–evening–night noise level or L_{den} to express noise level over an entire day. It imposes a penalty on sound levels during evening and night and it is primarily used for noise assessments of airports, busy main roads, main railway lines and in cities over 100,000 residents. The penalty for sound production during evenings and nights is due to higher nuisance perception during quieter hours and to prevent sleep deprivation for nearby residents.[11]

For average noise exposure, the guidelines strongly recommend reducing noise levels produced by aircraft below 45 dB L_{den}, as aircraft noise above this level is associated with adverse health effects.

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[9] **Fidell, S.** (2003). *The Schultz curve 25 years later: A research perspective*. *The Journal of the Acoustical Society of America*, 114(6), 3007–3015.
[10] World Health Organization. Environmental Noise Guidelines for the European Region, 2018. https://iris.who.int/bitstream/handle/10665/279952/9789289053563-eng.pdf?sequence=1
[11] https://en.wikipedia.org/wiki/Day%E2%80%93evening%E2%80%93night_noise_level

For night noise exposure, the guidelines strongly recommend reducing noise levels produced by aircraft during night time below 40 dB L_{night}, as night-time aircraft noise above this level is associated with adverse effects on sleep.

At a minimum, any subsequently prepared NEPA document should explain why DAF is choosing to use the DNL model and rejecting the WHO's guidance.

2. The DEIS analysis fails to incorporate local evidence to support its assertions of no impact.

The authors of the DEIS are aware of the incongruity of using urban standards to assess the effects of combat aircraft noise on rural areas and wilderness and they deflect somewhat, citing for example the Shultz Curve and its subsequent iterations. Matching the responses of residents to changing level of annoying ambient noise and displaying the correlations seems like a useful idea. But it turns out this correlation is entirely a modeling exercise. In practice, no local people who will be impacted by the proposed action are queried for their responses to noise. Instead, the model relies on responses collected from other places and decades ago. In later iterations of the Schultz Curve methodology, it seems most of the places sampled were near airports. Current sampling is not performed locally to confirm the location-specific relationship between noise levels and annoyance ahead of the DEIS analysis. Modeling tables are consulted to determine existing ambient sound levels, and no follow up surveys or noise measurements have been gathered after aircraft operations or combat training begins to confirm the prior conclusions. Therefore, DAF must further analyze and incorporate local evidence to support its currently-flawed modeling standards.

3. The DNL is an inappropriate metric for quiet rural/Wilderness Areas.

The DEIS acknowledges that: "Many of the areas that underlie the existing and proposed airspace described in Chapter 2 are undeveloped wilderness or rural areas" (3-25). The text assumes that these areas are very quiet and lack human-caused noises.

It is absurd then to cite a 40-year-old FICUN standard that prohibits residential use in urban areas exposed to DNL exceeding 65 dBA as somehow protecting the quiet character of those rural and wild areas in Arizona and New Mexico. Can it really be the case that until the area becomes too noisy to legally live in, the effects of combat training by military aircraft would not be significant?

The National Academy of Engineering acknowledges the inappropriateness of using DNL in quiet areas, stating that "Neither day-night average sound level nor percent highly annoyed is an appropriate metric for measuring noise in naturally quiet areas. Because of the logarithmic nature of the decibel, short-duration sounds of high amplitude compared with background noise can significantly increase the day- night level, even though the sound remains at the background level most of the time. As for percent highly annoyed, this is hardly the best measure of satisfaction for areas where quiet and solitude are valued."[12]

[12] National Academy of Engineering "Technology for a Quieter America" 2010. http://nap.edu/12928

Public health evidence shows that it is the louder sound events distinguishable from background sound levels that are very important from a public health perspective. A 15-year prospective study from Switzerland found that higher levels of intermittency of noise regardless of source were independently associated with heart attack, stroke, heart disease, and heart failure.[13] This result applies to many areas that will be impacted by the proposed action and should have been taken into consideration in the DEIS. DNL is not the appropriate metric to evaluate sound events in rural and wilderness areas where background sound levels are low.

a. *The DEIS fails to use the growing body of epidemiological evidence that demonstrates the relationship of environmental noise exposure and public health to assess the impacts of the proposed action and alternatives on rural and Tribal communities.*

The DEIS asserts that "There is no scientific basis for concluding that aircraft noise has a negative non-auditory health impact." However, many highly reputable public health organizations and governmental bodies recognize environmental noise as a significant threat for a range of non-auditory health effects. This body of evidence was not disclosed or used to assess impacts of alternatives in the DEIS. This represents a failure to take the "hard look" NEPA requires, as well as a failure to address "responsible opposing viewpoints."

In its "Policy on Noise as a Public Health Hazard," the American Public Health Association reports that"

> "[d]ecades of scientific evidence show that noise causes or contributes to noise-induced hearing loss, annoyance, sleep disruption, cardiovascular disease, metabolic disturbances, and exacerbation of anxiety and depression. It also has adverse impacts on communication, activities, learning, productivity, and quality of life.
>
> Sleep disruption, annoyance, and stress caused by environmental noise play central roles in the development of clinical disease. These responses set off a cascade of physiological responses involving increases in stress hormone levels, blood pressure, heart rate, and other risk factors that, in turn, raise the risks of stroke, hypertension, ischemic heart disease, myocardial infarction, metabolic disturbances, and related mortality.
>
> Pathophysiological and epidemiological studies suggest that environmental noise is also implicated in metabolic diseases such as diabetes and obesity. Furthermore, research shows that noise exposure substantially increases the risk of anxiety and depression."[14]

[13] Vienneau, Danielle et al. Transportation noise exposure and cardiovascular mortality: 15-years of follow-up in a nationwide prospective cohort in Switzerland *Environment International* 2022 Jan:158:106974 https://pubmed.ncbi.nlm.nih.gov/34775186/

[14] American Public Health Association. Noise as a Public Health Hazard. October 26, 2021. Policy Number: 202115 https://apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2022/01/07/noise-as-a-public-health-hazard

The DEIS omits consideration of this growing body of research that reveals the profound impact of aircraft noise on public health. Below is a glimpse into the evidence linking aircraft noise to detrimental health outcomes.

i. Aircraft noise and children's wellbeing

A particularly concerning study focused on children aged 9 to 11 found that even at noise levels far below those required to cause hearing damage, aircraft noise significantly increases stress in children.[15] This study showed that chronic exposure to aircraft noise elevated stress markers, such as resting blood pressure and levels of epinephrine and norepinephrine (both stress hormones), while simultaneously reducing indicators of quality of life. The implications are clear: even moderate, consistent exposure to aircraft noise can undermine children's well-being, impacting their physical health and overall development.

In another study of children from 106 schools located around London Heathrow Airport, Madrid Barajas Airport, and Amsterdam Schiphol Airport, aircraft noise was associated with a decrease in reading scores and an increase in hyperactivity scores.[16]

ii. Nighttime aircraft noise and hypertension risk

A 2008 study on hypertension and exposure to noise near airports revealed a troubling connection between increased night-time aircraft noise and rising blood pressure.[17] Normally, during sleep, the body experiences what is known as "blood pressure dipping," a natural and essential process for maintaining long-term cardiovascular health. However, frequent nighttime disruptions caused by aircraft noise can interfere with this crucial dipping, leading to a heightened risk of hypertension.[18]

For residents living in MOAs where the operational hours are proposed to extend later into the night, the consequences could be severe. The increased frequency of extreme noise events will likely cause more sleep disturbances, raising the risk of hypertension and threatening the long-term health of those affected. This must be analyzed in a supplemental analysis.

iii. Aircraft noise and cardiovascular disease and mortality

Emerging research continues to reveal the serious health risks posed by night-time aircraft noise, particularly its impact on the cardiovascular system. Studies show that even short-

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[15] Evans, G. W., Bullinger, M., & Hygge, S. (1998). Chronic Noise Exposure and Physiological Response: A Prospective Study of Children Living Under Environmental Stress. *Psychological Science*, *9*(1), 75 – 77. https://doi.org/10.1111/1467-9280.00014

[16] Clark, Charlotte et al. 2021. A meta-analysis of the association of aircraft noise at school on children's reading comprehension and psychological health for use in health impact assessment. *Journal of Environmental Psychology*, Volume 76, August 2021, 101646 https://sci-hub.gupiaoq.com/10.1016/j.jenvp.2021.101646

[17] Babisch et al. Hypertension and exposure to noise near airports: the HYENA study, *Environmental Health Perspectives*, 2008, vol. 116 (pg. 329-333).

[18] Munzel, Thomas et al. Cardiovascular effects of environmental noise exposure. 2014. *European Heart Journal*, Volume 35, Issue 13, 1 April 2014, Pages 829–836. https://academic.oup.com/eurheartj/article/35/13/829/634015?login=false

term exposure to high noise levels at night can impair endothelial function—causing blood vessels to narrow and slowing blood flow to the heart. This dysfunction, believed to result from increased production of reactive oxygen species, may help explain the strong link between chronic noise exposure and cardiovascular disease.[19]

One retrospective study of over 6 million older adults (aged 65 and above) living near 89 U.S. airports found alarming results. Those residing in areas within the 90th percentile of noise exposure faced significantly higher risks of hospitalization due to ischemic heart disease and cerebrovascular disease.[20] Supporting these findings, a 15-year Swiss study found that long-term exposure to aircraft noise was directly associated with increased mortality from ischemic stroke.[21] The research also emphasized that it is not just the overall noise levels, but the sudden, intermittent loud events that also contribute to heart attacks, strokes, heart disease, and heart failure.

In 2021, a groundbreaking study published in the *European Heart Journal* reinforced these concerns.[22] The study linked elevated aircraft noise in the two hours preceding night-time deaths with an increase in cardiovascular mortality. The most striking associations were seen with conditions like ischemic heart disease, myocardial infarction, heart failure, and arrhythmia—indicating that night-time aircraft noise can trigger fatal heart events.

The DEIS makes a grave error by omitting this evidence of adverse health effects from aircraft noise. The DEIS should have used available dose-response information to assess the health impacts of the proposed action. Additional analysis is required.

4. The DAF fails to explain why it considers the noise methodology in the DEIS to be reliable.

An agency receives deference for its choice of methodology from a reviewing court if it "support[s] its conclusions . . . with studies that the agency, in its expertise, deems reliable." *The Lands Council v. McNair*, 537 F.3d 981, 994 (9th Cir. 2008). However, for a court to be able to defer to the agency, it "must explain the conclusions it has drawn from its chosen methodology, and the reasons it considers the underlying evidence to be reliable." *Id*.

The DEIS does not explain why its methodology for evaluating noise impacts is reliable. In fact, the DEIS recites that "[t]he FAA recognizes that there are settings where the 65 dB DNL standard for land use compatibility may not apply. These areas would likely be areas of extreme

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[19] Schmidt, Frank P. et al. Effect of nighttime aircraft noise exposure on endothelial function and stress hormone release in healthy adults. *European Heart Journal*, Volume 34, Issue 45, 1 December 2013, Pages 3508–3514.
[20] Correia, Andrew et al. 2013. Residential exposure to aircraft noise and hospital admissions for cardiovascular diseases: multi-airport retrospective study. *British Medical Journal (BMJ)* 2013; 347. https://www.bmj.com/content/347/bmj.f5561.abstract
[21] Vienneau, Danielle et al. Transportation noise exposure and cardiovascular mortality: 15-years of follow-up in a nationwide prospective cohort in Switzerland *Environment International* 2022 Jan:158:106974 https://pubmed.ncbi.nlm.nih.gov/34775186/
[22] Saucy, Apolline et al. Does night-time aircraft noise trigger mortality? A case-crossover study on 24 886 cardiovascular deaths. *European Heart Journal*, Volume 42, Issue 8, 21 February 2021, Pages 835–843 https://academic.oup.com/eurheartj/article/42/8/835/6007462?login=true

quiet, very rural areas, or natural areas with little human activity, such as wilderness areas or other protected natural areas." DEIS at 3-28 (emphasis added). Yet throughout the DEIS, in terms of evaluating whether noise impacts are significant, the DAF uses the 65 dB DNL standard across the whole Project Area to find that they are not, and that increases in noise (averaged over a year) does not reach thresholds that, the DAF claims, would require it to evaluate impacts to recreation (thereby "allowing" the DEIS to forego the impacts analysis that NEPA requires for some MOAs and some environmental features or activities). In fact (per the discussion in the "baseline" section below), the vast majority of the land under the MOAs would be "areas of extreme quiet, very rural areas, or natural areas with little human activity." And yet the DEIS applies the crude, 65 dB DNL standard to all of these areas (i.e., very rural, wilderness, and protect natural areas), without explaining why that methodology is appropriate and reliable for evaluating noise impacts on the lands affected. Without such explanation, no court would defer to the agency's use of outdated methodologies that are inappropriate for the vast majority of the areas affected.

B. <u>The DEIS analysis is flawed because it hides the severity of individual sound events and "focus booms" produced by low elevation subsonic combat training and lower elevation sonic booms.</u>

1. The DNL metric averages data over the entire MOA which can be thousands of square miles, thus hiding the magnitude and severity of a single sound event.

The DNL metric does not adequately capture extremely loud sound events because it averages sound levels over time as well as over a very large MOA area. Therefore, the significance of an individual sound event is masked as it may not raise the average DNL over the threshold level of 65 dB. People living under an MOA airspace will be significantly affected by the loudness of each individual overflight, but the DNL metric of noise exposure is cumulative while the experience of L max (highest time-weighted sound level) is individual—one screaming jet at a time. This fails to take the hard look NEPA requires.

2. The DEIS analysis does not account for topography, thus underestimating the noise impacts of the proposed action.

Table 3.4-7 in the DEIS (embedded on the following page) (*note: this table also appears in DEIS Appendix J as table 7.2-1, though it lacks the same footnote*), notes that the noise analysis calculations for overpressure "do not account for topography." This is a significant shortcoming, as the many of the areas in the MOAs—especially Wilderness Areas, and protected areas with high levels of biodiversity—have rugged, highly variable topography. This omission in the analysis is significant, since maneuvers in canyons will produce higher pressure levels than training flights over open areas, thus producing higher noise levels. Additional analysis is needed, as demonstrated by the footnote in table 3.4-7.

3. Sonic boom calculations in the DEIS omit overpressures produced by "focus booms"

Table 3.4-7 in the DEIS and Table 7.2-1 from DEIS Appendix J denote the relative overpressure generated by F-16C and F-35A aircraft. The pressures range from 9.4 pounds per

square foot (psf) for an F-35A flying at 5,000 feet AGL to 1.6 psf for an F-16C flying at FL300. The table is hedged, however, by an observation in Appendix J that "aircraft maneuvers may create "focus booms" with overpressures 2 to 5 times the magnitude of steady state sonic booms." In that case, the overpressure range potentially shifts from a high of 47 psf to a low of 7.5 psf. The observation about focus booms, which appears in Appendix J on p. J-46, is not mentioned in the main DEIS document itself. This table is embedded below as Figure 3.

Table 3.4-7 Sonic Boom Overpressures for Relevant Fighter Aircraft (pounds per square foot)

Aircraft Type[2]	Altitude and Speed[1]					
	5,000 feet AGL		10,000 feet AGL		30,000 feet AGL	
	Mach 1.2	Mach 1.4	Mach 1.2	Mach 1.4	Mach 1.2	Mach 1.4
F-16C	7.5	8.3	4.2	4.7	1.5	1.6
F-35A	8.4	9.4	4.9	5.3	1.7	1.8

Note: [1] These calculations do not account for topography. Thus the altitudes are presented generically in AGL.
[2] A-10s do not fly supersonic, thus overpressures were not calculated.
Legend: AGL = above ground level.

Figure 3: *Sonic Boom Overpressures for Relevant Fighter Aircraft (pounds per square foot). Table embedded from DEIS page 3-33.*

It is not clear how often these louder booms might occur or at what altitudes. They are generated by extreme aircraft maneuvers performed at supersonic speeds. It seems that lowering the supersonic flight floor was proposed specifically to accommodate those more realistic training opportunities. The text in the Appendix states: "it is impossible to predict when and where sonic booms or focus booms may occur" (J-6). Text in the DEIS basically says the same thing—without mentioning focus booms.

It is misleading to bury important information about the frequency and duration of supersonic flight during a sortie — "one or more 30-60 second increments"— in a footnote to the Annual Supersonic Sorties Tables. See Table 3.4-15 for an example. The text below the table states that the Outlaw, Jackal, Morenci, and Reserve MOAs will be treated as a combined supersonic grouping. The number of supersonic sorties is denoted as 1371, but the footnote suggests that the number of sonic boons *might* be higher, though no additional information is given, making this vague statement impossible to analyze. Since it is impossible to predict when or where sonic booms may occur, does that also mean it is not possible to tell how many sonic booms will occur at 5,000 AGL or any other altitude between 5,000 feet AGL and FL 300? Additional information must be provided to allow for meaningful analysis.

C. <u>The DEIS analysis is flawed because the Model Input Data are inaccurate.</u>

It also appears that the "Model Input Data" for the DEIS's noise impact models are not accurate because the model input data do not include any flights exceeding Mach 0.9, and therefore do not correctly model the supersonic flights that the DAF is proposing. Model Input Data appears on unnumbered pages after page J-52 of the DEIS Appendices. As noted above, there is no explanation of how many flights of various types DAF claims it needs, and so there is no way to evaluate whether the model for noise impacts is actually reflecting what is being proposed, or whether the DEIS is using data that reflects what DAF actually intends to do with its expanded and intensified combat training proposal.

And there seem to be some discrepancies in the data. For example, the DEIS discusses the sonic boom overpressures for supersonic flights of F-16s and F-35s at Mach 1.2 and Mach 1.4 (DEIS at 3-33), but the "Model Input Data" on the unnumbered pages after DEIS App'x J-52 does not appear to include any simulation of any flight faster than Mach 0.9—that is, no supersonic flights (which occur above Mach 1.0)! For example, in the Reserve MOA, despite the Proposed Action authorizing supersonic flights down to 5,000 feet AGL, the Model Input Data appears to show that the DEIS is modeling flights that will use various power settings and that 10% of the time will be between 34,000 feet and 51,000 feet at airspeed of Mach 0.85; 20% of the time will be between 24,000 feet and 34,000 feet at airspeed of Mach 0.85; 40% of the time will be between 20,000 feet and 24,000 feet at airspeed of 400 knots (approximately Mach 0.60); 25% of the time will be between 10,000 feet and 20,000 feet at airspeed of 400 knots (approximately Mach 0.60); and 5% of the time will be between 5,000 feet and 10,000 feet at airspeed of 400 knots (approximately Mach 0.60). This data appears on the unnumbered page that is 303 out of 646 of the Appendices pdf, seven pages after page J-52. But these exclusively subsonic flights are not what the Proposed Action would authorize – rather, it would authorize supersonic flights down to 5,000 feet AGL. DEIS at 3-33, DEIS App'x at J-35.

Thus, it appears that the DEIS's "Model Input Data" does not accurately reflect the Action that is being proposed for authorization, because it does not, apparently, actually model any supersonic flights, much less ones occurring at 5,000 feet AGL. And nowhere in the DEIS or Appendix J is there any explanation of why the model input data only goes up to Mach 0.9 as the top speed while the DEIS describes sonic boom effects up to Mach 1.4.

D. <u>The DEIS analysis of the potential impact of chaff dispersion is inadequate.</u>

The DEIS relies on generalities, sweeping assumptions, and omissions to find no impacts to the environment stemming from the use of chaff. The DEIS fails to perform community analyses that experts now recommend, i.e., it fails to follow guidelines for site-specific analyses that DAF research recommends in the case of chaff use. As a result, the environmental impacts of the Proposed Action are not adequately assessed. In fact, the DEIS is largely a limited catalog of dimensions and data lists that are not actually analyzed to determine if the Proposed Action does more harm to one area than to another. This violates NEPA's hard look mandate.

1. DAF fails to follow its own guidelines for assessing the potential impact of chaff use.

RR-188 chaff is used as a defensive countermeasure to cloak military aircraft from enemy radar. It consists of glass fibers that are coated with aluminum and bundled into cartridges. Each cartridge holds approximately 5,000,000 short fibers (dipoles). The cartridges are fired from aircraft during an evasive maneuver, and the discharge creates a temporary cloud of aluminized fibers that reflect radar signals, shielding the aircraft from enemy weapons that are guided by radar.

The size of the fiber cloud and the dimensions of its dispersal pattern depend on the altitude of its release and concurrent weather and wind patterns. The dispersal might range from

500 feet to 300 miles, extending potentially well beyond the existing and proposed MOAs. Eventually the chaff fibers drift to the ground.

The analyses regarding potential impacts from the use of chaff in DEIS are inadequate and misleading. The DEIS asserts that RR-188 chaff and its residual materials pose no environmental harm to natural resources, including water; that there is only minimal risk to the safety of people; and that no impact on biological resources or to special-status species would be expected. However, the analyses do not follow DAF's own guidelines for assessing the potential effects of chaff on health, safety, and the environment (DAF, 1997; Chaff/Flare Guidelines).

To adequately assess the impacts of chaff, the Chaff/Flare Guidelines state that site-specific analyses are required for the following conditions or issues:

- Small, confined fresh-water aquatic environments with sensitive species, and
- Water bodies with significant waterfowl use or protected species.
- Wilderness Areas, Wild and Scenic Rivers, parks, coastal zones, outstanding visual resource areas.
- Native American traditional use areas.

(USAF, 1997, Table: 5.1-1: Potential for Impact from Flare and Chaff Use)

The DEIS expressly fails to perform any detailed site-specific analyses on water resources in the areas impacted by the Proposed Action even though there are multiple bodies of water there that meet the conditions specified in the guidelines. The failure is justified by citing CEQ regulation (40 C.F.R. § 1501.7(a)(3) (2019); now 40 C.F.R. § 1502.4(d)(1) (2024)), which allows agencies in scoping to eliminate from detailed study issues that are not relevant and or have been covered by prior environmental review.

The DEIS does not support its numerous sweeping conclusions that the use of chaff would have no impact upon the environment. For example, the DEIS asserts that "the use of chaff and flares does not affect water quality or aquatic habitats" (3-2), and that the Proposed Action would create a "miniscule amount of debris in any small geographic location" (Appendix F-17). These deficiencies are explained in more detail in the following section: *The DEIS analysis and discussion of water and fish impacts is inadequate.*

Given that MOAs are special use airspaces that generally occur over land not owned by the Department of Defense, extra care in analyses is appropriate. That care should extend beyond weak assumptions and offhand risk assessments.

The DEIS makes sweeping statements that chaff is safe without discussing its toxic components. It states, "[t]he principal components of chaff (i.e., aluminum, silica glass fibers, and stearic acid) do not pose an adverse risk to human and environmental health, based on the low-level toxicity of the components, their dispersion patterns, and the unlikelihood that the components would interact with other substances in nature to produce synergistic toxic effects (DAF 2011)" (DEIS Appendix F-4). We refute these claims and provide detail in the following section: *The DEIS analysis and discussion of water and fish impacts is inadequate.*

E. The DEIS fails to properly analyze the fire risk impacts associated with the proposed action; the analysis of fire risk is factually inaccurate and inadequate.

The DEIS presents the fire risk associated with the proposed expansion of aerial training activities primarily as a risk of wildfire ignitions from the use of flares, and dismisses that risk as the result of an unlikely occurrence: "Fire risk associated with flares stems from an unlikely, but possible, scenario of a flare reaching the ground or vegetation while still burning" (DEIS at 3-17).

However, the DEIS misunderstands and mischaracterizes the nature of the fire risk in the areas proposed for mission expansion. The DEIS underestimates the risk of fire ignition from flares; the DEIS fails to adequately assess the risk of fire ignition from live fire, crashes, and other accidental ignition sources; the DEIS fails to adequately assess the risk that a surface ignition could result in escaped wildfire; the DEIS fails to analyze the potential impacts to communities that would be harmed by escaped wildfire; the DEIS fails to analyze the potential impacts to natural resources that would be harmed by large-scale wildfire. Note that CEQ regulations mandate that agencies disclose reasonably foreseeable consequences of agency actions, including effects "that have catastrophic consequences, even if their probability of occurrence is low." 40 C.F.R. § 1502.21(d) (2020 & 2024).

1. The DEIS inadequately assesses the risk of fire ignition from flares.

The Air Force proposes to discharge 163,260 countermeasure flares annually over the areas of the Proposed Action, increasing the annual number of flares discharged by 36% while decreasing the minimum release altitude in three of the six areas (Table 2.2-5 Proposed Chaff and Flare Usage – Alternative 2, DEIS at 2-12). However, the DEIS then asserts that there is no increase in fire risk from flares.

> "In a fire risk assessment for all DAF ranges and areas where flares are used (DAF 1997), operating parameters (such as release altitude, area, environmental conditions) were too diverse to isolate level of use as the only or primary factor affecting frequency of fires. For this reason, and because flare-caused fires were rare in any case, no statistical correlations can be made between utilization (that is, total number of flares released) and fire occurrence. Thus, the increased number of flares proposed does not directly correlate to an increased fire risk" (DEIS at 3-21).

Presumably, the technicality at the heart of this assertion is that fire risk is a factor not just of the number of flares discharged, but also of where and under what conditions the flares are discharged. Nonetheless, assuming that DAF will use flares similarly to how they have been used in the past, and given that the risk of accidental wildfire ignition of from flares is certainly not zero, a 36% increase in the discharge of flares on its own represents an increased risk of surface fire ignition.

In addition, the proposed action would decrease the minimum release altitude for flare discharges in three of the six proposed operation areas: from 5,000 feet AGL to 2,000 feet AGL in the Tombstone MOA, with a proposed 30,000 flare discharges annually; from 3,000 feet to

2,000 feet in the Outlaw/Jackal MOA, with 24,640 flare discharges; and from 5,000 feet to 2,000 feet in the Gladden/Bagdad MOA, with 20,620 flare discharges. Decreasing the minimum release altitude for flare discharges indisputably increases the risk of surface fire ignition.

Contrary to DAF's assertion that flares are a low risk of fire ignition, there is documentation of many large and costly fires having been started by military flares. Fires in New Jersey in 2007,[23] Oregon in 2018,[24] on San Carlos Apache tribal lands,[25] fires on Tohono O'odham lands, and the Telegraph Fire in Arizona in 2021[26] were all likely started by military flares. San Carlos Apache Chairman Terry Rambler has documented at least ten fires caused by DAF flares on San Carlos Apache land, providing maps and photos.[27] These fires occurring over the last 20 years facts undermine the DAF's continued reliance on the 27-year-old 1997 DAF study.

Arizona's Telegraph fire in 2021 burned over 180,000 acres, destroyed 51 structures, threatened lives, destroyed critical habitat, and cost millions of dollars.[28] In the case of this fire, the incident command said that there was a high probability that the fire was caused by military fighter jets in the area that day.[29] In response, federal, state, and local officials have all asked DAF to reconsider dropping flares at lower elevations because of fire risk.[30]

The DEIS states that flares have a 99% reliability with a 95% confidence level (3-20). Considering this 99% reliability rate, of the 163,260 flares proposed to be discharged annually, 1,632 are expected to be unreliable. These flares can fail to ignite after ejection from the aircraft or burn only partially in their descent to the ground.

Flares that fail to ignite or burn completely on their descent can ignite later, causing serious injury and/or igniting a surface fire. For example, a woman in Graham County found a flare in the desert in 2017. The flare exploded, causing the woman severe burns that required skin grafts and months of recovery. While DAF confirmed that the flare was theirs,[31] DAF did not explain how the flare came to be in that location or how long it might have been there before exploding. In any case, unexploded flares can present a risk of ignition for days or weeks after they are released.

By DAF's own estimation, over 10 years, 16,320 flares would be expected to be unreliable, of which some significant percentage would be potential sources of surface ignitions, potentially

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[23] New York Times. 2007. Thousands Flee New Jersey Wildfire Ignited by Flare From F-16. By Alan Feuer and Richard G. Jones. May 16, 2007.
[24] Oregon Public Broadcasting. 2017. Feds Examine Military Flares In Mysterious Oregon Wildfires. By Tony Schick. July 19, 2017.
[25] San Carlos Apache Tribe. 2022. March 4, 2022. Letter to Col. Thurnham, Christopher Brewster and Jesse Durham re: Scoping Comments on DAF EIS. Chairman Terry Rambler and Vice Chairman Tao Etpison.
[26] Braham Reznik. Did fighter jets cause Arizona wildfire? Here's what we know. June 29, 2021. 12 News CBS.
[27] San Carlos Apache Tribe. 2022. March 4, 2022. Letter to Col. Thurnham, Christopher Brewster and Jesse Durham re: Scoping Comments on DAF EIS. Chairman Terry Rambler and Vice Chairman Tao Etpison.
[28] State of Arizona. 2021. *Declaration of Emergency – Telegraph Fire.* June 9, 2021.
[29] Braham Reznik. Did fighter jets cause Arizona wildfire? Here's what we know. June 29, 2021. 12 News CBS.
[30] Arcand, Cameron. 2024. Arizona lawmaker asks Air Force to reconsider flare protocols over wildfire risk. September 25, 2024.
[31] Rodewald Matt. 2017. Air Force flare seriously injures woman. Fox 10 Phoenix. February 8, 2017.

for many weeks or longer after they are released. Any subsequently prepared NEPA document must address the impacts from these burning and exploding devices.

a. The DEIS does not comply with DAF Chaff/Flare Guidelines

The DEIS does not comply with DAF's Chaff/Flare Guidelines, which describe how fire risk from flares should be assessed: In order to adequately assess the impacts of countermeasure flares on lands not owned by the Department of Defense, the Chaff/Flare Guidelines state that site-specific analyses are needed when conditions warrant. The Chaff/Flare Guidelines clearly identify by category the resource issues that need to be addressed and the conditions that trigger the need for studies. (USAF, 1997, Chaff/Flare Guidelines, Table 5.-1: Potential for Impact from Chaff and Flare Use)

For example, in the category of Fire Risk the following issues are identified in the Chaff/Flare Guidelines as needing site-specific analysis when non-Department of Defense lands with low-altitude airspace (where military training occurs below 10,000 MSL):

1. Effect of quantities of flares used on fire risk
2. Effect of weather on fire risk
3. Effect of topography on fire risk
4. Effect of vegetation on fire risk
5. Effect of fire management capacities
6. Effectiveness of minimum release altitudes on fire risk

Despite these clear and specific guidelines, and despite acknowledging the diversity of topography and climates in Arizona, the DEIS fails to provide a site-specific analysis that considers the differences in vegetation, topography and fire management capacities within and among the six MOAs. The DEIS indicates that DAF declines to undertake the necessary site-specific analysis when the local DAF installation has an existing flare restriction protocol.

> "Modeling a local fire hazard involves considerable data collection and effort; therefore, as a first step, guidelines already developed by land managers for an area can be adopted to determine when it is safe to drop flares. Fire prediction modeling would only need to be performed for areas where this approach is not adequate. Implementing the current flare restrictions used by the DAF installations has proven to be effective at preventing fires from training activities originating from the bases" (DEIS, Appendix F at F-13).

This does not satisfy the clear requirements of the Chaff/Flare Guidelines. Furthermore, the DEIS does not disclose which areas are covered by existing flare restriction protocols and which are not, nor does the DEIS disclose or analyze the effectiveness of those protocols. Merely stating that flare restrictions have been proven to be effective does constitute an analysis.

Finally, the Chaff/Flare Guidelines require a site-specific analysis of the fire management capability. The DEIS must analyze fire management capacity, not just by jurisdiction, but with respect to the terrain, distance, and accessibility. At military ranges, firefighting equipment can be prepositioned. Such a strategy is not feasible in, for example, a wilderness area. Wilderness areas, wilderness study areas, and roadless areas are defined areas with limits on access and ground operations, and there are other areas where access may be difficult due to terrain and distance.

2. The DEIS fails to adequately assess the risk of fire ignition from live fire, crashes, and other accidental ignition sources.

The DEIS discusses the risk of surface ignition from flares but does not analyze the risk of accidental surface fire ignition associated with live fire exercises, crashes and mishaps, or other accidental sources of ignition.

The DEIS acknowledges the risk of crashes and other "mishaps,"

> "Based on historical data on mishaps at all installations and under all conditions of flight, the military services calculate Class A mishap rates per 100,000 flying hours for each type of aircraft in the inventory to provide the basis for evaluating risks among different aircraft and levels of operations… Based on the historical data, 495 Class A mishaps have occurred, and 448 aircraft have been destroyed. This results in an average Class A mishap rate of 2.45 per 100,000 flight hours, and an aircraft destroyed rate of 5.21 across all three airframes (Air Force Safety Center [AFSEC] 2021)" (DEIS at 3-14).

However, the fire risk assessment focuses solely on the risk of ignition from flares, and does not address the risk of ignition from any other sources associated with the operations, such as live fire exercises, crashes and mishaps.

> "In a fire risk assessment for all DAF ranges and areas where flares are used (DAF 1997), operating parameters (such as release altitude, area, environmental conditions) were too diverse to isolate level of use as the only or primary factor affecting frequency of fires. For this reason, and because flare-caused fires were rare in any case, no statistical correlations can be made between utilization (that is, total number of flares released) and fire occurrence. Thus, the increased number of flares proposed does not directly correlate to an increased fire risk" (DEIS at 3-21).

Nonetheless, crashes and other mishaps are a very real risk and potential source of ignitions. According to the Air Force Times in 2022, "Six F-16s have been involved in accidents so far this year. About three Fighting Falcons have been totaled each year on average for the past decade."[32] Serious crashes have included: an F-16 crash on the Tohono O'odham Nation in 2004

[32] Air Force Times. 2022. Fighter pilot who tailed a civilian plane blamed for destroying F-16. By Rachel S. Cohen. December 2, 2022. https://www.airforcetimes.com/news/your-air-force/2022/12/02/fighter-pilot-who-tailed-a-civilian-plane-blamed-for-destroying-f-16/

that killed a Singaporean pilot[33]; an F-16 crash near Douglas, AZ in 2015 that killed an Iraqi pilot[34]; an F-16 crash near Bagdad, AZ that killed a Taiwanese pilot in 2016[35]; an F-16 crash near Safford, AZ that killed an Iraqi pilot[36]; and a non-fatal F-35 crash near Albuquerque in 2024.[37] Furthermore, the DEIS focuses solely on Class A mishaps, defined as property damage of $2.5 million and/or aircraft destroyed, and resulting is fatality or permanent total disability (DEIS at 3-14).

> "As stated in **Section 3.3.2.1**, *Flight Safety*, the average Class A mishap rate across the lifetime of F-16/F-35/A-10 is 2.45 mishaps per 100,000 flight hours (AFSEC 2021). The type of training proposed would be the same as what is performed currently, and there would be no aspect of the Proposed Action that would increase the potential accident rate" (DEIS 3-18).

However, a mishap need not result in the destruction of an airplane or of a person's life in order to accidentally ignite a surface fire. All types of mishaps—Class A, B, C and D—could result in accidental ignition of a surface fire. However, the DEIS fails to provide an estimate of all mishaps and accidents. In fact, the DEIS fails even to provide an estimate of the risk of Class A mishap over the life of the plan.

Similarly, the DEIS fails to analyze how the decrease in the minimum altitude of overflights and flare release increases the risk of mishaps and/or increases the risk that the existing level of mishaps could result in an increase in the risk of accidental surface fire ignitions. Expanding low-elevation sorties would increase the likelihood of crashes. This is especially problematic given that the Proposed Action would substantially increase the number of low-elevation maneuvers.

3. The DEIS fails to adequately assess the risk that a surface ignition could result in escaped wildfire.

The DEIS analysis of fire risk largely focuses on the likelihood of a flare resulting in an escaped wildfire:

> "If a burning flare reaches the ground or the canopy of a tree or shrub, it may or may not start a fire. The conditions that must be satisfied in order for a fire to start and spread include: (1) the source must be very near to or in contact with a fuel element, (2) the source must have sufficient residual energy to ignite the fuel element, and (3) fuel

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[33] U.S. Air Force. Officials announce F-16 accident investigation findings. December 7, 2004. https://www.af.mil/News/Article-Display/Article/135447/officials-announce-f-16-accident-investigation-findings/

[34] CNN. Iraqi pilot dies in F-16 crash in Arizona. By Cameron Tankersley and Joshua Berlinger. June 26, 2015. https://www.cnn.com/2015/06/26/us/arizona-f-16-crash/index.html

[35] AP News. Military: Human remains found at Arizona F-16 crash site. January 21, 2016. https://apnews.com/general-news-1ffbc9c257e64900a9d051762c68f4a6

[36] AP News. Iraqi student pilot killed in Arizona F-16 crash identified. September 6, 2017. https://apnews.com/general-news-d4a21a03097c4870884600d24e5e3085

[37] Military News. 2024. F-35 Crashes Outside of Albuquerque Airport; Pilot in Serious Condition. By Drew F. Lawrence and Thomas Novelly. May 29, 2024. https://military.com/daily-news/2024/05/29/f-35-crashes-outside-of-albuquerque-airport-pilot-serious-condition.html

> conditions must support the spread of fire. With regards to fires starting from a flare landing in the crown of a tree or shrub, a burning flare alighting in the crown layer of shrub cover may start a fire, but the crown layer must contain a sufficient density of dead foliage with low enough moisture content to support the spread of fire, or no fire would result. If hot material comes in contact with rotten wood, smoldering combustion can be sustained at temperatures as low as 200 degrees Celsius. However, the fraction of surface area covered by rotten wood is small in even in a decaying forest stand" (DEIS Appendix F at F-13).

The DEIS makes two incorrect assumptions in this analysis. The first is that the ignition of shrubs and trees is the primary concern with respect to an escaped wildfire. In reality, grasses are the primary fuel for most of the area burned in wildfires. According to Arizona Firewise, "grasses can dry out rapidly and burn quickly, creating fast, low-intensity fires... Fire in desert scrub will behave similarly to grasslands when annual and/or invasive plants are contiguous and dry…"[38]

Active wildfire in grass and desert scrub can travel 4.5 miles an hour, significantly faster than fire burns through forest and woodlands.[39] In fact, many wildfires, including wildfires that later involve forests and woodlands, initially start in grass and desert scrub. Grass and desert scrub are, by far, the greatest vegetation type across each of the MOAs (DEIS, 3-70).

Furthermore, invasive grasses, such as buffelgrass, have spread through many arid regions of Arizona, including in the MOAs. These invasive grasses provide a much more continuous fuel source and burn hotter than native grasses, leading to greater fire risk.[40] The DEIS's focus on trees, shrubs, and rotting wood ignores the much greater likelihood that an ignition source would make contact with dry grass, and results in a meaningless analysis of fire risk. It is extremely concerning that the DEIS does not even mention proliferation of invasive grasses throughout the MOAs and how this has significantly increased fire risks.

The other incorrect assumption is that the conditions for the spread of a wildfire would need to occur at the time of the operation. As noted above in the discussion of unreliable flares, such flares may explode days or weeks after they are released during an operation. Furthermore, a flare could result in a smoldering burn, undetected for several days until increased windspeed and/or reduced humidity levels allow the fire to spread to become an active wildfire beyond the scale of containment. Many large wildfires in the Southwest have started as ignitions that smoldered for days before growing into active fires.

The DEIS proposes to mitigate the risk of accidental ignition of surface fires by limiting the use of flares in certain areas on days when weather conditions are conducive to the spread of fire, essentially, low humidity and high wind speeds:

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[38] Arizona Department of Forestry and Fire Management. 2024. AZ Firewise. https://dffm.az.gov/fire/prevention/firewise

[39] *Ibid.*

[40] Balch, Jennifer, V. Iglesias, A.L. Mahood, M.C. Cook, C. Amaral, A. DeCastro, S. Leyk, T.L. McIntosh, R.C Nagy, L. St. Denis, T. Tuff, E. Verleye, A.P. Williams, C.A. Kolden. 2024. The fastest-growing and most destructive fires in the US (2001 to 2020). *Science* 386,425-431(2024). DOI: 10.1126/science.adk5737.

> "Implementing restrictions on the use of flares based on local fire conditions is a best management practice that is currently implemented for each MOA and is defined in individual unit policies. These restrictions vary depending on the local conditions beneath the MOA and would continue as part of the Proposed Action" (DEIS 3-20).

However, these restrictions are based on the very limited observation of the existing conditions on the day of the flight. To guard against starting a large-scale active fire, the restrictions must consider the weather conditions not just the day of the flight, but over the next several days, as well, to reduce the likelihood that a smoldering burn could grow into an active surface fire.

Furthermore, because operation mishaps can similarly result in the ignition of surface fires, the restrictions applied to the use of flares based on local conditions and projected fire weather for several days after the flight, should similarly apply to all flights, not just the use of flares.

4. The DEIS fails to analyze the potential impacts to communities that would be harmed by escaped wildfire.

The fact that the DEIS proposes to minimize flight time directly over highly populated areas as the primary means for reducing risk to population centers indicates a fundamental misunderstanding of the nature of the fire risk:

> "[The] limited amount of time the aircraft is over any specific geographic area limits the probability that a disabled aircraft would impact a populated area" (DEIS at 3-18).

In reality, large-scale wildfires can burn for tens of miles, threatening homes and communities far from the ignition source. For example, three of the largest wildfires in recent history in Arizona are the 2002 Rodeo-Chediski Fire that burned 462,000 acres, the 2005 Cave Creek Fire that burned 248,310 acres, and the 2011 Wallow Fire that burned 539,000 acres; these wildfires extended downwind from the ignition sites—generally to the north and east—for distances of approximately 40 miles, 25 miles, and 40 miles, respectively.

The DEIS must analyze the potential impacts of a surface fire ignited by operations in the MOA resulting in a large-scale wildfire that could reach properties, homes, and communities as far as twenty or forty miles downwind. The DEIS must analyze the impacts not just to property, but also to critical infrastructure upwind of populated areas. Such infrastructure includes drinking water supply, power lines, and access routes.

The DEIS identifies communities within the MOAs, any of which could be impacted by large-scale wildfires ignited in the MOA. These include the communities of Reserve, Clifton, and Duncan in the Morenci MOA; Miami and Kerney in the Outlaw MOA; Safford and Whiteriver in the Jackal MOA; Bagdad in the Bagdad MOA; Aguila, Hillside, Peeples Valley, Yarnell, and Congress in the Gladden MOA; and Bisbee, Gleeson, Animas, and Hachita in the Tombstone/Playa MOA.

In addition to the direct impacts, DAF must analyze the potential indirect impacts to communities related to the costs of managing a fire response. The DEIS assumes that the costs of fire response would be borne by either the DAF or other federal agencies.

> "The land area under the existing and proposed MOAs/ATCAAs is owned or managed by a variety of separate entities, including Bureau of Land Management (BLM) and the USFS as well as tribes. Fire suppression of wildland fires on Federal lands is the responsibility of the entity that owns/manages that land and is geared toward protecting lives and suppressing wildfire" (DEIS at 3-17).

These are potentially massive costs to the U.S. Forest Service and Bureau of Land Management, and the DEIS must quantify and analyze these costs. As an example, the estimated cost of fire suppression activities during the 2011 Wallow fire was $109 million.[41]

Furthermore, the DEIS assumes that a surface fire ignited by DAF operations in the MOAs will remain on the jurisdiction in which it ignites. As discussed above, large-scale fires can burn hundreds of thousands of acres over tens of miles. In such situations, a fire could involve communities far from the point of ignition and require engagement of fire suppression resources from state agencies, tribal governments and other local governments.

The DEIS must estimate and analyze the costs of fire response, evacuation, loss of business, loss of homes and property, and post-fire restoration be incurred by individuals and entities other than DAF—including state, tribal, and local governments—should an ignition result in a large-scale fire that extends to downwind jurisdictions and communities.

5. The DEIS fails to analyze the potential impacts to natural areas and wildlife that would be harmed by escaped wildfire.

Large-scale wildfires can burn for tens of miles, across hundreds of thousands of acres. Fire ignitions from DAF operations in an MOA can result in impacts to natural areas and wildlife within and adjacent to the MOAs.

In a 2022 letter to DAF regarding the proposed action, the U.S. Fish and Wildlife Service (USFWS) stated that the proposed action, including the potential for fire ignitions, could harm many federally protected species:

> "We anticipate the proposed action, through noise, sonic booms, potential for fire ignitions, and other actions could affect a suite of federally-listed mammals, birds, reptiles, amphibians, fish, and plants, including, but not limited to the jaguar (*Panthera onca*), Mount Graham red squirrel (*Tamiasciurus hudsonicus grahamensis*), New Mexico meadow jumping mouse (*Zapus hudsonius luteus*), Mexican long-nosed bat (*Leptonycteris nivalis*), Mexican spotted owl (*Strix occidentalis lucida*), southwestern willow flycatcher (*Empidonax traillii extimus*), yellow-billed cuckoo (*Coccyzus*

[41] BIA Interagency Report. 2011. Wallow Fire - Fuel Treatment Effectiveness on the Fort Apache Indian Reservation. December 2011. https://www.bia.gov/sites/default/files/dup/assets/public/pdf/idc015931.pdf

americanus), narrow-headed gartersnake (*Thamnophis rufipunctatus*), northern Mexican gartersnake (*Thamnophis eques megalops*), New Mexican ridge-nosed rattlesnake (*Crotalus willardi obscurus*), and Chiricahua leopard frog *(Rana chiricahuensis*)" (DEIS Appendix L, page 511).

In addition to complying with the Endangered Species Act, DAF must ensure that the DEIS discloses and analyzes these potential impacts, including the potential impacts from fire ignitions.

The MOAs occur over millions of acres of open space and natural areas that serve as habitat for countless plants and animals. These include millions of acres of designated Wilderness Areas and roadless areas, tens of thousands of acres of Research Natural Areas and Areas of Critical Environmental Concern, as well as Organ Pipe Cactus National Monument and Chiricahua National Monument. These areas are important natural areas that can be highly sensitive to fire and can also have extremely limited access for fire suppression activities.

The Proposed Action would occur over 1,956,010.73 acres of federally designated critical habitat and 638.22 miles of linear critical habitats (linear measurements are most appropriate to account for narrowly confined critical habitats following rivers streams and riparian areas).

The Bagdad MOA contains critical habitat for the Northern Mexican gartersnake, Southwestern willow flycatcher, and yellow-billed cuckoo. The Gladden MOA contains critical habitat for the Northern Mexican gartersnake and Southwestern willow flycatcher. The Jackal MOA contains critical habitat for Chiricahua leopard frog, Mexican spotted owl, Mount Graham red squirrel, razorback sucker, Southwestern willow flycatcher and yellow-billed cuckoo. The Morenci MOA contains critical habitat for Chiricahua leopard frog, Gila chub, Mexican spotted owl, Narrow-headed garter snake, Razorback sucker, Southwestern willow flycatcher and yellow-billed cuckoo. The Outlaw MOA contains critical habitat for Acuna cactus, Gila chub, Mexican spotted owl, razorback sucker, Southwestern willow flycatcher and yellow-billed cuckoo. The Reserve MOA contains critical habitat for Chiricahua leopard frog, Gila chub, Mexican spotted owl, narrow-headed garter snake, New Mexico meadow jumping mouse, Southwestern willow flycatcher, Three Forks springsnail and yellow-billed cuckoo. The Ruby/Fuzzy MOA contains critical habitat for Beardless chinchweed, Chiricahua leopard frog, Jaguar, Mexican spotted owl, Northern Mexican gartersnake, Sonora chub, Southwestern willow flycatcher and yellow-billed cuckoo. The Sells MOA contains critical habitat for Acuna cactus, desert pupfish, jaguar and Sonoyta mud turtle. The Tombstone MOA contains critical habitat for beautiful shiner, Chiricahua leopard frog, jaguar, Mexican spotted owl, New Mexican ridge-nosed rattlesnake, San Bernardino springsnail, Yaqui catfish, Yaqui chub and yellow-billed cuckoo.

There are 17 Important Bird Areas within the MOAs, as well as nesting locations for Mexican spotted owl, Bald eagle and Golden eagle. There are over 1,548,430 acres of designated critical habitat for Mexican Spotted Owl in the MOAs. While many birds of the Southwest are adapted to fire, large-scale fires in the Southwest have historically occurred primarily late in the

breeding season, when nesting birds and fledglings are better able to flee the fire front.[42] According to the EPA, large scale fires are becoming more frequent during spring and early summer months, which corresponds with the breeding seasons of many species.[43]A large-scale fire ignited during breeding season has a very high risk of disrupting breeding and resulting in the death of nesting birds and offspring.

The DEIS states that DAF purportedly maintains avoidance areas around Bald Eagle and Golden Eagle nests, in which flight below 1000 feet AGL is restricted during nesting season (DEIS at 1-10, 3-15). However, the DEIS provides no map or other evidence of these avoidance areas, except the statement that such avoidance areas occur only in the Sells and Ruby MOAs (DEIS at 3-76). Several designated Bald Eagle Nesting Areas occur under MOAs outside of the two mentioned. In any case, the prohibition of extremely low flight maneuvers does not address the risk of accidental ignition of surface fires either within nesting areas or upwind of them.

The DEIS fails to disclose and analyze the site-specific impacts related to the existing fire risk in the MOAs. However, the DEIS provides only a general acknowledgment that fire could occur, and that the impacts of a fire would depend on site-specific conditions and the nature and timing of the fire.

> "Flare initiated fires would not be expected to occur although the use of flares minimally increases fire risk. Any fires of a natural or non-natural source may adversely affect vegetation, injure wildlife or livestock, and destroy property such as fences or buildings. If a wildland fire were to occur as a result of flare activity, a loss of canopy and/or understory vegetation would likely occur depending on the severity of the fire, land condition at the time, and how quickly fire control could respond. Recovery of the vegetation would depend on the species burned, season, and severity. Grasslands naturally have frequent fire regime, and therefore are composed of species that can quickly recover from fires. Woodland and shrubland communities recover over longer periods depending on severity of the fire and climatic conditions available following the fire" (DEIS Appendix F at F-12 to F-13).

The Arizona Wildfire Risk Assessment Portal indicates that the MOAs are dominated by fire risk rated as Moderate-high, High, Very High, and Extreme risk.[44] The only exception is the Bagdad/Gladden MOA, which is dominated by areas not rated as moderate-high risk or higher, but with several areas rated as high risk and higher.

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[42] Ketcham, Shari & Koprowski, John. 2013. Impacts of Wildfire on Wildlife in Arizona: A Synthesis. School of Natural Resources and the Environment, University of Arizona, Tucson, Arizona.

[43] Environmental Protection Agency. 2024. Climate Change Indicators: Wildfires. Updated June 2024. Accessed October 2024.

[44] The Arizona Wildfire Risk Assessment Portal is a mechanism used by the Arizona Department of Forestry and Fire Management to deploy wildfire risk information and create awareness about wildfire issues across the state. Wildfire risk and threat data layers were developed as part of the West-Wide Wildfire Assessment covering the seventeen Western States, by the Oregon Department of Forestry completed this assessment on behalf of the Council of Western State Foresters with funding from the USDA Forest Service.
https://apps.azgeo.az.gov/azwrap/index.html

The DEIS must disclose and analyze the potential impacts of fire ignition resulting in large-scale fire, based on site-specific factors such as the fire risk at each site and the location with respect to natural areas and wildlife habitat values.

F. <u>The Proposed Action violates the core mandate of the Wilderness Act as well as Forest Service and Bureau of Land Management regulations on the management of Wilderness, and the DEIS fails to properly analyze the impacts to designated Wilderness Areas.</u>

As reflected in the DEIS, the Proposed Action (and all of the other action alternatives) would result in expanded use of MOAs over thirty-one Wilderness Areas, including twenty-nine in Arizona and two in New Mexico (DEIS 3-98 to 3-100). Pursuant to our GIS analysis, proceeding with any of the action alternatives will result in a total of 1,234,543.95 acres of designated Wilderness being located under the MOAs, as shown on the map in Figure 5, below:

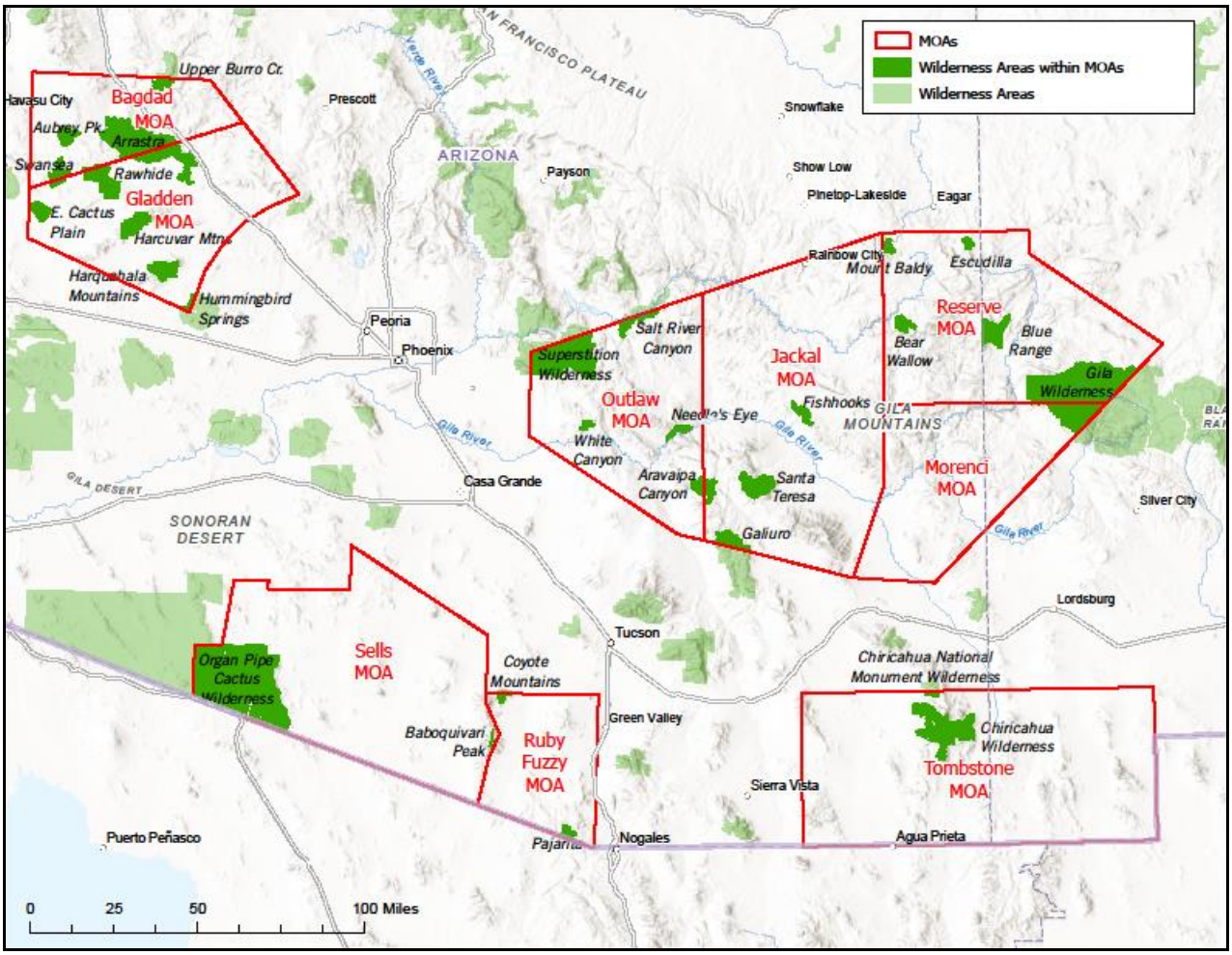

Figure 5: *Map of designated Wilderness Areas within or below MOAs that would be impacted by the Proposed Action. Map by Curt Bradley.*

The Proposed Action and each of the action alternatives in the DEIS are inconsistent with the Wilderness Act of 1964,[45] and related regulations and implementing policy guidance. Congress passed the Wilderness Act to establish the National Wilderness Preservation System, which provides protection for lands relatively unimpacted by human activity.[46] The system includes over 800 congressionally designated Wilderness Areas nationally, which are managed by four agencies: the National Park Service (NPS), Bureau of Land Management (BLM), U.S. Fish and Wildlife Service (USFWS), and U.S. Forest Service (USFS). The Wilderness Act provides the following declaration of policy:

> "In order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, does not occupy and modify all areas within the United States and its possessions, leaving no lands designated for preservation and protection in their natural condition, it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness."[47]

In contrast to areas where human development dominates the landscape, Section 2(c) of the Wilderness Act defines wilderness as "an area where the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain," and as "an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation, which is protected and managed so as to preserve its natural conditions."[48] To qualify for Wilderness designation, lands must meet the following four criteria:

> "(1) generally appears to have been affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable; (2) has outstanding opportunities for solitude or a primitive and unconfined type of recreation; (3) has at least five thousand acres of land or is of sufficient size as to make practicable its preservation and use in an unimpaired condition; and (4) may also contain ecological, geological, or other features of scientific, educational, scenic, or historical value."[49]

Once designated by Congress, "wilderness areas shall be devoted to the public purposes of recreational, scenic, scientific, educational, conservation, and historical use."[50] Consistent with the express legislative intent and policy in the Wilderness Act, lands designated as Wilderness receive the highest level of protection afforded to any public lands in America.[51] The federal agencies that manage Wilderness Areas have a statutory obligation to protect the wilderness character of designated lands as follows: "each agency administering any area designated as wilderness shall be responsible for preserving the wilderness character of the area

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[45] Wilderness Act of 1964, 16 U.S.C. §§ 1131-1136.
[46] *Id. See also Nat'l Audubon Soc'y v. Forest Serv.*, 46 F.3d 1437, 1440 (9th Cir. 1993).
[47] 16 U.S.C. § 1131(a).
[48] *Id.* § 1131(c).
[49] *Id.*
[50] 16 USCS § 1133(b).
[51] *See generally* University of Montana, Wilderness Connect, Learn About Wilderness, *available at* https://wilderness.net/learn-about-wilderness/ (last visited Oct. 3, 2024) [hereinafter Wilderness Connect].

and shall so administer such area for such other purposes for which it may have been established as also to preserve its wilderness character."[52]

To preserve wilderness character, Section 4(c) of the Wilderness Act prohibits commercial enterprise and permanent roads, among other restrictions.[53] Relevant here, the Wilderness Act specifically prohibits the use of motorized and mechanized vehicles and equipment and the landing of aircraft in Wilderness, "except as necessary to meet minimum requirements for the administration of the area for the purpose of [the Wilderness] Act."[54] To invoke this exception, an agency must first identify a valid "purpose" under the Act.[55] It must then show that the prohibited activity is "necessary" to meet the "minimum requirements for the administration of the area" for that identified purpose.[56]

Interagency management guidance, *Keeping It Wild 2*, provides further guidance to assist federal agencies in implementing the Wilderness Act mandate to preserve wilderness character.[57] *Keeping It Wild 2* defines wilderness character as follows:

> "Wilderness character is a holistic concept based on the interaction of (1) biophysical environments primarily free from modern human manipulation and impact, (2) personal experiences in natural environments relatively free from the encumbrances and signs of modern society, and (3) symbolic meanings of humility, restraint, and interdependence that inspire human connection with nature. Taken together, these tangible and intangible values define wilderness character and distinguish wilderness from all other lands."[58]

Keeping It Wild 2 goes on to distill these values into five qualities of wilderness character, which "are derived from the entire statutory definition of wilderness, Section 2(c) of the Wilderness Act, which expresses congressional intent, both ideal and practical, for the meaning of wilderness and wilderness character."[59] The five qualities include "Untrammeled," "Natural," "Undeveloped," "Solitude or Primitive and Unconfined Recreation," and "Other Features of Value."[60]

One core component of this guidance in *Keeping It Wild 2* are monitoring questions and indictors to be used to monitor trends in wilderness character to ensure that "managers are accountable to the central mandate of the Wilderness Act—to preserve wilderness character."[61] Based on these monitoring questions and indicators, the qualities of wilderness character that

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[52] 16 USCS § 1133(b).
[53] *Id.* § 1133(c).
[54] *Id.*
[55] *Wilderness Watch, Inc. v. U.S. Fish & Wildlife Serv.*, 629 F.3d 1024, 1032 (9th Cir. 2010).
[56] *Id.* at 1037.
[57] USDA Forest Service, Rocky Mountain Research Station, Keeping It Wild 2: An Updated Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System, General Technical Report RMRS-GTR-340 (Oct. 2015), *available at* https://www.fs.usda.gov/rm/pubs/rmrs_gtr340.pdf [hereinafter Keeping It Wild 2].
[58] Keeping It Wild 2, at 7.
[59] Keeping It Wild 2, at 10.
[60] Keeping It Wild 2, at 10-12.
[61] Keeping It Wild 2, at vi.

would most obviously be adversely affected by the Proposed Action include the natural quality and solitude or primitive and unconfined recreation quality.

Specifically, the natural quality includes an indicator related to the presence of animal species in a Wilderness Area and acknowledges that "alternations in the occurrence or abundance of animals may result in cascading changes within the animal community as well as associated plant communities."[62] As discussed elsewhere in these comments, a wide array of wildlife species are likely to be adversely affected by the Proposed Action, including the possibility that the very persistence of some individual wildlife would be threatened, thereby contributing to the degradation of the natural quality.

The solitude or primitive and unconfined recreation quality includes an indicator related to remoteness from sights and sounds of human activity outside of wilderness, including from aircraft.[63] An increase in the number or intensity (e.g. lower altitude and therefore increased noise levels) of overflights – as proposed in the DEIS – would directly contribute to the degradation of the solitude or primitive and unconfined recreation quality of wilderness character.

Keeping It Wild 2 also explains the interplay and tradeoffs between the five qualities of wilderness character. For instance, it uses the example of spraying herbicide to eradicate non-indigenous plant species as benefitting the natural quality while simultaneously degrading the untrammeled quality.[64] This explanation goes on to state:

> "Over time, tradeoffs affecting different qualities of wilderness character and the cumulative results of seemingly small decisions and actions may cause a significant gain or loss of wilderness character. With an established framework to discuss these tradeoffs within the context of wilderness character and its five qualities, managers have a tool to approach wilderness stewardship with humility, respect, and restraint, ultimately helping them to preserve wilderness character as a whole."[65]

Whereas management actions in designated Wilderness by the federal land management agencies may result in both benefits and impacts to different qualities of wilderness character as explained above (with the ultimate mandate to preserve wilderness character as a whole and in the long-term), the Proposed Action would have no benefit to any quality of wilderness character. Instead, as described above, the Proposed Action would degrade both the natural quality and opportunities for solitude or primitive and unconfined recreation quality of wilderness character. Absent any benefit to any quality of wilderness character, degradation of these two qualities because of the Proposed Action would lead to degradation of wilderness character as a whole. The Proposed Action is therefore contrary to the mandate of the Wilderness Act to preserve wilderness character and Wilderness Areas should therefore be removed from the proposed MOAs.

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[62] Keeping It Wild 2, at 41.
[63] Keeping It Wild 2, at 54.
[64] Keeping It Wild 2, at 14.
[65] *Id.*

In addition to the core mandate of the Wilderness Act to preserve wilderness character, mandatory USFS and BLM regulations related to the management of Wilderness Areas provide further provisions to protect wilderness character, including prohibitions on dropping any material by aircraft over wilderness:

> **General Prohibitions – National Forest Wilderness**
> The following are prohibited in a National Forest Wilderness: (c) Landing of aircraft, or dropping or picking up of any material, supplies, or person by means of aircraft, including a helicopter.[66]

> **What is prohibited in wilderness? – BLM Wilderness**
> Except as specifically provided in the Wilderness Act, the individual statutes designating the particular BLM wilderness area, or the regulations of this part, and subject to valid existing rights, in BLM wilderness areas you must not: (e) Land aircraft, or drop or pick up any material, supplies or person by means of aircraft, including a helicopter, hang-glider, hot air balloon, parasail, or parachute.[67]

The proposal to drop chaff and flares over Wilderness Areas managed by the USFS and BLM violates these regulations and therefore cannot legally occur over wilderness. In addition, the DEIS states numerous times that the need for the Proposed Action is driven by the fact that "there is currently not enough airspace that provides the appropriate … attributes (ability to fly supersonic at lower altitude and use of chaff and flares) to support required training" (DEIS at 1-10). Given that the ability to drop chaff and flares as part of training exercises represents a core component of training needs and therefore the Purpose and Need for the project, and further, that the dropping of chaff and flares over Wilderness Areas is prohibited by BLM and Forest Service regulations, all Wilderness Areas managed by the two agencies should be removed from the proposed MOAs because they are not legally available to support this training need.

The DEIS also fails to appropriately analyze the geographic extent of Wilderness in New Mexico and Arizona, impacts to wilderness values that would result from the action alternatives, and management constraints of Wilderness Areas when evaluating which lands are appropriate for military combat training. Occupying approximately 3% and 6% of the land in New Mexico and Arizona respectively, the rare Wilderness designation is not merely one kind of protected area among many. Instead, Wilderness designation constitutes the highest form of protection available to public lands in the United States. Accordingly, the Proposed Action must be consistent with basic legal requirements for the management and protection of these lands, as well as clearly justify why training exercises must occur over land designations that cover a mere 3% and 6% of New Mexico and Arizona, respectively. Yet the DEIS considers neither the highly limited geographic extent of Wilderness nor the level of protection afforded to Wilderness, relative to other public land designations.

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[66] 36 C.F.R. **§** 261.18(c) (USFS).
[67] 43 C.F.R. **§** 6302.20(e) (BLM).

Moreover, the effects from subsonic noise, supersonic noise, visual effects, and air-to-ground contact (from chaff and flares) all directly conflict with the Congressional intent of the Act yet are not appropriately analyzed in the DEIS.

Pertaining to noise in Wilderness, the DEIS states:

> "Under the MOAs addressed in this Proposed Action, no person or place would be exposed to noise levels greater than 65 dB DNL or 62 dBC CDNL under any of the alternatives. Therefore, no incompatible land uses, no significant impacts to land uses, and no significant impacts to recreational uses would occur as a result of increases in noise related to the Proposed Action." (3-91)

It is inappropriate to use these thresholds to evaluate noise impacts in Wilderness. As the DEIS recognizes, "FAA Order 1050.1F requires that special consideration must be given to the evaluation of noise impacts in areas of quiet setting where compatible land use criteria are not relevant to the value, significance, and enjoyment of the area (e.g., wilderness areas, national wildlife refuge, etc.)" (3-91). Despite this recognition, the DEIS continues to rely on default noise thresholds in a highly abstracted manner and provides no mitigation or alternative to avoid the significant noise impacts in Wilderness. Any increase in human-caused noise in Wilderness, let alone the significant increase caused by subsonic and supersonic flight and the potential for sonic boom, is fundamentally contrary to the intent of the Wilderness Act.

Indeed, while the DEIS states absent any actual analysis or evidence that noise impacts from training flights would be insignificant, recent news articles on the proposed MOAs tell a starkly different story. For example, the *Silver City Daily Press* published an article about the September 11, 2024 public meeting that the DAF hosted in Silver City. This article quotes numerous participants that shared their experiences during this meeting with military overflights:

> One participant "described how in Alaska, his dogs would freak out long before he could hear or see the jets."
>
> Another "described an experience she had while driving between Lordsburg and Silver City, saying she felt like her cells were splitting."
>
> A third "described an experience he had years ago while in the Gila Wilderness with packhorses. He said four F-16s flew just a few hundred feet above him, engaging their afterburners into a vertical climb. 'The earth-shattering noise from the heat and exhaust of the thrust literally put my partner and I on the ground, as well as the gear from the packhorses … The packhorses scattered, completely traumatized, as were we. It took hours to recoup the damage. The trauma of the event took us weeks to recover from. I'm not sure the horses ever did. The memory is still fixed in my brain some 30 years later.'"
>
> And a fourth stated, "'I spent two seasons in the national forest, getting in the flight paths on purpose dozens of times. I had earplugs on, and I knew the flights were coming, which is not true for most people that experience this … I went to my knees

> every time, and my rib cage rattled. It's not just a sound. It's a pulsating vibration that is just an overwhelming experience. It is astonishing to me … [that] impacts like that are supposed to be accepted.'"[68]

The *New Mexico Political Report* published a subsequent article about issues that residents of Rodeo, NM and Portal, AZ are experiencing from military training flights. Similar to the *Silver City Daily Press* article, this piece also cites complaints from several people with military overflights:

> "Among these are complaints from someone who was riding horses in Horseshoe Canyon in Arizona when military jets "streaked overhead very loud" and caused the horses to spook."
>
> "Another complaint came from Rodeo in Hidalgo County where a resident complained that the flights were causing sonic booms and rattling the windows of their house."
>
> "A complaint from Arizona pleaded that flights over their house stop because the training flights were scaring their children."[69]

While the accounts from the people quoted in these two articles are anecdotal, they provide insight into the lived experience of people experiencing low-altitude military overflights. These lived experiences demonstrate that the DEIS's abstraction of noise issues from overflights over Wilderness is inadequate and inaccurate, and further debunk the statement in the DEIS that "no significant impacts to recreational uses would occur as a result of increases in noise related to the Proposed Action" (DEIS, 3-91). Rather, these lived experiences clearly demonstrate that low-level military overflights over Wilderness adversely impact humans and non-humans alike, and therefore further substantiate the fact that the proposed action would adversely impact the natural quality and opportunities for solitude or primitive and unconfined quality of wilderness character.

Similarly, the DEIS fails to adequately consider the impact of visual effects to Wilderness and instead conceals that impact through misleading characterizations. The DEIS acknowledges the following:

> Some areas underlying the proposed airspace have high visual sensitivity, such as Wilderness Areas and Wilderness Study Areas . . . . The overflight of low flying aircraft at high speed in these areas are more likely to have an impact because of the high visual-quality ratings and level of visual management protection that is more affected by change. (3-145)

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[68] Ogle, Juno. "Hundreds turn out for Air Force hearing." *Silver City Daily Press,* 14 Sept. 2024. https://www.scdailypress.com/2024/09/14/hundreds-turn-air-force-hearing/

[69] Grover, Hannah. "Residents of Rodeo, NM and Portal, AZ say military training flights are causing problems." *New Mexico Political Report,* 10 Oct. 2024. https://nmpoliticalreport.com/quick-reads/residents-of-rodeo-nm-and-portal-az-say-military-training-flights-are-causing-problems/

The DEIS further reflects that the visual impacts of adopting Alternatives 2 through 4 "could be moderate in some visually sensitive areas, with potential indirect impacts to naturalness and unconfined recreation activities in Wilderness Areas and Wilderness Study Areas, as well as scenic values" (3-146). And yet, the DEIS inexplicably proceeds to conclude the following: "The Proposed Action would not result in any physical changes to the visual setting of underlying lands. Therefore, the Proposed Action has no potential to change the visual or aesthetic quality of any landscape" (3-145). In concluding that the Proposed Action has no potential to change the visual or aesthetic quality of any landscape and declining to mitigate or avoid effects, the DEIS wholly dismisses the substantial impact to the aesthetic quality of Wilderness that would occur as the result of increased sorties, and, in some Wilderness Areas, the lowering of the flight floor. As discussed above, the sight of military aircraft over Wilderness Areas contributes to the degradation of the opportunity for solitude or primitive and unconfined quality of wilderness character.

In addition to inadequate consideration of noise and visual impacts, the DEIS entirely fails to analyze the impacts to wilderness character resulting from low-level overflights and the dropping of chaff and flares and makes no reference to the symbolic importance of wilderness as a type of untrammeled land, free from human encroachment.

Together, these deficiencies in the DEIS amount to a failure to analyze or address the adverse impacts that Alternatives 2, 3, and 4 would have on wilderness character. Wilderness scholars and agency practitioners consider the preservation of wilderness character to be the primary legal mandate of the Wilderness Act.[70] Although the project would impact thirty-one Wilderness Areas, the DEIS fails to explicitly mention Wilderness character even once. The DEIS does make cursory mention of naturalness and unconfined recreation in the context of visual effects, but none of the other qualities (untrammeled, undeveloped, solitude, and other features of value) are mentioned a single time in the DEIS. The failure to consider these core qualities of Wilderness violates the requirements under NEPA to adequately assess the environmental impacts of the proposed action and to consider reasonable alternatives.

Finally, of the twenty-nine Arizona Wilderness Areas affected by the proposal, eighteen were designated through the Arizona Desert Wilderness Act of 1990, which has a provision for military activities (DEIS, 3-98 to 3-99). The provision specifically states, "Nothing in this title shall preclude low-level overflights of military aircraft, the designation of new units of special airspace, or the use or establishment of military flight training routes over wilderness areas designated by this title."[71] We acknowledge that this statute created a degree of legal exemption for low-level overflights (although not the dropping of chaff or flares) above these eighteen Wilderness Areas located in Arizona. But while the Arizona Desert Wilderness Act did not prohibit overflights, that does not mean that overflights have no impact on wilderness character, visitors, or values, or that the DAF can ignore those impacts pursuant to NEPA. DAF cannot use the Arizona Desert Wilderness Act exception as a carte blanche invitation to ignore all the impacts of overflights above these areas in a NEPA analysis. The DAF should read and interpret the

[70] Keeping It Wild 2, at 8.
[71] Arizona Desert Wilderness Act of 1990, Sec. 101(a)(4)(i), Pub. L. 101-628; 104 Stat. 4469, 4474.

exception in the Arizona Desert Wilderness Act of 1990 together with the purpose and intent of the Wilderness Act and associated regulations and policy guidance.[72]

The DEIS, however, appears to apply the exception broadly to permit the widest set of all possible military actions over these Wilderness Areas, including very low flights and the dropping of material from aircraft (which is not permitted in the Arizona Desert Wilderness Act of 1990), without adequately considering how these actions interact with other aspects of applicable law and regulation.[73] Simply because the Arizona Desert Wilderness Act of 1990 *allows* low-level military overflight does not give the DAF the right to *not evaluate and disclose to the public* the noise impacts from the additional, more intensive overflights proposed. To simply say, as the DEIS does at 3-104, that the statutory permission for low-level flights makes noise associated with the Proposed Action not incompatible with these areas does not satisfy the DAF's obligation under NEPA to take a "hard look" at what those proposed impacts will be. Instead, the DAF must fully evaluate and disclose to the public the likely noise effects on even the Wilderness Areas established by the Arizona Desert Wilderness Act of 1990 and consider the narrowest alternative that will accomplish a well-articulated purpose and need for the proposed action and best comply with all applicable law and regulation.

In sum, the military training activities contemplated by the DEIS are inconsistent with the legislative intent of the Wilderness Act and the mandatory duty of federal agencies to preserve Wilderness character, not to mention adequately analyze the impacts of the Proposed Action on Wilderness values. Military training does not qualify for an exception to the prohibitions in the Wilderness Act because it is not required for the administration of wilderness for the congressionally established "public purposes of recreational, scenic, scientific, educational, conservation, and historical use."[74] Although the Arizona Desert Wilderness Act of 1990 does provide an exception that allows low-level overflights above eighteen of the thirty-one Wilderness Areas at issue, the duty to preserve Wilderness character remains intact. To address these deficiencies, the DAF should choose the no action alternative or craft a new alternative designed to avoid or minimize impacts on Wilderness, consistent with applicable law, regulation, and policy.

Considerations applied to designated Wilderness Areas should also be applied to any Wilderness Study Areas (WSAs) within the proposal area. Under the Federal Land Policy Management Act of 1976 (FLPMA), public agencies must give the same management consideration to WSA's "so as not to impair the suitability of such areas for preservation as wilderness," also known as the non-impairment mandate, until Congress acts regarding those areas or releases such areas for multiple use management.[75]

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[72] For example, as cited above, the USFS and BLM have regulations that prohibit aircraft from releasing materials that land on the ground within Wilderness Areas.

[73] *See, e.g.*, DEIS at 3-104 ("Eighteen of the wilderness areas have a provision that allows for low-level military overflight and the establishment of SUA; thus the associated noise exposure from the Proposed Action is not expected to be incompatible with these areas and no additional consideration is warranted.").

[74] 16 USCS § 1133(b).

[75] U.S. Bureau of Land Management. 2023. Fact Sheet: Wilderness, Wilderness Study Areas, and Lands with Wilderness Characteristics. Northwest California Integrated Draft Resource Management Plan and Environmental Impact Statement (NCIP) BLM Northern California District.

G. The DEIS analysis and discussion of water and fish impacts is inadequate.

1. The DEIS Fails to Establish the Baseline for Impacts to Fish and Water Resources and Does Not Adequately Analyze Impacts from Chaff and Flares

The DEIS dismisses any evaluation of impacts to water resources with this initial paragraph and dismissive conclusory statement:

> **"Water Resources.** Water Resources include surface water, groundwater, wetlands, Wild and Scenic Rivers, and floodplains. The Proposed Action would be limited to the modification of airspace to support military training operations and would not include any components that would touch or directly affect the quantity, flows, percolation rate, or accessibility of surface or ground water resources. The use of chaff and flares does not affect water quality or aquatic habitats; see **Appendix F** for detailed information on chaff and flares." (3-2)

The DEIS fails subsequently to establish the environmental baseline for protected waters and fish resources or conduct an adequate analysis of the likely impacts of chaff and flares to these resources. This lack of a reasoned explanation for deeming impacts of chaff and flares to water resources to be insignificant violates NEPA and the Administrative Procedure Act.

The DEIS fails to acknowledge that many waterways under the DEIS are Waters of the United States subject to the protection of the Clean Water Act (CWA)—much less evaluate impacts on these protected waters. The DEIS fails to recognize that its discharge of chaff and flares within the Reserve and Morenci MOAs will affect waters designated by the State of New Mexico as Outstanding National Resource Waters (ONRW). According to the New Mexico Environmental Department, ONRWs are defined as follows:

> An Outstanding National Resource Water is one that possesses outstanding ecological, recreational or natural resource values. ONRW status is authorized under the state Water Quality Act and the federal Clean Water Act. The designation protects approximately 700 miles of 195 perennial rivers and streams, 29 lakes, and approximately 4,930 acres of 1,405 wetlands in 12 United States Department of Agriculture Forest Service (USFS) Wilderness Areas in New Mexico. Protection of these waters will help maintain a clean water supply for uses in wilderness and for downstream uses by municipalities, agriculture, and recreational interests, and will help maintain healthy ecosystems, preserve habitat, and protect vulnerable and endangered species. Wetlands in ONRW USFS Wilderness Areas serve as the headwater source of perennial streams, provide habitat for wildlife including rare and endangered species, provide physical, chemical and biological integrity of adjacent high-quality streams and lakes,

dissipate and modify flood energy, and provide sediment retention and erosion control.[76]

Within the Reserve and Morenci MOAs, these include substantial portions of the West Fork Gila River and Middle Fork Gila River, including their tributaries and the headwaters of the Gila River system, as well as Whitewater Creek, Big Dry Creek, Sacaton Creek, Rain Creek, Mogollon Creek, West Fork Mogollon Creek and other smaller streams. Pueblo Creek within the Blue Range Wilderness also is a ONRW. All of the designated ONRWs are shown in the 2019 NMED report cited herein as well as on the Department's GIS mapping tool.

Yet DAF failed to acknowledge that these ONRWs exist at all, much less evaluate whether discharge of chaff and flares will impact them. ONRWs possess "outstanding ecological, recreational or natural resource values"—so the DEIS's dismissive (and inaccurate) statements that chaff and flares will not affect water quality or aquatic habitat does not include any analysis of whether chaff or flares will impact the recreational nature of these ONRWs, for example by depositing unnatural materials into a pristine Wilderness where hikers and rafters/kayakers will be forced to encounter it, marring their recreational experience. In fact, in DAF's 1997 report on the environmental effects of chaff and flares, the agency explained that "[u]se of chaff fibers over or immediately adjacent to highly sensitive areas such as Wilderness Areas, Wild and Scenic Rivers, National Parks and Monuments, and other pristine natural areas may be incompatible with the land use management objectives for those areas," that chaff (particularly non-deployed bundles) may be noticed by recreationists, and that "in areas specifically protected to preserve naturalness and pristine qualities, such as Wilderness Areas or Wild and Scenic Rivers, users (both the public and land managers) are more likely to perceive chaff debris as undesirable and unattractive since it conflicts with expectations of primeval character and management objectives to preserve naturalness."[77] DAF must take a hard look at the potential impacts of chaff and flare discharge to ONRWs and other rivers and streams that are protected under the Clean Water Act or lie within Wilderness Areas.

The DEIS (and particularly Appendix F) downplay the risk of chaff to the environment, including aquatic environments. "A bundle of chaff consists of approximately 5 to 5.6 million aluminum-coated silica fibers." DEIS App'x at F-1. "Clumps of non-deployed chaff have been found on the ground at training ranges and on public or private property under airspace where chaff is used for training. However, assuming a 99 percent reliability rate and the large area covered by training airspace, encountering a clump of non-deployed chaff is rare. As an example, 20,000 chaff bundles deployed annually over a 2,000 square mile area would have an estimate of one clump of non-deployed chaff per 10 square miles per year." DEIS App'x at F-3. But extrapolated to the actual airspace involved—which the agency can and should have done—this sample calculation shows that, in fact, there are likely be a *lot* of non-deployed chaff bundles generated by the Proposed Action.

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[76] New Mexico Environment Department (NMED). 2019. Maps and List of Wetlands Within United States Forest Service Wilderness Areas in New Mexico Designated as Outstanding National Resource Waters. New Mexico Environment Department, Surface Water Quality Bureau, January 23, 2019.

[77] U.S. Air Force (USAF). 1997. Environmental Effects of Self-Protection Chaff and Flares. U.S. Air Force Air Combat Command, August 1997. At ES-2, 3-60.

For example, the Jackal MOA covers 3,115,954 acres, and the Outlaw MOA covers 1,756,264 acres. (DEIS at 3-95 to 3-96). Together they cover 4,872,218 acres, or just over 7,612 square miles. The Proposed Action would authorize 24,560 chaff bundles annually in the Outlaw/Jackal MOA (DEIS at 2-12). Shoehorning the *actual* information about the proposed chaff releases into the hypothetical in the Appendix (that 20,000 chaff bundles deployed annually over a 2,000 square mile area would result in 200 non-deployed chaff bundles, or one per 10 square miles per year), the Proposed Action would result in about 245 non-deployed chaff bundles annually within the Outlaw/Jackal MOA (based on 99% reliability out of the 24,560 bundles authorized), or roughly one per every 31 square miles per year. But given the ostensible need for lower elevation flights that involve "terrain masking" (presumably within the canyons that occur in many of the MOAs, DEIS at 1-7), it likely that missions and chaff drops will occur disproportionately above rivers and creeks within these canyons, as will the incident of non-deployed chaff.

The DEIS provides no information on the size of the Morenci/Reserve MOA (and several other MOAs), but together they appear to be about 4/5 the size of the combined Outlaw/Jackal MOA. Assuming for sake of calculation that Morenci/Reserve MOA is about 3.8 million acres, or about 5,937 square miles, the 16,920 chaff releases proposed to be authorized annually (DEIS at 2-12) would translate into 169 non-deployed bundles annually, roughly one per every 35 square miles per year, but again concentrated in canyons including the unspoiled and protected waters of the forks of the Gila River and other nearby Wilderness rivers and creeks.

DEIS Appendix F acknowledges that "[a]n impact to confined aquatic habitats could occur if there were a potential for significant accumulation and decomposition of chaff fibers." DEIS App'x at F-4. A bundle of over 5 million aluminum-coated silica fibers that was not deployed and lands in a river or stream would be a "significant accumulation" of chaff fibers, and DAF is proposing to discharge 133,870 chaff bundles per year in all MOAs combined. DEIS at 2-12. This means that, taking even DAF's 99% reliability rate, that 1,338 non-deployed chaff bundles will fall to earth, or into streams, every year. Yet the DEIS Appendix simply sidesteps any analysis of the impacts to rivers and their resident fish by a conclusory assertion that "[s]ince chaff would be broadly distributed with a low density in any one area, it is unlikely that chaff would be detectable or significantly accumulate within *confined* water bodies." DEIS App'x at F-4 (emphasis added). *But the DEIS and its Appendix say nothing about potential impacts to free-flowing water bodies*—the DEIS simply ignores those. Indeed, the Appendix F discussion of flare impacts to the environment does not discuss aquatic impacts at all. DEIS App'x at F-14.

Even chaff that deploys properly can result in residue that will fall into streams and creeks, particularly given the proposal to deploy 133,870 chaff bundles per year at altitudes as low as 2,000 feet AGL in most of the MOAs. DEIS at 2-12. In its 1997 report on the environmental effects of chaff and flares, DAF identified both aluminum and copper as elements within chaff that could cause detrimental effects to aquatic species—not to mention potential impacts to humans and other wildlife—stating that:

> "sensitive aquatic species could be adversely affected by repeated, concentrated exposure to chaff deposition. If such an environment exists in an area proposed

> for chaff use, the presence of threatened or endangered aquatic species should be identified through consultation with the local office of the U.S. Fish and Wildlife Service and the state fish and game or fish and wildlife department. If protected aquatic species or their habitats are known to occur or could be in the area, the environmental assessment should include a quantification of the amount of copper that they might be exposed to and resulting concentrations that could be expected in the affected water bodies under the proposed action."[78]

Furthermore, in the same report, DAF states that "[u]se of chaff over or immediately adjacent to highly sensitive areas such as Wilderness Areas, Wild and Scenic Rivers, National Parks and Monuments, and other pristine natural areas may be incompatible with the land use management objectives for those areas." Despite these conclusions, the DEIS fails here to adequately analyze the potential effects of chaff on sensitive aquatic species and highly sensitive areas that occur in the Gila National Forest, Apache-Sitgreaves National Forest, Coronado National Forest, and elsewhere under the MOAs— an area that encompasses hundreds of thousands of acres of wilderness lands and at least 1,445miles of rivers and other waterbodies protected under the Clean Water Act or other designation.

To take a hard look at the impacts of chaff to water bodies, DAF should calculate an estimate of non-deployed chaff bundles for each MOA, then disclose the water courses present within the MOAs, and evaluate the likely impacts. But the DEIS lacks the fundamental baseline information to evaluate this threat to rivers and streams, depriving the public and the agency decisionmaker from the information needed for meaningful public comment and informed, democratic decisionmaking. In addition, DEIS Appendix F discloses that 401,610 pieces of residual chaff are expected in the MOAs, while 653,040 residual pieces of flares are expected in the MOAs (DEIS App'x F at F-17). The Appendix does not disclose whether this is annually or over the life of the Proposed Action, and contains discrepancies for the areas of the Outlaw/Jackal and Morenci/Reserve MOAs (listing a greater square miles area for the former but a greater acreage area for the latter—one of those is wrong). But the figures do disclose that 17 to 18 pieces of residual chaff and flare materials are likely to be present in a square mile in the Outlaw/Jackal and Morenci/Reserve MOAs where the majority of protected waterbodies occur. Yet the Appendix, and the DEIS, do not go on to analyze what proportion of those residual pieces are likely to land in rivers or streams and what effect they will have on the fish and other aquatic organisms therein.

The DEIS falsely asserts that "[d]ue to the nature of the Proposed Action, and the fact that no ground disturbance would occur under the airspace, no effects to reptiles, small mammals (except bats), amphibians, fish, and invertebrates, or their associated habitats are anticipated." DEIS at 3-68; *see* DEIS at 3-70, 3-76 (similar conclusory statements that no impact would be expected to fish). This is not a "hard look" at whether the discharge of chaff and flares from up to over 53,000 annual sorties in the MOAs, each of which contains fish habitat (and where there are ESA-listed threatened or endangered fish species under every MOA) will have an adverse impact to fish species and their habitat. The DEIS simply lists 15 threatened or endangered fish species present under the MOAs, and never again mentions fish, either in the DEIS text or Appendices.

[78] U.S. Air Force (DAF). 1997. Environmental Effects of Self-Protection Chaff and Flares. U.S. Air Force Air Combat Command, August 1997. At 163

This represents a failure to establish baseline information as well as to take a hard look at potential impacts to fish.

The DEIS does not address impacts to water and fish, and the cursory "analysis" of water and biological resources impacts does not address major issues of concern for both resources from chaff and flare discharges (DEIS App'x at F-4 to F-5, F-14). As noted, the Appendix mentions only confined water bodies, but does not address how chaff will affect rivers and streams, and the discussion of flares does not mention water or fish at all, although it does acknowledge that dud flares can reach the ground or surface water (DEIS App'x at F-14). Moreover, the Appendix F "analysis" relies heavily on only two sources, DAF reports issued in 1997 and 2011 (DEIS App'x at F-4 to F-5, F-14). But these sources in turn disclose that they do not evaluate impacts to fish—and therefore cannot be relied on for DAF's dismissive conclusion that there will be no impacts from chaff and flares to fish (*See* DEIS App'x at F-4 to F-5, F-14).

The 1997 report says, for example, that "Information was not available concerning the ability of surface or bottom feeding waterfowl and other aquatic species to process ingested chaff." After discussing laboratory tests of toxicity that involved levels not found in nature, the 1997 report recommends that "[s]ite-specific analysis should be considered if any area that could be affected is known to provide habitat for a threatened or endangered species." DAF ignores that recommendation in the DEIS. Instead, the DEIS Appendix focuses exclusively on whether *inhalation* of chaff by wildlife has adverse effects, and whether the inhalation or ingestion of chaff "causes any adverse health effects in humans" (DEIS App'x at F-5). Fish do not inhale chaff, and effects on humans bear no relevance to fish species that weigh one-two hundredth as much as a human being. The single study that focused on marine ecosystems has no relevance to impacts to freshwater, endangered and threatened species such as those that inhabit waterbodies under the MOAs. *Id*. The 2011 report in turn mentions fish only a handful of times but notes that "[a]luminum concentrations in fish, plants, or other biota were not assessed in the sediment survey" cited, and that "[n]o studies have been performed and no impacts have been identified" regarding impacts of flare parts to fish.[79] In short, the DEIS and its Appendix F offer no scientific support for the suggestion that there will be no impacts to fish because there is no science to support that, including the studies cited. Simply put, the DEIS does not bother to analyze impacts to listed fish, and therefore violates NEPA's hard look requirement.

If chaff is released at low elevations over the fish-bearing streams and their tributaries below the MOAs, there is a high likelihood that substantial amounts of chaff will enter the small waterways that support these sensitive fish species. The steep, narrow canyons that many of these streams flow through will likely act as a funnel for clouds of chaff, magnifying the concentration of chaff that will enter the water. The DEIS Appendix misleadingly says that "[s]ince chaff would be broadly distributed with a low density in any one area, it is unlikely that chaff would be detectable or significantly accumulate within confined water bodies" and that "distribution of the individual pieces of residual materials would be huge, resulting in a miniscule amount of debris in any small geographic location" (DEIS App'x at F-4, F-17). This is not true for non-deployed chaff or dud flares. And the distribution of flare ash or deployed chaff

[79] U.S. Air Force (DAF). 2011. Environmental Effects of Training With Defensive Countermeasures. Science Applications International Corporation (SAIC), Hampton, VA, October 2011.

could be localized, for example, within a larger area, particularly if released at the floor altitude of 2,000 feet over a confined river gorge. A reliance on wind to dilute ash and residue is conjectural and requires further analyses. Granted the distribution of ash falling to the ground in mountainous wilderness is difficult to model—there are a lot of variables: the altitude of discharge, the wind speed at the time of discharge, the number of flares discharged, terrain—but nevertheless, the effects of a toxic cloud of particulate descending on a hapless hiker, or a bird, or a fish beneath a chaff or flare discharge must at least be considered, not dismissed out of hand.

The DEIS downplays or ignores the toxic components of chaff and flares (DEIS App'x at F-3, F-14). The DEIS Appendix makes sweeping statements that chaff and flares are safe without discussing their toxic components. It says the principal components of chaff (i.e., aluminum, silica glass fibers, and stearic acid) "do not pose an adverse risk to human and environmental health, based on the low- level toxicity of the components, their dispersion patterns, and the unlikelihood that the components would interact with other substances in nature to produce synergistic toxic effects" (DEIS App'x at F-4 (citing DAF's 2011 report)). This assertion fails to take into account significant components of RR-188 chaff that are listed on DEIS Appendix p. F-3.

For example, Calcium Oxide and Magnesium Oxide constitute 16% to 25% of chaff by weight. Magnesium Oxide is extremely toxic to aquatic life. In contact with water, Calcium Oxide converts to slaked lime which will alkalize water.[80] Another example of a toxic component of chaff is Boron Oxide, which constitutes 8% to 13% of RR-188 chaff by weight. Boron oxide reacts with water to form boric acid which is toxic. Roach poison commonly incorporates boric acid. It is a substantial omission not to address the potential hazards of those components of chaff.

In addition, Aluminum, which is a listed ingredient of RR-188 chaff, is dismissed as a potential hazard because water under the area of the Proposed Action is typically only modestly alkaline and, therefore, not likely to dissolve the metal. However, what is the potential for alumina uptake by invertebrates in small, confined bodies of water that are made more alkaline by the addition of Calcium Oxide?

The failure of the DEIS to establish the baseline of affected waterbodies means that significant water resources have not been inventoried and sampled to assess vulnerabilities to contamination by RR-188 chaff. Without an inventory, current data, and a monitoring program, there will be no way to determine if RR-188 chaff and its residues could harm these features and any associated flora and fauna.

The combustible part of the M206 flare consists of Teflon, Magnesium, Fluorel binder, Boron, Potassium perchlorate, and Barium chromate.

- Teflon: Under high temperatures, Teflon breaks down. Byproducts include: (1) Sodium trifluoroacetate: H410 (82.14%): Very toxic to aquatic life with long lasting effects [Warning Hazardous to the aquatic

[80] PubChem. 2020. Calcium oxide, Sodium trifluoroacetate, Safety and Hazards and Toxicity. U.S. National Library of Medicine, National Institutes of Health, Bethesda, MD. https://pubchem.ncbi.nlm.nih.gov/

environment, long-term hazard][81] and (2) Carbonyl fluoride: H330 (83.03%): Fatal if inhaled [Danger Acute toxicity, inhalation]

- Magnesium: Under high temperatures, magnesium breaks down. Byproducts include Magnesium oxide: H410 (36.22%): Very toxic to aquatic life with long lasting effects [Warning hazardous to the aquatic environment, long term hazard][82]

- Boron: H413 (10.49: May cause long lasting harmful effects to aquatic life [Warning hazardous to the aquatic environment, long term hazard.][83]

- Potassium Perchlorate: Potassium perchlorate at very low doses (<0.004 mg/L) delays limb emergence in frogs, alters their gender ratios (0.06 mg/L), inhibits their metamorphosis (11.9 mg/L), and causes 50% mortality (329 mg/L over 96 hours). The effects on reptiles have apparently not been analyzed. [84] *and* [85]

- Barium Chromate: H410 (12.8%): Very toxic to aquatic life with long lasting effects [Warning Hazardous to the aquatic environment, long-term hazard][86]

Given the failure to evaluate the effect of these toxic components on fish and other aquatic species, and given the lack of existing information, DAF must conduct comprehensive studies of the effects of chaff and flares on fish and other aquatic species, with a special focus on the species listed as threatened and endangered that inhabit the waterbodies beneath the MOAs.

The DEIS also fails to disclose essential baseline information regarding the presence and prevalence of ESA-listed fish species. For example, the DEIS omits critical habitat for fish species from its bare-bones list of "Critical Habitat Occurring Below the MOA" (DEIS at 3-73; *see* DEIS at 3-70 (noting that the table includes only "[c]ritical habitat for federally listed mammals and birds.")). In fact, critical habitat has been designated for Gila chub (*Gila intermedia*) in the Upper Gila River, Middle Gila River, Lower Santa Cruz River, and Lower San Pedro River underneath the Morenci, Reserve, Jackal, Outlaw, and Tombstone (including

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[81] PubChem. 2020. Sodium trifluoroacetate, Safety and Hazards and Toxicity. U.S. National Library of Medicine, National Institutes of Health, Bethesda, MD. https://pubchem.ncbi.nlm.nih.gov/
[82] PubChem. 2020. Magnesium oxide, Safety and Hazards and Toxicity. U.S. National Library of Medicine, National Institutes of Health, Bethesda, MD. https://pubchem.ncbi.nlm.nih.gov/
[83] PubChem. 2020. Boron, Safety and Hazards and Toxicity. U.S. National Library of Medicine, National Institutes of Health, Bethesda, MD. https://pubchem.ncbi.nlm.nih.gov/
[84] PubChem. 2020. Potassium perchlorate, Safety and Hazards and Toxicity. U.S. National Library of Medicine, National Institutes of Health, Bethesda, MD. https://pubchem.ncbi.nlm.nih.gov/
[85] U.S. Air Force (DAF). 1997. Environmental Effects of Self-Protection Chaff and Flares. U.S. Air Force Air Combat Command, August 1997. At 163
[86] PubChem. 2020. Barium chromate, Safety and Hazards and Toxicity. U.S. National Library of Medicine, National Institutes of Health, Bethesda, MD. https://pubchem.ncbi.nlm.nih.gov/

expansion) MOAs. *See* 70 Fed. Reg. 66664, 66707 (Nov. 2, 2005). But the DEIS ignores this and does not evaluate the potential harm from chaff and flares to this critical habitat.

Likewise, the DEIS ignores critical habitat designated beneath the MOAs for Beautiful shiner (*Cyprinella Formosa*), Yaqui catfish (*Ictalurus pricei*), and Yaqui chub (*Gila purpurea*) in waters under the Tombstone MOA. 49 Fed. Reg. 34490, 34496 (Aug. 31, 1984). And also critical habitat designated for Desert Pupfish (*Cyprinodon macularius*) beneath the Sells MOA. 51 Fed. Reg. 10839, 10850 (Mar. 31, 1986). And also critical habitat designated for Little Colorado spinedace (*Lepidomeda vittate*) beneath the Reserve MOA. 52 Fed. Reg. 35034, 35041 (Sept. 16, 1987). And also critical habitat designated for Spikedace (*Meda fulgida*) and Loach Minnow (*Tiaroga cobitis*) in waters beneath the Outlaw, Jackal, Morenci, Reserve, and Tombstone (including expansion) MOAs. 77 Fed. Reg. 10810, 10910–32 (Feb. 23, 2012). And also critical habitat designated for Razorback sucker (*Xyrauchen texanu*) under the Outlaw, Jackal, and Morenci MOAs. 59 Fed. Reg. 13374, 13398 (Mar. 21, 1994). And also critical habitat designated for Sonora chub (*Gila ditaenia*) under the Ruby/Fuzzy MOA. 51 Fed. Reg. 16042, 16047 (Apr. 30, 1986). Yet none of this designated critical habitat is described or acknowledge, much less does the DEIS evaluate the potential impacts of chaff and flare discharges to this critical habitat and the threatened and endangered fish species that rely on it.

2. DEIS Fails to Evaluate Compliance with the Clean Water Act and Demonstrate That the Discharge of Chaff and Flares Will not Violate the Clean Water Act

Waters protected under the Clean Water Act (CWA) and subject to the prohibition of discharges thereto without a permit occur throughout the Project Area. Waters in New Mexico and Arizona are currently subject to the regulations promulgated in January 2023 by the U.S. Environmental Protection Agency to define "waters of the United States", as amended in September 2023 after the U.S. Supreme Court's May 2023 decision in *Sackett v. EPA*, 598 U.S. 651 (2023). https://www.epa.gov/wotus/definition-waters-united-states-rule-status-and-litigation-update (last visited Oct. 2, 2024); *see* 88 Fed. Reg. 3143 (Jan. 18, 2023), 88 Fed. Reg. 61969 (Sept. 8, 2023). According to this current regulatory definition,

> (a) Waters of the United States means:
> (1) Waters which are:
> (i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
> (ii) The territorial seas; or
> (iii) Interstate waters;
> (2) Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;
> (3) Tributaries of waters identified in paragraph (a)(1) or (2) of this section that are relatively permanent, standing or continuously flowing bodies of water;
> (4) Wetlands adjacent to the following waters:
> (i) Waters identified in paragraph (a)(1) of this section; or

(ii) Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3) of this section and with a continuous surface connection to those waters;

(5) Intrastate lakes and ponds not identified in paragraphs (a)(1) through (4) of this section that are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3) of this section.

40 C.F.R. § 120.2.

This definition is intended to codify *Sackett*'s holding that "the CWA's use of 'waters' encompasses 'only those relatively permanent, standing or continuously flowing bodies of water "forming geographic[al] features" that are described in ordinary parlance as "streams, oceans, rivers, and lakes" 598 U.S. at 671 (quoting *Rapanos v. United States*, 547 U.S. 715, 739 (2006) (plurality op. of Scalia, J.). Under both *Sackett* and 40 C.F.R. § 120.2, many waters of the United States exist under the MOAs, including the Gila River (an interstate water that was used in the past or may be susceptible of use in interstate commerce) which flows beneath the Morenci, Jackal, and Outlaw MOAs, its relatively permanent or continuously flowing tributaries, including the West Fork Gila River and Middle Fork Gila River beneath the Reserve MOA, and other tributaries of the Gila. The following maps in Figure 6 and 7 show perennial streams under the MOAs that meet or are likely to meet the new regulatory definition, and thus be subject to protection under the CWA.

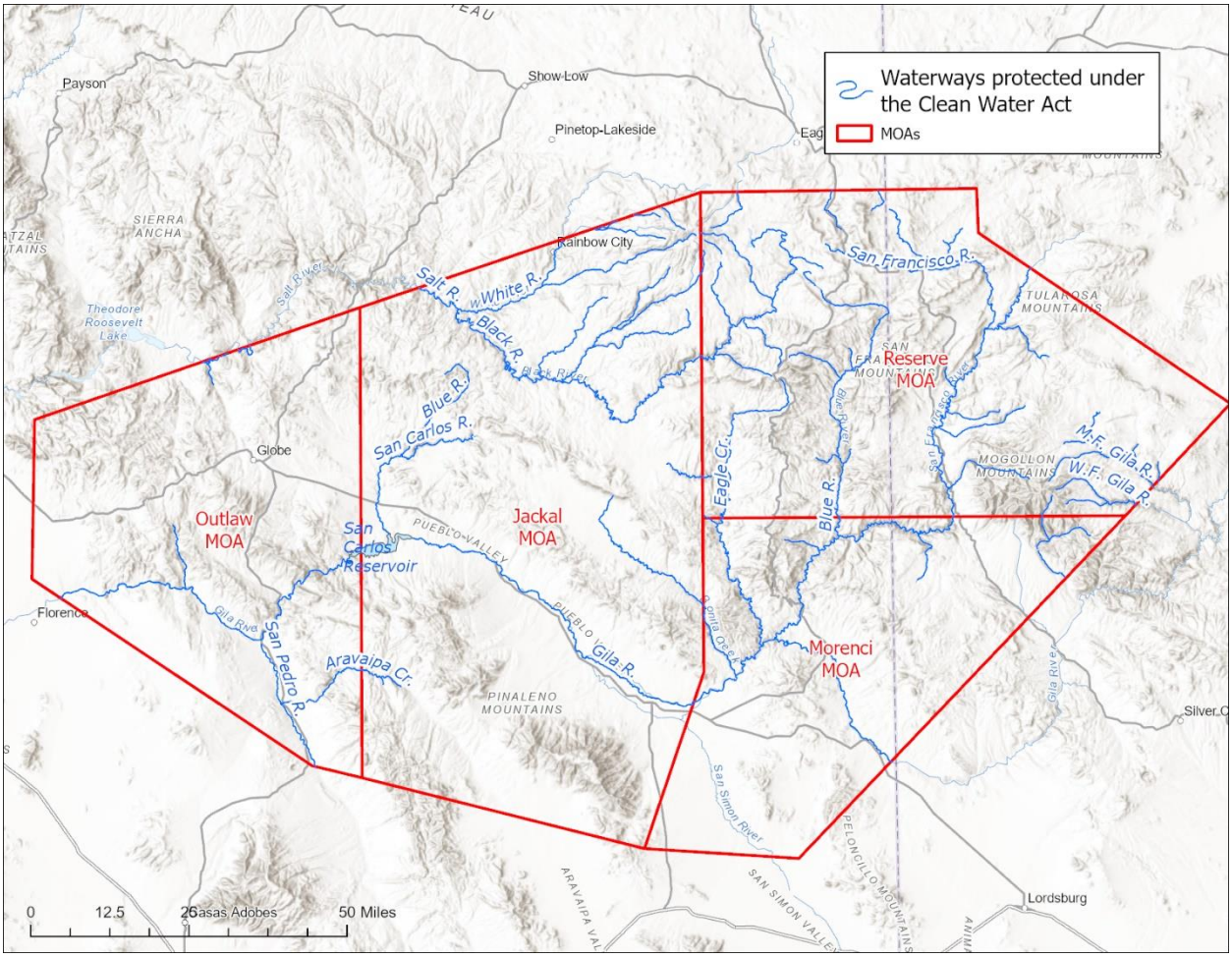

Figure 6: *Waters of the United States subject to protection under the Clean Water Act within the Outlaw, Jackal, Reserve and Morenci MOAs. Map by Curt Bradley.*

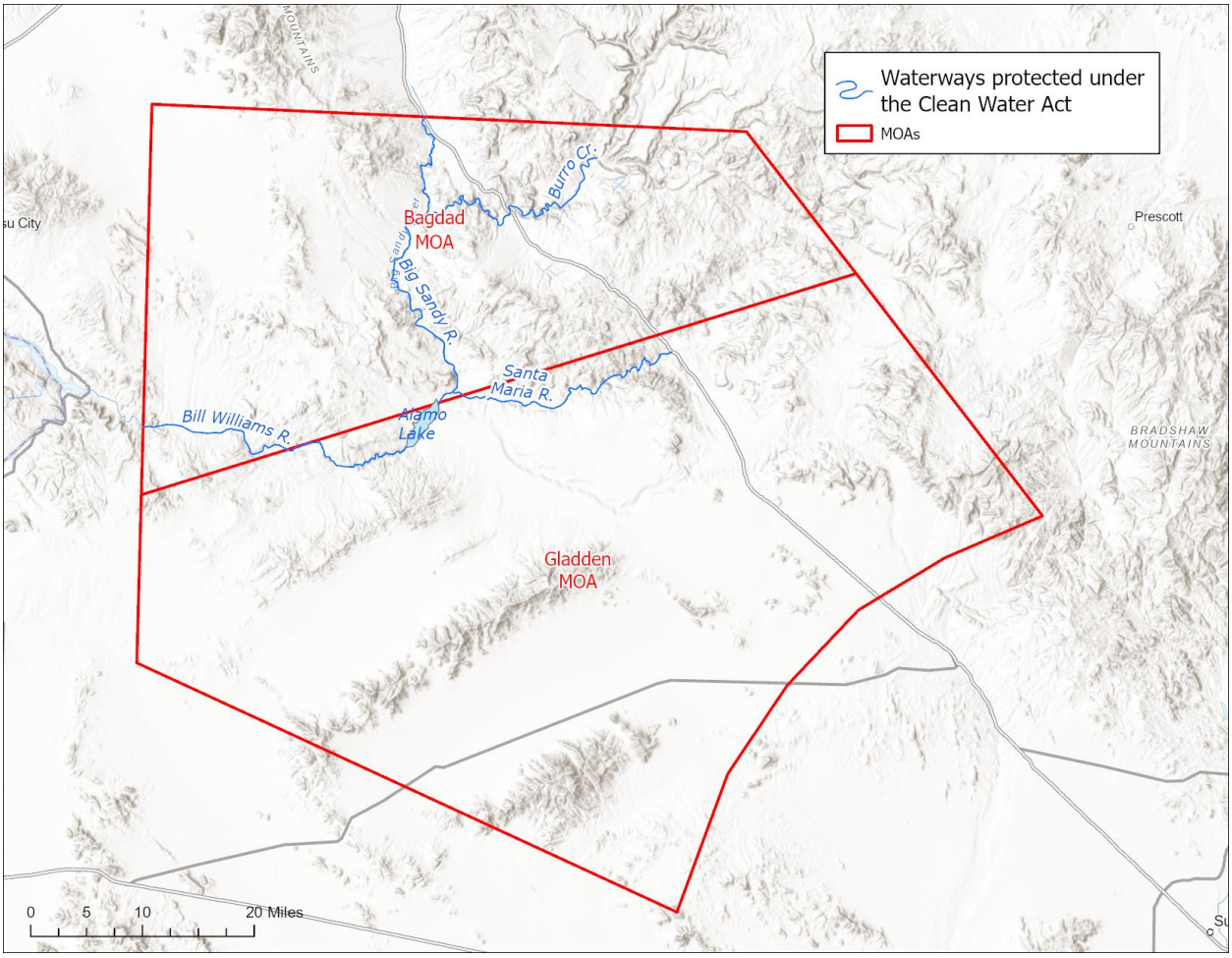

Figure 7: *Waters of the United States subject to protection under the Clean Water Act within the Bagdad and Gladden MOAs. Map by Curt Bradley.*

The CWA is designed "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). The CWA attempts to achieve these goals through a comprehensive regulatory scheme using permits, technology controls, and water quality-based pollution controls. Relevant here, the CWA prohibits all discharges of pollutants from point sources into waters of the United States unless such discharges are authorized pursuant to a CWA permit. 33 U.S.C. § 1311(a)(1). The CWA defines the term "pollutant" to mean "dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water." 33 U.S.C. § 1362(6). A point source is any "discernable, confined, and discrete conveyance." *Id.* § 1362(14).

The CWA regulates point source discharges through the Section 402 National Pollutant Discharge Elimination System (NPDES) permit program, which applies to discharges of pollutants. *Id.* § 1342. The CWA expressly prohibits federal agencies from issuing a federal license or permit for any activity that may result in a discharge into waters of the United States until the permit applicant has obtained certification pursuant to § 401 of the CWA. 33 U.S.C. §

1341(a)(1). DAF cannot approve any decision that allows discharge of chaff or flares into waters of the United States unless and until it has secured a Clean Water Act permit to do so.

In the leading pertinent case, the Supreme Court held that dropping bombs into the ocean and shooting at marine targets by the U.S. Navy was a "point source" discharge under the Act. *Weinberger v. Romero-Barcelo*, 456 U.S. 305 (1982); *see also Sierra Club v. BNSF Ry. Co.*, No. 2:13-cv-00967-JCC, ECF 337 (W.D. Wash. Oct. 25, 2016) (coal and coal dust blown off the top of moving rail cars and into navigable waters amounted to a point source discharge); *League of Wilderness Defs./Blue Mtns. Biodiversity Proj. v. Forsgren*, 309 F.3d 1181, 1192-93 (9th Cir. 2002) ("We hold that the aerial spraying of pesticide conducted by the Forest Service is point source pollution and requires [a] NPDES permit."); *Peconic Baykeeper, Inc. v. Suffolk Cnty.*, 600 F.3d 180, 188–89 (2d Cir. 2010) (spraying of pesticides from aircraft is a discharge from a point source.); *No Spray Coal., Inc. v. City of New York*, No. 00 Civ. 5395(GBD), 2005 WL 1354041, *5 (S.D.N.Y. June 8, 2005) (spraying of pollutants from helicopters into the air, which eventually landed on navigable waters, was a discharge from a point source).

In the DEIS, DAF declines to evaluate the effects of the Proposed Action on water resources (DEIS at 3-1, 3-2 ("The use of chaff and flares does not affect water quality or aquatic habitats.")). At the same time, DAF acknowledges the possibility that "[a]n impact to confined aquatic habitats could occur if there were a potential for significant accumulation and decomposition of chaff fibers. Since chaff would be broadly distributed with a low density in any one area, it is unlikely that chaff would be detectable or significantly accumulate within confined water bodies" (DEIS App'x at F-4).

But although the DEIS leaps to the conclusion that it is "unlikely" that chaff will significantly accumulate in *confined* water bodies (while not even addressing impacts to free-flowing rivers and streams), in the same breath it recognizes that the chaff will be "broadly distributed" – and, if chaff is released at lower elevations over waterways in the project area, there is a high likelihood that the steep, narrow canyons will act to funnel falling chaff, magnifying the concentration of chaff that will enter the water. The DEIS does not even mention the Clean Water Act, or the likelihood that it will end up discharging chaff or flares into waterbodies protected by the CWA (including the West and Middle Forks of the Gila River and the mainstem Gila River that flow through the Reserve, Morenci, Jackal, and Outlaw MOAs, and other relatively permanent or continuously flowing tributaries of the Gila River), and nowhere does the DEIS indicate that DAF has ever sought or secured a Clean Water Act permit. Absent such permit, DAF is and would be in continuing violation of the CWA. And, given that the DEIS admits that that over 1 million pieces of residual chaff (401,610 pieces) and flares (653,040 pieces) will be discharged in all of the MOAs (presumably each year), it is an absolute certainty that some chaff and flare residue will reach waters of the United States protected by the CWA. DEIS App'x F at F-17. The DAF must disclose and evaluate the Proposed Action's compliance with the CWA.

H. The DEIS analysis of the potential impact to soils is inadequate.

The DEIS states that "There are no activities proposed that would impact the geology, topography, or soils in the affected environment. The use of chaff and flares does not affect soil chemistry" (3-2). But merely saying that there is no effect does not make it the case. Saying that operations in the air do not affect soils or geology surface is naive and obfuscatory.

The DEIS provides estimates of chaff, flare and chaff and flare residual materials releases, but as explained in depth in the preceding section, does not consider the accumulation and concentration of materials over many years of military training. The DEIS does not address the degradation of residual materials such as plastic caps, pistons and tape into secondary microplastics that can contaminate soils and affect soil chemistry, the soil microbiome and the biophysical environment.[87]

The DEIS also says that flares are made of "magnesium and Teflon (polytetrafluoroethylene)" (F-7), a type of per- and polyfluoroalkyl synthetic chemicals (PFAS) that are known not to degrade easily in the environment and are commonly known as "forever chemicals." These chemicals have been shown to pollute soil, especially when burned, which is obviously the case with flares.[88] [89] PFAS are widely regarded as presenting environmental hazards to both water and soil as documented by the EPA and others.[90] DAF is already being sued for PFAS-related mitigations and clean-up, and yet this DEIS proposes increased combat training here that would increase PFAS exposure.

A report written by researchers for the Navy Medicine Journal states that, "Currently, DOD severely restricts the use of chaff in training in order to reduce pollution of the environment and to protect civilian airspace," and goes on to discuss the research on the dangers of chaff.[91] There are numerous other studies about the environmental dangers of both chaff and flares. However, this and other research were ignored in this DEIS, which instead takes the position that there is no effect. This defies common sense as well as research findings.

In addition, sonic booms are known to increase danger of rock and landslide, weaken cliffs and overhangs, and damage or destroy sensitive landscape features like hoodoos. An EPA study included documentation of damage to National Park cliff dwellings and rock formations.[92]

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[87] Machado, Anderson Abel de Souza; W. Kloas; C Zarfl; S. Hempel; and M.C. Rillig, 2017. Microplastics as an emerging threat to terrestrial ecosystems. Global Change Biology, Volume 24, Issue 4, April 2018, Pages 1405-1416).

[88] International Chemical Secretariat. 2022. The Teflon chemical PTFE is often touted as a safe cousin of toxic PFAS. But is it really? Accessed September 2024 https://chemsec.org/the-teflon-chemical-ptfe-is-often-touted-as-a-safe-cousin-of-toxic-pfas-but-is-it-really/.

[89] Citizens for Safe Water Around Badger. 2024. Does U.S. Military Chaff Contain PFAS? https://cswab.org/does-u-s-military-chaff-contain-pfas/.

[90] Environmental Protection Agency. 2024. Research on Per- and Polyfluoroalkyl Substances (PFAS). Accessed September 2024. https://www.epa.gov/chemical-research/research-and-polyfluoroalkyl-substances-pfas.

[91] Spargo, Barry, D. Arfsten, and C. Wilson. Human and Environmental Health Issues Related to Use of Radio Frequency Chaff. Navy Medicine, Volume 92, No. 5 (September-October 2001):12-16.

[92] Environmental Protection Agency. 1971. The Effects of Sonic Boom and Similar Impulsive Noise on Structures. December 31, 1971. Washington D.C. 20460. https://nepis.epa.gov/Exe/tiff2png.cgi/9101C5O3.PNG?-r+75+-g+7+D%3A%5CZYFILES%5CINDEX%20DATA%5C70THRU75%5CTIFF%5C00002729%5C9101C5O3.TIF

Finally, DAF dumping of chaff and flares over public lands or private property that is not a lawful dump site is not only an affront to the natural resources but could be as much as a Class 6 felony under Ariz. Rev. Stat. Ann. §13-1603 (ARS, 2024).

Based on these failures, we request DAF to prepare a supplemental DEIS that discloses and analyzes fully the impacts of the Proposed Action on soils.

I. The DEIS analysis of the potential impact from hazardous materials is inadequate.

The DEIS fails to take the hard look NEPA requires at the impacts of the proposed action from aircraft hazardous materials, including jet crashes. A supplemental DEIS must include a discussion of procedures or an estimate of fiscal and human resource impacts to land management agencies that would need to respond to and clean up hazardous materials releases from the proposed expanded training, including the higher likelihood of crashes.

J. The DEIS analysis of impacts to birds and birders is inadequate.

1. The DEIS Fails to Provide Adequate Data and Analysis of the Proposed Action's Impact to Birds and Birdwatchers/Birders

a. The DEIS Fails to Establish an Adequate Baseline for Effects of the Proposed Action on Birds and People Who Enjoy Observing Birds

DAF failed to gather and present in the DEIS site-specific data related to birds and those who enjoy observing them for each of the MOAs.[93] Although the DEIS and appendices list the names of certain bird species that occur under the MOAs, and note that critical habitat for some of the birds listed as threatened or endangered exists under some of the MOAs, there is no information given regarding the presence of other bird species within the MOAs that will be affected by the noise from combat training aircraft, and no information offered regarding the abundance or location of the threatened or endangered species or the few other species actually listed by name (in the appendix), nor of how much critical habitat exists for which species within each MOA or where that critical habitat is. *See* DEIS at 3-68 to 3-82, 3-86 to 3-89; DEIS App'x at L1-1 to L1-6. In addition, the DEIS erroneously states that designated critical habitat for the Cactus ferruginous pygmy-owl exists within five of the MOAs (DEIS at 3-73), whereas in fact critical habitat was removed in 2006 when the species was delisted. 71 Fed. Reg. 19452 (Apr. 14, 2006). This owl species was recently relisted as threatened, but with critical habitat yet to be proposed in a separate rulemaking. 88 Fed. Reg. 46910 (July 20, 2023).

[93] NEPA mandates that agencies take a "hard look" at the impacts of proposed actions to the "human environment." 42 U.S.C. § 4332(C). This includes impacts having a "reasonably close causal relationship" with "a change in the physical environment." *Ashley Creek Phosphate Co. v. Norton*, 420 F.3d 934, 943 (9th Cir. 2005). *See also* 40 C.F.R. § 1502.16(b) (2020 & 2024) (agency must disclose impacts to economic or social effects "when the agency determines that economic or social and natural or physical environmental effects are interrelated"). Courts hold that this includes impacts to environmental values and the recreational activities they support. *See, e.g., Or. Natural Desert Ass'n v. BLM*, 625 F.3d 1092, 1109 n.11 (9th Cir. 2010) (Bureau of Land Management must disclose impacts of off-road vehicle use and livestock grazing to wilderness characteristics, including solitude and recreational opportunities).

The DEIS contains no analysis of the effects of noise on any bird species besides the eight threatened and endangered species that occur under the MOAs, simply lumping them all with other "wildlife" and—after noting that "species differ in their response to various types, durations, and sources of noise," (DEIS at 3-77), citing only a handful of examples of studies of noise impacts to birds (two of which involved species that do not breed in Southeastern Arizona or Southwestern New Mexico). (DEIS at 3-81, 3-82). For special status species, the DEIS acknowledges that "there are no studies of the effects of noise on [Yellow-billed Cuckoo or Southwestern Willow Flycatcher]" (DEIS at 3-88). The DEIS merely lists eight bird species that are listed as threatened or endangered under the Endangered Species Act (ESA), and provides a superficial discussion of the potential for noise impacts from the more intensive combat aircraft training the Air Force is proposing (DEIS at 3-71, 3-74 to 3-75).

The DEIS includes *no* information regarding how many people engage in birdwatching or birding within the MOAs, much less any analysis of how combat training flights will affect these recreationists who depend on very quiet ambient noise conditions for being able to observe birds and (in the case of "birders") record their observations. *See, e.g.*, DEIS at 3-92 (mentioning that a common type of recreating on the lands beneath the MOAs is "viewing . . .wildlife" with no details of where or how many people engage in this activity or the subset involving observing birds). This is a fundamental violation of NEPA.

Establishing a baseline estimate is a core "requirement in environmental analysis often employed to identify the environmental consequences of a proposed agency action." *Or. Nat. Desert Ass'n v. Jewell*, 840 F.3d 562, 568 (9th Cir. 2016). Further, in estimating baseline conditions, the analysis "must be based on accurate information and defensible reasoning." *Great Basin Res. Watch v. Bureau of Land Mgmt.*, 844 F.3d 1095, 1101 (9th Cir. 2016). "Without establishing the baseline conditions which exist [in the project area] before [the project] begins, there is simply no way to determine what effects the proposed [project] will have on the environment and, consequently, no way to comply with NEPA." *Half Moon Bay Fishermans' Mktg. Ass'n v. Carlucci*, 857 F.2d 505, 510 (9th Cir. 1988); *see also N. Plains Res. Council, Inc. v. Surface Transp. Bd.*, 668 F.3d 1067, 1085 (9th Cir. 2011) ("without [baseline] data, an agency cannot carefully consider information about significant environmental impacts").

Although the DEIS superficially discusses the potential effects of more intensive combat training on birds, it contains no discussion of the impact of the Proposed Action on birdwatchers and birders. The term "birdwatcher" applies generally to anyone who enjoys observing birds in nature, while the term "birder" applies to a subset of birdwatchers who actively pursue birds, often to compile lists of birds observed during a day's outing or during a lifetime.[94] However, neither of these terms appears in the DEIS or its appendices, and the DEIS's description of "recreation" as including "viewing . . .wildlife" also alludes to "outdoor activities that occur on land that lies beneath the airspace affected by alternatives under the Proposed Action" without acknowledging that certain outdoor activities—like birdwatching and birding—depend critically on quiet, natural background levels of noise with which high-speed combat aircraft training at low elevations is incompatible (DEIS at 3-91).

[94] "Birding v. Birdwatching" https://ontarionature.org/birding-vs-birdwatching-blog. (last viewed Sept. 22, 2024).

b. The DEIS Fails to Establish the Baseline for Ambient Noise

DAF failed to gather and present in the DEIS site-specific data for each of the impacted areas, instead relying upon baseline estimates that are unsupported in the DEIS and the best available science. The DEIS correctly notes that "[m]any of the areas that underlie the existing and proposed airspace described in Chapter 2 are undeveloped wilderness or rural areas" (DEIS at 3-25). But then, rather than gathering and presenting site-specific information regarding the baseline noise in these undeveloped wilderness and rural area, DAF fails its duty under NEPA. The DEIS simply notes that "because of the remote nature of these areas and their large size, ambient noise levels are difficult to predict, but are assumed to be quite low since these areas lack man-made noise sources" (DEIS at 3-25).

DAF has acknowledged that there is "incomplete or unavailable information" about baseline ambient noise levels in the "many" wilderness and rural areas that will be affected by low elevation combat aircraft under the Proposed Action. 40 C.F.R. § 1502.21(a) (2020 & 2024). However, because this is "incomplete information relevant to reasonably foreseeable significant effects" that "is essential to a reasoned choice among alternatives," the agency must evaluate whether the "overall costs of obtaining it are not unreasonable," and—if not—must collect the necessary data and include that information in the EIS. *Id*. § 1502.21(b) (2020 & 2024). But the DEIS does not make this required evaluation.

Instead, the DEIS describes a National Park Service "NPS Sound Map program" that "produced predictive sound maps for the U.S. and their park units to help determine the quality of the acoustic environment" (DEIS at 3-25). The DEIS then provides a table showing the maximum and minimum existing L50 dBA noise levels from the NPS Sound map within each MOA, for example showing the Reserve MOA with a minimum of 28 L50 dBA and a maximum of 40 L50 dBA. DEIS at 3-26. However, these levels could be anywhere within the MOAs, some of which cover more than 3,000,000 acres—although the DEIS does not provide the acreage for the Morenci, Reserve, Fuzzy, and Ruby MOAs, another significant failure to establish accurate baseline information. *See* DEIS at 3-94 to 3-98 (displaying existing acres only for Tombstone C, Tombstone Expansion, Jackal, Jackal Low, Outlaw, Gladden, and Bagdad MOAs); DEIS App'x F-17 (showing combined acreage for Reserve/Morenci and Ruby/Fuzzy).

The map accompanying this table (DEIS at 3-27) paints a picture that is at odds with the bare maximum and minimum levels shown in the table: the vast majority of the MOAs are near the low end of the noise spectrum (as low as 21.4946 L50 dBA), shown in increasingly darker green the quieter they are, with narrow lines of yellow indicating areas near major roads, towns, or mining operations. Yet the DEIS never analyzes noise effects on the very quiet areas depicted in darker green throughout that map.

The DEIS is therefore misleading in presenting only two extreme figures for the ambient noise levels within the MOAs when the vast majority of the MOAs are actually very quiet. DAF needs to present detailed, quantified information about how much of the area that will be affected by the Proposed Action is land where the ambient noise level is "quite low" and just how quiet those areas are (DEIS at 3-25). Without this baseline information, DAF had no basis to evaluate

whether the effects of increased total sorties, increased supersonic sorties, lowering the floor for flights to 100 feet in some areas and 5,000 feet for supersonic flights in others would have a significant effect on the quiet soundscape of the vast areas of wilderness and peaceful rural land. And the DEIS compounds this baseline problem by describing that the noise levels presented in the National Park Service's report are "not directly comparable to the FAA and DAF standards of DNL and Ldnmr" (DEIS at 3-26). Because DAF made no attempt to collect site-specific noise level data, the DNL estimates are the only assessment of potential conditions presented in the DEIS.

Yet at least some data is available that shows that even the minimum noise levels reported in the DEIS are likely higher than the ambient, natural noise levels in areas with little regular human activity. In 1990, the Forest Service and National Park Service's Interagency Aircraft Overflight Sound Project found that "[s]ound levels at one spot in the Gila Wilderness were measured at 18 dBA in the morning and 28 dBA in the evening. . . . An aircraft clearly audible at a site with low background sound levels is inaudible at another site with higher background levels, even though the aircraft is producing the same amount of sound."[95] The Project also determined that "[i]f the sound of aircraft overflights adversely [a]ffect wilderness users only if it is heard, the 'theory of signal detection' provides a basis for predicting whether or not such a signal—in this case an aircraft—can be detected. This theory has been successfully applied in research conducted for the military, where listeners are intently attempting to detect approaching aircraft. It has been shown that annoyance, under several different situations, is correlated with detectability."

The National Park Service, in its 1995 Report to Congress on Effects of Aircraft Overflights on the National Park System, similarly documented that visitor impacts from aircraft noise were significantly greater among users in the quieter backcountry than in frontcountry areas. For example, in reports from 23 Park Service units, 70% of backcountry permit holders reported hearing aircraft (compared to 20% of frontcountry users), and nearly 50% of these backcountry permit holders reported that aircraft noise interfered with natural quiet (compared to about 5% of frontcountry users), and over 30% of backcountry permit holders reported that the aircraft noise annoyed them and interfered with their enjoyment (compared to less than 5% of frontcountry users).[96]

The Interagency Aircraft Overflight Sound Project's conclusion that annoyance is correlated with detectability, and the Park Service's documentation of the heightened awareness of and annoyance/disruption by aircraft in quiet backcountry areas, combined with the very low ambient noise in the vast majority of the MOAs (as low as 18 dBA in the Gila Wilderness), makes it likely that noise from combat aircraft *will* be detected and *will* cause annoyance to people trying to observe birds or otherwise engage in quiet recreation—particularly given the frequency with which people seek out these opportunities within the lands under the MOAs that are birding "hot spots," described below.

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[95] U.S. Forest Service (USFS) & National Park Service (NPS). 1990. Interagency Aircraft Overflight Sound Project Update, June 30, 1990.

[96] National Park Service (NPS). 1995. Report on Aircraft Overflights on the National Park System. United States Department of the Interior, National Park Service, July 1995.

The DEIS uses a 65 dB DNL standard for land use compatibility throughout the DEIS and uses this standard to assess the significance of noise impacts. *See, e.g.*, DEIS at 3-27 to 3-28, 3-41, 3-50, 3-91. But, as described above, the DNL standard is outdated, inaccurate, and not appropriate evaluating noise impacts in the predominantly rural and very quiet areas affected by the Proposed Action. Relying on this standard, which was developed for evaluating noise in urban environments, DAF's modeling determined that "the Proposed Action would not involve any land under the MOAs being exposed to noise levels greater than 65 dB DNL or 62 dBC CDNL," which led DAF to conclude that "no incompatible land uses or significant impacts to land uses or recreational uses as a result of increases in noise related to the Proposed Action would occur" (DEIS at 3-98).

However, the DEIS also recites that "[t]he FAA recognizes that there are settings where the 65 dB DNL standard for land use compatibility may not apply. *These areas would likely be areas of extreme quiet, very rural areas, or natural areas with little human activity, such as wilderness areas or other protected natural areas*" (DEIS at 3-28 (emphasis added)). Yet, in the section on recreational impacts, DAF uses the outdated and arbitrary-for-rural-quiet-areas 65 dB DNL standard to claim that it is not required to analyze impacts to overall land use and recreation beneath the Tombstone A and B, Tombstone (Exclusion Area), Morenci, Reserve, Sells, Fuzzy, and Ruby MOAs (DEIS at 3-91).

But NEPA *requires* an agency to take a hard look at the impacts of its proposal on the human environment—not to arbitrarily claim that their modeled result of average noise increase over the course of a year based on the DNL standard precludes any need to assess the effects of noise on recreationists including birdwatchers and birders who depend on quiet, natural settings to be able to observe (visually and aurally) birds without intrusion from artificial noise sources. Given the extreme quiet nature of most of the lands under the MOAs, it is misleading to assert that the effects of more frequent and more intense (because lower to the ground) noise from combat aircraft by citing the DNL threshold of 65 dBA. In fact, it is obviously false to assert that combat aircraft training in Wilderness or other naturally quiet areas will be benign because the DNL metrics would not exceed a level that makes an *urban* neighborhood intolerable.

In effect, DAF approaches the noise impacts analysis backwards: it uses a metric that averages noise levels over a year and "applies" it without first defining the baseline conditions within the MOAs—most of which are very quiet areas. And the "application" of that metric leads to the agency discounting completely any impacts to birds, birders, and other recreationists within most of the MOAs (s*ee* DEIS at 3-91 to 3-109). And—despite disclosing the significant effects that a single flight at low elevation or at supersonic speeds less than a mile above ground can cause (DEIS at 3-31, DEIS App'x at J-43 to J-46)—DAF never evaluates how the significant noise levels associated with individual sorties are likely to affect birds, birders, and birdwatchers in the very quiet areas that predominate under the MOAs.

DAF needs to begin this analysis again by first establishing an <u>accurate</u> baseline for ambient noise within the MOAs—and, as described below, an accurate baseline of the bird species within the MOAs potentially affected by the increased intensity of combat training proposed and of the birders, birdwatchers, and other recreationists seeking quiet areas who will

be affected—and then take a "hard look" at those impacts. The DEIS as it stands violates NEPA in failing to establish the environmental baseline and failing to take the requisite hard look, and as a result serves neither of NEPA's goals of having available detailed information regarding environmental impacts and making the relevant information available to the public so that it can play a role in the "democratic decision making" that NEPA contemplates. *Or. Nat. Desert Ass'n v. Bureau of Land Mgmt.*, 625 F.3d 1092, 1099–1100 (9th Cir. 2010).

c. The DEIS Fails to Identify or Include Baseline Information About Sensitive Noise Receptors and Designated Important Bird Areas Under the MOAs

The DEIS fails to identify important noise sensitive areas within the MOAs or provide any analysis of the Proposed Action's impacts to these areas. The DEIS acknowledges that "noise sensitive areas include residential, educational, health, and religious structures and sites, and parks, recreational areas, areas with wilderness characteristics, wildlife and waterfowl refuges, and cultural and historical sites" (DEIS at 3-28). But except for listing the presence of Wilderness Areas and certain other protected areas within some of the MOAs—and not even specifying that these might be "noise sensitive" areas—the DEIS provides no baseline information regarding the presence of noise sensitive areas or other noise sensitive receptors. *See* DEIS at 3-94 to 3-98 (listing Wilderness Areas and Areas of Critical Environmental Concern only for Tombstone C, Tombstone Expansion, Jackal, Jackal Low, Outlaw, Gladden, and Bagdad MOAs); DEIS at 3-105 (listing all Wilderness Areas underneath the MOAs).

Yet the DEIS describes that many of the "[MOAs] would be considered rural and generally quiet, there are times of use by military aircraft where aircraft-generated noise would be noticeable and potentially considered annoying, depending on the time and location of the observer," (DEIS at 3-25), that "[m]any of the areas that underlie the existing and proposed airspace described in Chapter 2 are undeveloped wilderness or rural areas," *id*., and that these "areas of extreme quiet, very rural areas, or natural areas with little human activity, such as wilderness areas or other protected natural areas" are places where "the 65 dB DNL standard for land use compatibility may not apply" (DEIS at 3-28). In the Appendices, DAF states that "training within the MOAs must adhere to all standard aircraft safety procedures" which includes "avoidance of noise sensitive areas or populated areas defined in 14 CFR 91.119, and recommendations defined in the FAA Aeronautical Information Manual (paragraph 7-5-6) which concerns National Parks, Monuments, Seashores, Lakeshores, Recreation Areas, and Scenic Riverways, National Wildlife Refuges, Big Game Refuges, Grame Ranges, and Wildlife Ranges, Wilderness Areas and Primitive Areas" (DEIS App'x at D2-5). The acknowledgement that the MOAs at issue are replete with noise sensitive areas where different analyses should be undertaken and which the Air Force acknowledges should be avoided makes the DEIS's failure to identify and analyze affected noise sensitive areas that much more serious an error.

In addition, the list of noise sensitive areas (about the presence of which the DEIS provides no details) in the DEIS fails to consider numerous other noise-sensitive locations, including sensitive wildlife receptors. It is unclear why a wildlife or waterfowl refuge would be considered a noise sensitive receptor, but not the actual wildlife species and their habitat. The MOAs in the Project Area overlay the heart of one of the most important landscapes and quiet soundscapes left in North America. Yet, the DEIS fails to consider the potential impacts to these

and other sensitive habitats. The potential impacts to these and other sensitive noise receptors must be analyzed as part of DAF's hard look at potential impacts of the proposed actions.

One specific type of noise sensitive area is of particular importance for any meaningful analysis of the impacts of the Proposed Action on birds and birders: "Important Bird Areas" or "IBAs." The DEIS offers no information or data regarding the presence of these areas, which are of particular importance for the conservation of birds, despite this information being publicly available. The National Audubon Society, as the United States administrator of the IBA program developed by BirdLife International (https://www.birdlife.org/), has designated 17 areas within seven of the MOAs as IBAs (see next table). Information about the IBA program is available on the Society's webpage at https://www.audubon.org/important-bird-areas. By clicking on the button marked "Visit the IBA Hub," DAF (or any person) can bring up an interactive map showing the IBAs throughout the Project Area. Five of the IBAs are designated as being of "Global Priority," meaning that the area is known or thought regularly to hold significant numbers of a globally threatened species. *See* Global IBA Criteria at https://datazone.birdlife.org//site/ibacritglob.

Figure 8 (below): *National Audubon Society Important Bird Areas Impacted by Combat Aircraft Training (IBAs of Global Priority highlighted in* ***bold*** *text)*

Tombstone MOA
Chiricahua Mountains (Global Priority – AZ)
Whitewater Draw State Wildlife Area (Global Priority – AZ)
Animas Mountains (State Priority – NM)
Clanton Canyon (State Priority – NM)
Gray Ranch Grasslands (State Priority – NM)
Guadalupe Canyon (State Priority – NM)

Ruby/Fuzzy MOA
Atascosa Highlands (State Priority – AZ)
Arivaca Cienega/Arivaca Creek (State Priority – AZ)
Upper Santa Cruz River (State Priority – AZ)

Sells MOA
Sonoran Desert Borderlands (State Priority – AZ)

Bagdad MOA
Bill Williams River NWR (Global Priority – AZ)
Joshua Tree (Global Priority – AZ)

Outlaw MOA
Boyce Thompson Arboretum and Arnett-Queen Creeks (State Priority – AZ)
Lower San Pedro River (Global Priority – AZ)

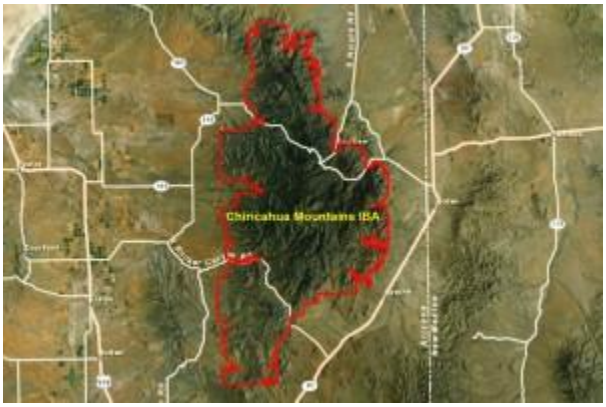
Jackal MOA
Pinaleño Mountains (Global Priority – AZ)

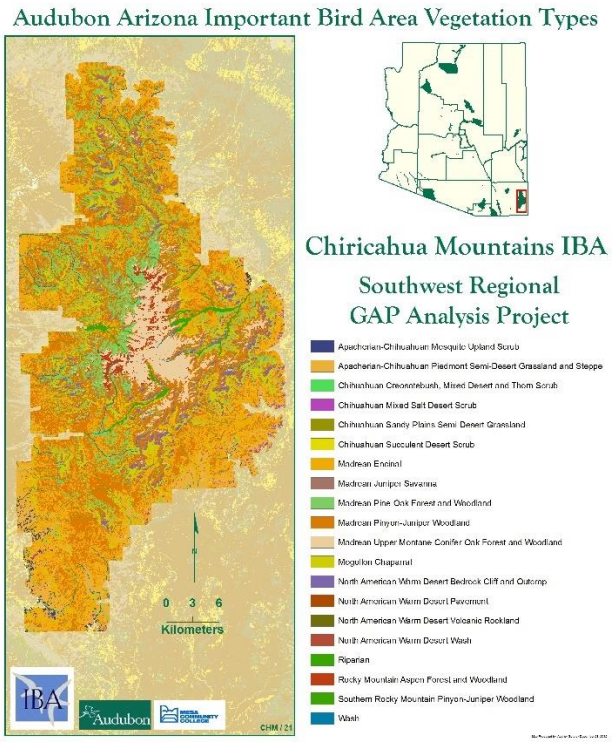
Reserve MOA
Blue and San Francisco Rivers Complex (State Priority – AZ)
Upper Little Colorado River Watershed (State Priority – AZ)

Gladden MOA - (None)

Morenci MOA - (None)

One of the most important of the IBAs that will be affected by the Proposed Action is the Chiricahua Mountains IBA (see figures 9 and 10, below), which lies under the center of the Tombstone MOA.





Figures 9 & 10: *Map of Chiricahua Mountains IBA and map of Arizona Audubon Chiricahua Mountains IBA vegetation types.*

The National Audubon Society's website (National Audubon Society 2024) describes that the Chiricahua Mountains IBA encompasses a large "sky island" mountain range in southeastern Arizona, part of a chain of mountains spanning from central Mexico into southern Arizona—the Sierra Madre. The range is almost 40 miles long by 20 miles wide, with the IBA encompassing 292,254 acres. The IBA extends from 5,000 feet elevation, at the ecotone between grassland and oak, to the top of Chiricahua Peak at 9,795 feet. Sierra Madrean species reach the northernmost extension of their ranges within this IBA. Notable are many bird species, including Mexican spotted owl, but also mammals like the Nayarit red squirrel and trees like the Apache pine. Numerous perennial springs and streams occur within the range, although none flow out of the mountains into the surrounding Chihuahuan desert scrub. The main canyons of the range include: West Turkey Creek, Rucker, and Cave Creek.

The Chiricahua Range is where the interior Rocky Mountain avifauna meet the northern Sierra Madrean avifauna, as well as a mixing of the Sonoran, Chihuahuan, and Great Basin desert avifauna. Some 375 bird species are known to inhabit the Chiricahua Mountains IBA.[97] Geographical position accounts for much of the bird wealth of the Chiricahua Mountain Region.

[97] Taylor, R.C.1997. Location Checklist to the birds of the Chiricahua mountains. Borderland Productions, Tucson, AZ

The Chiricahuas are situated near the North American apex of the 1000-mile-long cordillera of the Sierra Madre Occidental, and midway between the Sonoran and Chihuahuan Deserts. Draining the southeast corner of the range, the San Bernardino Valley spills into the Rio Yaqui and provides a 400-mile-long natural corridor for Sinaloan Thorn Forest birds. The sheer size and topographic diversity of the Chiricahua region make it possible for most birds to find appropriate habitat. Broadly speaking, there are six basic plant communities, and each supports a unique subset of birds.[98]

Of particular importance ornithologically is the great number of Mexican species whose northern summer breeding range occurs only in the southern "sky island" mountains of Arizona, these species include: elegant trogon, Mexican spotted owl, whiskered screech-owl, violet-crowned hummingbird, Sulphur-bellied flycatcher, and Mexican chickadee (the latter found only in the Chiricahuas and Animas Mountains in the U.S.). The elegant trogon population is the second largest group in the United States after the population within the Huachuca Mountains IBA. Fifteen species of hummingbirds have bred in the IBA. This IBA supports 33 (breeding or resident) Species of Conservation Status, most notably a high percentage of the state population of: Mexican spotted owl, whiskered screech-owl, Arizona woodpecker, buff-breasted flycatcher, Grace's warbler, and possibly Crissal thrasher. Within the last ten years Short-tailed hawks have nested within this IBA. Historically, thick-billed parrots occupied the Chiricahua Mountains, and the habitat remains little changed. Twenty-six birds were reintroduced in 1986, but the reintroduction attempt failed, apparently to the inexperience of the individuals released and predation by raptors. During the course of 2008 guiding, birding and a study of raptor densities in a 50 sq km study area in the Chiricahua mountains Helen Snyder or field assistant David Jasper identified ten Mexican spotted owl pairs plus a single bird. The birds were encountered during nocturnal surveys for other species of owl. This effort and past U.S. Forest Service surveys provided the data for A1 Global recognition for Mexican spotted owl.

The Town of Portal, which would come within the Tombstone MOA if it were expanded, is known as an epicenter for birdwatching and birding. In the eBird dataset for August 1, 2023 through July 31, 2024, 14 localities on or near the following map had at least 365 unique visits where birders recorded data in eBird over the course of that year—an average of one or more birding visits per day. And, to underscore, these hundreds and even thousands of annual birding visits in each locality represent only those birders who submitted lists to the eBird dataset—not other birders who keep private lists, and not the likely far greater number of birdwatchers who come to this unique area to observe the hundreds of species that can be found in the Chiricahuas.

The localities include several outstanding and oft-frequented birding locations that are currently not within the Tombstone MOA, but would be underneath the proposed expansion, including Portal—Cave Creek Ranch, the town of Portal (including Bob Rodrigues yard, Jasper/Moisan feeders, Old Canyon Road, Portal—Willow Tank (see Figure 11 on following page)), Rustler Park, Paradise, Pinery Canyon, East Turkey Creek, Barfoot Park, and Whitetail Canyon (see Figure 12 on following page). Adding aircraft noise, especially at low elevation and supersonic speeds, into this area known for its quiet ambient sounds and excellent birding will harm birders and birdwatchers as well as the local economy.

[98] *Ibid.*

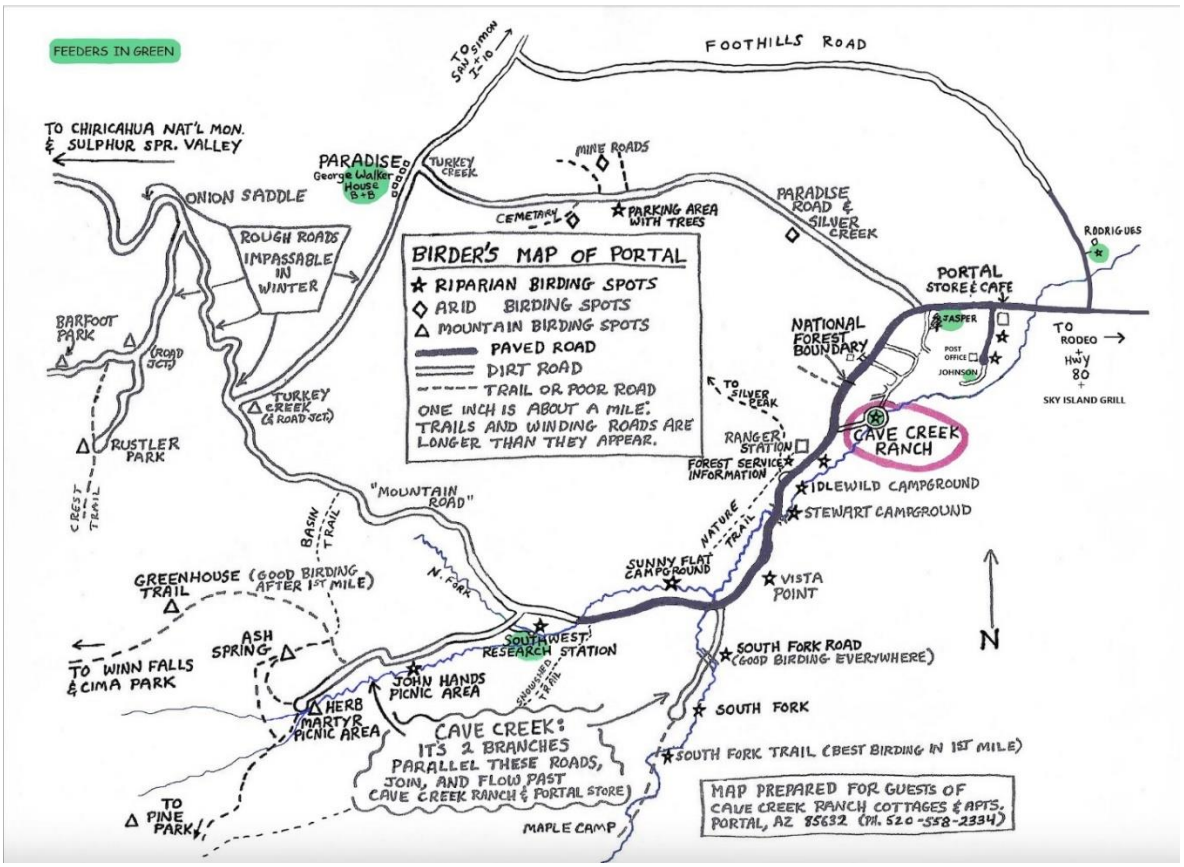


Figure 11: *Birders map of Portal, AZ.*

Locality	Unique Sampling Events	Latitude	Longitude
Portal--Cave Creek Ranch	1,871	31.9041957	-109.156
Cave Creek Canyon--South Fork	1,623	31.8801293	-109.177
Portal	1,515	31.9136009	-109.141
Cave Creek Canyon--Southwestern Research Station	1,416	31.8835432	-109.206
Portal--Bob Rodrigues yard (Dave Jasper's old yard)	1,049	31.9212240	-109.128
Portal--Jasper/Moisan feeders (opened 2015)	905	31.9144645	-109.144
Paradise--George Walker House	860	31.9350554	-109.219
Pinery Canyon*	804	31.9328003	-109.271
Portal--Willow Tank**	731	31.8145008	-109.060
Rustler Park	648	31.9030991	-109.278
East Turkey Creek at FR42/FR42B	598	31.9086083	-109.251
Barfoot Park	496	31.9172001	-109.279
AZ-Cochise-Portal--2494 S. Old Canyon Rd. (private)	434	31.9063055	-109.153
Chiricahua Mtns.--Whitetail Canyon***	370	31.9994008	-109.272

* Pinery Canyon is about 1/2 mile W of Onion Saddle (shown on map)

** Willow Tank is about 6 miles SE of Portal Store (shown on map)

*** Whitetail Canyon is about 4 miles NW of Paradise (shown on map)

Figure 12: *Unique sampling events logged by birders on eBird at high-visitation localities in the Chiricahua IBA, August 1, 2023 through July 31, 2024.*

The Portal area would be directly affected for the first time if the Proposed Action were adopted, seriously degrading the birdwatching and birding opportunities and harming local businesses that depend on the tourism which being a world-class bird area attracts.

None of this baseline detail about the Chiricahua Mountains IBA—nor indeed any detail about any of the 17 IBAs located under the MOAs—is included in the DEIS.

d. The DEIS Fails to Establish the Baseline for Effects of the Proposed Action on Birds

As with the effects of low elevation combat aircraft training to birdwatchers and birders, the DEIS fails to establish an adequate, quantified baseline of the Proposed Action's likely effects on birds. Although it lists eight bird species that are listed as threatened or endangered under the ESA (DEIS at 3-74 to 3-75), and provides an additional list of species designated as protected in Arizona and New Mexico in Appendix L2, the DEIS contains no information about where within the MOAs these birds nest or can be found (noting only whether they occur somewhere within the MOAs that are mostly more than one million acres in extent), their abundance, or what habitat is of particular importance to them. What is missing is any baseline information regarding the sheer number of species that are present within the MOAs, precluding DAF from effectively analyzing the impacts to these species.

By contrast, the DEIS states that over 100 species of migratory birds may be located within the MOAs, relying solely on an Arizona Game and Fish Department reporting tool (3-75). But no data regarding birds in New Mexico is provided, despite three of the MOAs extending into that state. *See id*. This improperly minimizes the baseline figures for the number of bird species that will be affected and presents an incomplete baseline against which to evaluate impacts.

In fact, the actual number of bird species within the MOAs and subject to noise from the combat training flights is far greater than the DEIS discloses. DAF could have ascertained this from publicly available data collected by the Cornell Laboratory of Ornithology's eBird app. Birders who recreate by observing and recording bird species in eBird supply the locality, geographical coordinates, names of species sighted, a unique "sampling event identifier" for each birding visit, and their own unique observer identification numbers, among other data that is collected in the eBird data sets.[99]

eBird data is available by County within the United States. By using the longitude and latitude figures for each locality, and comparing the locations to the interactive map of the MOAs at: https://cardnotec.maps.arcgis.com/apps/webappviewer/index.html?id=b2685e8cb40c4917a324a6ae2996b21e, we identified the localities within Apache, Graham, Greenlee, and Cochise Counties (in Arizona) and Catron, Grant, Hidalgo, and Luna Counties (in New Mexico) that were within the Reserve, Morenci, and Tombstone MOAs. A summary of the data from the eBird data

[99] Cornell Laboratory of Ornithology. 2024(c). Raw Data (Text Format) for eBird Basic Dataset. Version: EBD_relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

sets is presented in the following table.[100] The data covers a period from August 1st to July 31st of the years indicated, so as to include the most recent monthly data available when the public comment period began.

Figure 13: *eBird Data Summary for Reserve, Morenci, and Tombstone MOAs*

County	MOA	Year(s)	Observations Within MOAs	Unique Sampling Events	No. of Unique Species	No. of Birds Documented	No. of Unique Localities	No. of Days With Observations	No. of Different Observers
New Mexico									
Grant	Tombstone	2019-24	1,804	392	150	6,796	192	177	167
Hidalgo	Tombstone	2019-24	88,455	9,580	349	358,377	1,906	1,317	2,720
Luna	Tombstone	2019-24	47	10	29	287	6	6	10
SubTotal	**Tombstone (NM)**	**2019-24**	**90,306**	**9,982**	**353***	**365,460**	**2,104**	**1,500**	**2,747***
Arizona									
Cochise	Tombstone	2023-24	359,504	25,739	411	3,761,641	2,408	366	2,339
Cochise	Tombstone	2022-23	347,591	24,447	444	5,576,070	2,388	365	2,446
Cochise	Tombstone	2021-22	307,109	24,450	427	7,179,287	2,447	365	2,331
Cochise	Tombstone	2020-21	303,692	20,901	431	3,420,378	2,328	365	1,989
Cochise	Tombstone	2019-20	169,654	12,346	395	2,666,946	1,452	366	1,393
SubTotal	**Tombstone (AZ)**	**2019-24**	**1,487,550**	**107,883**	**517***	**22,604,322**	**2,447**	**1,827**	**7,471***
New Mexico and Arizona Combined									
Total	**Tombstone (All)**	**2019-24**	**1,577,856**	**117,865**	**518***	**22,969,782**	**4,551**	**3,327**	**7,529***
5-Yr Ave	**Tombstone (All)**		**315,571**	**23,573**		**4,593,956**		**365**	
Apache	Reserve	2019-24	32,986	2,850	289	171,417	554	673	540
Catron	Reserve	2019-24	27,749	2,363	273	97,644	719	781	411
Graham	Reserve	2019-24	33	3	29	89	3	3	3
Greenlee	Reserve	2019-24	11,905	1,292	225	32,634	505	266	158
Total	**Reserve**	**2019-24**	**72,673**	**6,508**	**356***	**301,784**	**1,781**	**1,723**	**881***
5-yr Ave	**Reserve**		**14,535**	**1,302**		**60,357**		**345**	
Catron	Morenci	2019-24	2,080	157	180	7,776	45	82	74
Graham	Morenci	2019-24	6,480	727	210	21,543	287	251	192
Grant	Morenci	2019-24	2,202	327	207	6,779	175	157	121
Greenlee	Morenci	2019-24	28,738	2,201	297	199,174	526	580	288
Hidalgo	Morenci	2019-24	5	2	5	12	1	1	1
Total	**Morenci**	**2019-24**	**39,505**	**3,414**	**311***	**235,284**	**1,034**	**1,071**	**456***
5-yr Ave	**Morenci**		**7,901**	**683**		**47,057**		**214**	

***figures represent number of unique species or number of different observers during the 5-year time period**

The eBird data shows that, in the Tombstone MOA (including the expansion area), in Cochise County alone, a total of 517 unique bird species were observed and recorded over the last five years. On the New Mexico side of the Tombstone MOA, a total of 353 unique species were observed and recorded during the five-year period from August 1, 2019 to July 31, 2024—one of which had not been among those also observed in the Cochise County portion of the Tombstone MOA (including expansion). Great avian richness is apparent in the Reserve and

[100] The raw data obtained from eBird and Excel spreadsheets converted from that data are provided as references – something that the Air Force failed to do with the Arizona Game and Fish Department Environmental Online Reporting Tool Reports that the DEIS cites at pages 3-75 and 4-1 and which the public therefore has been unable to review.

Morenci MOAs as well. In the Reserve MOA, 356 unique bird species were observed and recorded during the five-year period from August 1, 2019 to July 31, 2024, while in the Morenci MOA, 311 unique bird species were observed and recorded during the five-year period from August 1, 2019 to July 31, 2024. Summary sheets showing the number of observations, number of unique species observed, localities, number of unique observers, number of unique sampling events (equivalent to a single visit by a single birder), and the number of observations of species listed for federal and state protection for each of the counties within the MOAs are attached as Appendix B.

These figures illustrate that the number of different bird species that would be affected by the Proposed Action is far larger than any of the figures provided in the DEIS. By narrowly focusing on specially-protected species, the DEIS misrepresents the overall impact to birds from the Proposed Action, and the sheer number and prevalence of species belies the DEIS's suggestion that there will be no, or minor, effects from noise from individual sorties on the birds that live in the remote, and largely natural areas under the MOAs that are important bird habitat.

Many of these species are migratory, protected from intentional take by the Migratory Bird Treaty Act (MBTA). Although the DEIS recognizes that at least 100 birds are thus protected, DEIS at 3-75, it does not evaluate whether the increased noise and startle responses created by lower, more frequent flights will constitute unlawful take. *See* DEIS at 3-75 to 3-76, 3-86. Rather, the DEIS simply makes the conclusory statement, unsupported by any reasoning or citation to sources, that take will be in compliance with the MBTA because "[t]he proposed training will not result in a significant adverse impact on any population of a migratory bird species."

The DEIS similarly ignores and fails to evaluate the effect of the Proposed Action on bird species listed as protected by the states of Arizona and New Mexico. Rather than actually establish a baseline for the frequency and distribution of these bird species within the Project Area, the DEIS simply names them in the Appendices (DEIS App'x at L1-1 to L1-6), but the DEIS then offers the conclusory, unsupported statement that "[t]he potential impacts associated with the proposed training activities to sensitive-status species, including those listed by the states of Arizona and New Mexico, would be the same as those described in the wildlife section above." DEIS at 3-86. This conclusion is not supported and cannot be extrapolated for the many bird species present from the few studies offered, and—as discussed in more detail below—represents a violation of NEPA.

In fact, there are 85 bird species listed in Arizona as "Species of Greatest Conservation Need" and 27 bird species listed in New Mexico as "Species of Greatest Conservation Need" that live under the MOAs (not all are present in every MOA). DEIS App'x at L1-1 to L1-6. As show on the summary sheets in Appendix B, the New Mexico species are listed as either threatened or endangered under state law. Many of these are widely distributed and, although in peril from a conservation perspective, still seen frequently by and sought after by birders.

For example, the summary sheets in Appendix B show that for the period August 1, 2023 to July 31, 2024, in Cochise County under the Tombstone MOA (including expansion area), that among the Arizona Species of Greatest Conservation Need there were 438 observations of

White-eared Hummingbird (*Basilinna leucotis*), 399 observations of Grey Hawk (*Buteo plagiatus*), 462 observations of Lucifer Hummingbird (*Calothorax lucifer*), 5,140 observations of Broad-billed Hummingbird (*Cynanthus latirostris*), 2,726 observations of Arizona woodpecker (*Dryobates arizonae*), 510 observations of Grey Catbird (*Dumetella carolinensis*), 683 observations of Buff-breasted Flycatcher (*Empidonax fulvifrons*), 2,948 observations of Rivoli's Hummingbird (*Eugenes fulgens*), 4,373 observations of Yellow-eyed Junco (*Junco phaeonotus*), 4,921 observations of Blue-throated Mountain-gem (*Lampornis clemenciae*), 1,839 observations of Loggerhead Shrike (*Lanius ludovicianus*), 394 observations of Gila Woodpecker (*Melanerpes uropygialis*), 1,699 observations of Lincoln's Sparrow (*Melospiza lincolnii*), 634 observations of Abert's Towhee (*Melozone aberti*), 2,524 observations of Dusky-capped Flycatcher (*Myiarchus tuberculifer*), 592 observations of Sulphur-bellied Flycatcher (*Myiodynastes luteiventris*), 1,773 observations of Mexican Chickadee (*Poecile sclateri*), 366 observations of Vesper Sparrow (*Pooecetes gramineus*), 1,962 observations of Yellow Warbler (*Setophaga petechia*), 1,182 observations of Elegant Trogon (*Trogon elegans*), 431 observations of Thick-billed Kingbird (*Tyrannus crassirostris*), and 912 observations of Arizona Bell's Vireo (*Vireo bellii arizonae*).

That is, there were more than an average of one sighting per day of 22 Species of Greatest Conservation Need in just the Cochise County portion of the Tombstone MOA (including the expansion area) during the twelve-month period from mid-2023 to mid-2024. With more than 20 flights per day proposed for this area under the Proposed Action, it is likely that these imperiled species will be harmed by noise from the intensified military combat training activities. Yet the DEIS contains no evaluation of these impacts to these species, only conclusory statements that all impacts will be the same and unimportant.

The DEIS also states that "there are defined avoidance areas associated with Mexican spotted owl and Bald and Golden Eagle nests beneath *most* of the airspace." DEIS at 1-10 (emphasis added). However, the DEIS fails to establish the baseline with respect to these putative avoidance areas: there are no maps showing where they are, despite (for eagles at least) they appear to be keyed off the location of productive nests, which the DEIS claims would be avoided by 1,000 feet AGL *in the Sells and Ruby MOAs* only from December 15th to July 15th. DEIS at 3-76 (emphasis added). Yet the DEIS asserts that "[k]nown concentrations of eagles occur at large bodies of water throughout Arizona and New Mexico some of which occur beneath the MOAs/ATCAAs such as San Carlos Lake, San Carlos River, Salt River, Crescent Lake, and Alamo Lake." DEIS at 3-75. San Carlos Lake and San Carlos River Bald Eagle Breeding Areas are within the Outlaw MOA; Crescent Lake Bald Eagle Breeding Area is within the Reserve MOA; Alamo Lake Bald Eagle Breeding Area is within both the Bagdad and Gladden MOAs—why are there no avoidance areas for these important concentrations of eagles? And there is no further mention of any avoidance areas associated with Mexican spotted owl. *See* DEIS at 3-75 (section discussing Mexican spotted owl), 3-88 to 3-89 (describing impacts from the Proposed Action on Mexican spotted owl). Without this essential baseline information, the DEIS is inadequate for the public and DAF decisionmaker to rationally evaluate the impacts from the Proposed Action on these species.

Finally, the DEIS fails to establish the baseline for critical habitat for ESA-listed birds within the MOAs. It merely notes that critical habitat for five species (four birds and jaguar)

occurs in certain MOAs, without explaining how much there is or how that amount compares with the size of the MOAs (DEIS at 3-73). This fails to present intelligible information about the magnitude of the area in which potential impacts to these listed species could occur. In fact, there are over 1,548,430 acres of designated critical habitat for Mexican spotted owl in the MOAs, with the vast majority of the Reserve MOA being Mexican spotted owl designated critical habitat, and substantial areas of the Tombstone and Jackal MOAs also being Mexican spotted owl designated critical habitat. This failure to establish clearly where and how much critical habitat exists for ESA-listed birds makes it impossible to tell from the DEIS how pervasive such habitat is, and thus what area affected by the combat training flights could contain ESA-listed species that would be disturbed by such flights. See Figures 14-17 on the pages following for detailed maps of designated critical habitats for avian species within the MOAs.

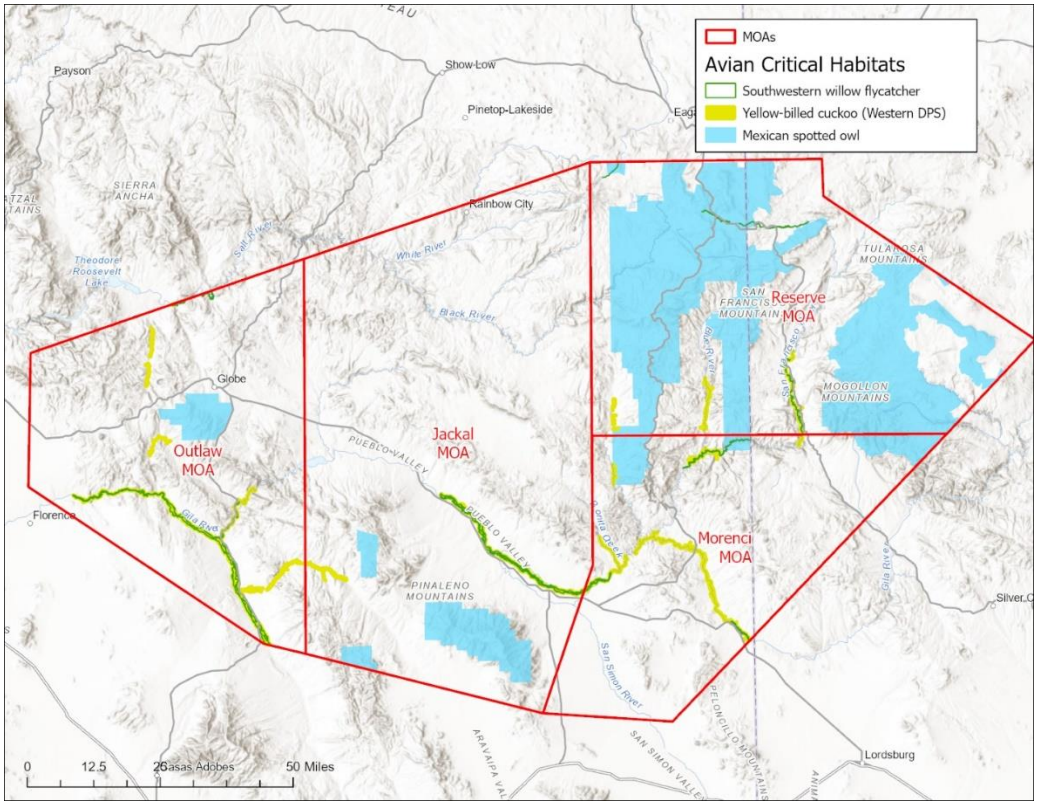


Figure 14: *Map of avian designated critical habitats within the Outlaw, Jackal, Reserve and Morenci MOAs. Map by Curt Bradley.*

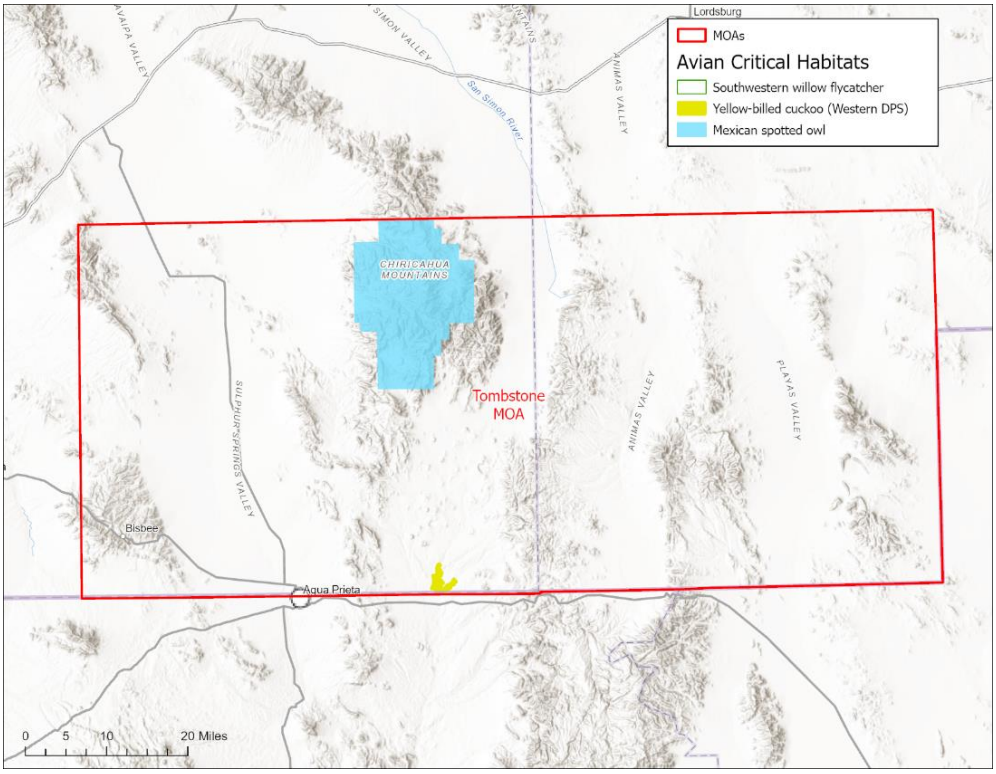


Figure 15: *Map of avian designated critical habitats within the Tombstone MOA. Map by Curt Bradley.*

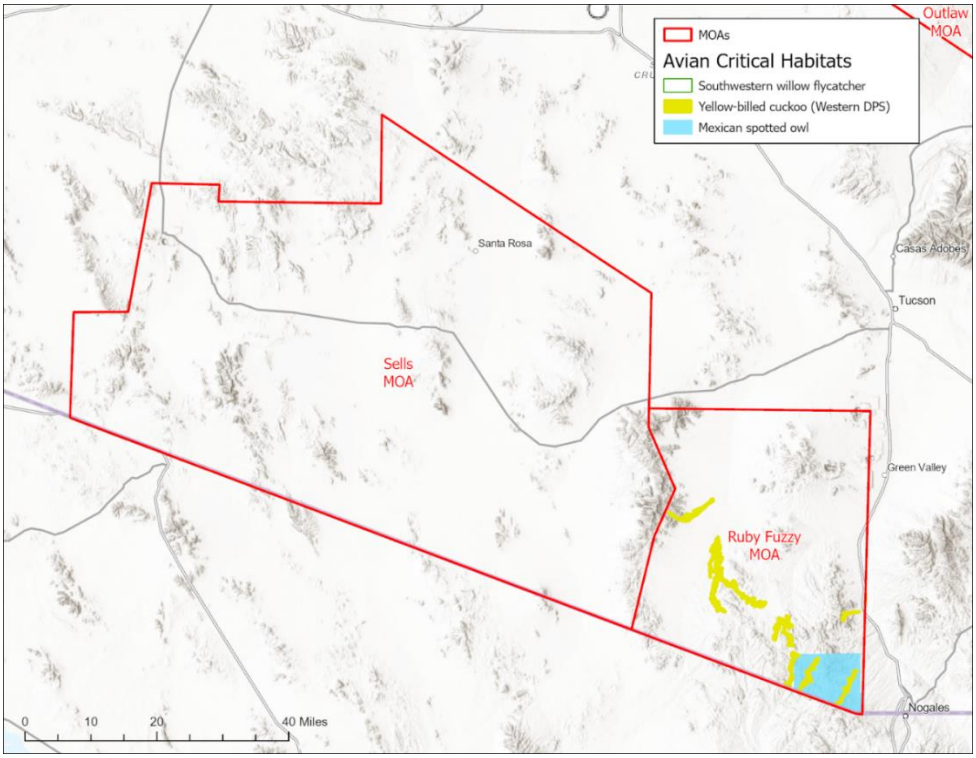


Figure 16: *Map of avian designated critical habitats within the Sells and Ruby/Fuzzy MOAs. Map by Curt Bradley.*

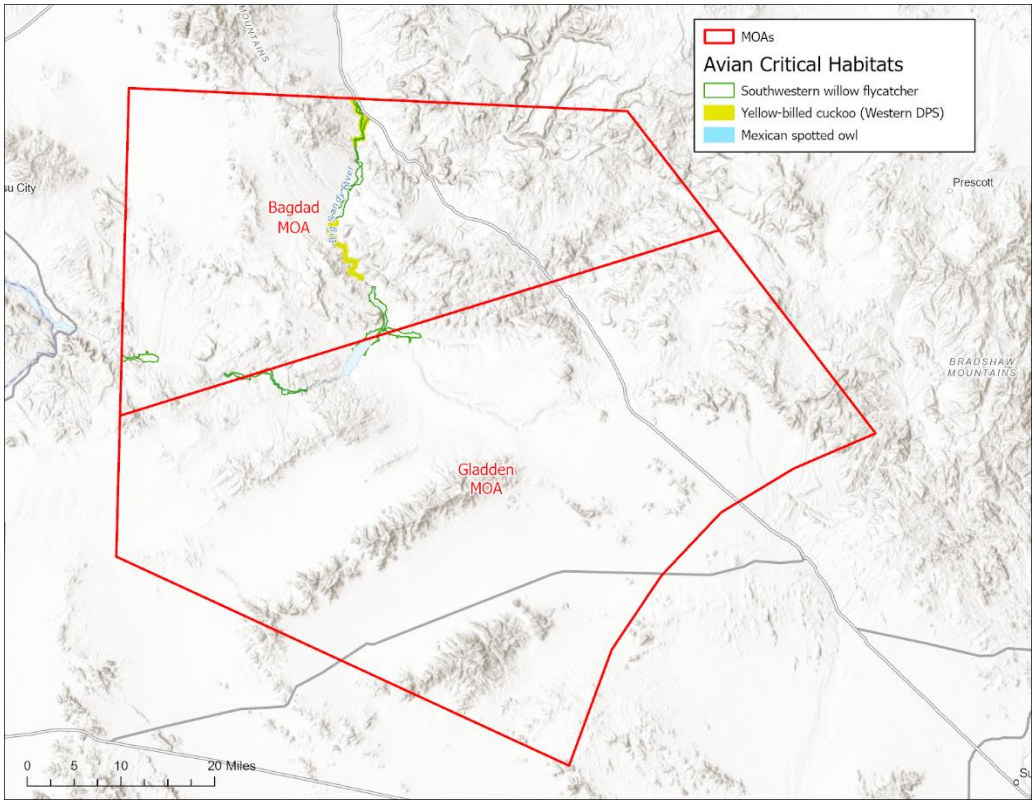


Figure 17: *Map of avian designated critical habitats within the Bagdad and Gladden MOAs. Map by Curt Bradley.*

e. <u>The DEIS fails to establish the baseline for effects of the Proposed Action on people who enjoy observing birds</u>

As noted above, the DEIS includes no baseline information at all regarding the prevalence of recreation on the lands under the MOAs that focuses on observing birds—either as birders who record their observations or others who simply enjoy birdwatching. Birding and birdwatching depend on very quiet ambient noise levels to provide a natural setting in which birds can be observed, and the quiet and solitude of the natural environment is itself a key component to the enjoyment of the activity. *See, e.g.*, DEIS at 3-92 (noting, without elaboration, that one of the recreational activities on the lands under the MOAs is "viewing . . . wildlife").

However, the publicly available eBird data described in the previous section shows that, at least, the three easternmost MOAs (Reserve, Morenci, and Tombstone) attract significant numbers of birders who have uploaded observation lists to eBird. For example, Figure 13 (*on Page 74, above*) shows that, between August 1, 2023, and July 31, 2024, within the Cochise County portion of the Tombstone MOA (including the expansion area), 2,339 unique observers made 25,739 trips ("sampling events") to observe and record birds—an average of 70.32 birding trips per day.[101] Again, this represents a small segment of the total number of recreationists who

[101] The eBird metadata defines "Sampling Event Identifier" as "[t]he unique number associated with the sampling event (eBird checklist). Each sampling event has a unique combination of location, date, observer, and start time."

depend on the quiet and beautiful Chiricahua Mountains for birdwatching (without recording their observations in eBird).

Given the Proposed Action's plan to increase the number of combat training sorties over the Tombstone MOA to 8,000 per year (about 21 to 22 sorties per day), it is almost certain that on any given day several combat training sorties will intersect with, and cause annoyance and disruption to, people who are birding and birdwatching in this area. Note also that the number of birding trips per day is higher during the spring and fall months when birds are migrating because birders will make visits to see birds that are not present year-round.

Yet the DEIS includes no baseline information regarding the number of people who recreate in the area under the MOAs for purposes of casually observing (birdwatchers) or recording counts of birds (birders). Without this baseline information, there is simply no way for the DEIS to evaluate the impacts of noise disruption on the quiet enjoyment of watching or recording counts of birds.

2. The DEIS's Analysis of the Impacts of Noise on Birds and People Who Enjoy Observing Birds is Flawed and Inadequate

a. The DEIS fails to incorporate the best available science on noise and visual impacts to birds and other wildlife.

The biological responses and ecological consequences of increased noise on wildlife can be classified into nine distinct categories, all of which can be critical to the health, viability and survival of individuals and the species population. These include: (i) physiology (stress, hearing loss/damage, immune function, gene expression); (ii) direct fitness metrics (survival, fecundity, clutch size); (iii) mating behavior (attraction, mating success, territorial behavior, pair bonding); (iv) foraging behavior (foraging rate, predation rate, hunting/foraging success); (v) movement (spatial distribution, fleeing rate, avoidance, dive pattern); (vi) vigilance; (vii) vocal behavior (call rate, intensity/amplitude, frequency shift, song length, call type, signal timing); (viii) population metrics (abundance, occupancy, settlement, density); and (ix) community-level metrics (species composition, predator-prey interactions).[102]

Shannon *et al.* (2016) explain in their review of the scientific literature that terrestrial wildlife responses begin at noise levels of approximately 40 dBA, and 20% of papers documented impacts below 50 dBA—well below the single-event noise exposure levels expected from combat aircraft training exercises. There is abundant literature about the effects of noise disturbance on wildlife. Birds in particular are susceptible to being startled and flushing from

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(Cornell Laboratory of Ornithology 2023). The number of unique Sampling Event Identifiers in the eBird database therefore represents the number of "birding trips" on which an observer observed and recorded birds. Some observers may have made multiple trips on a single day, for example when they began separate lists at different localities or at different times of the day.

[102] Shannon, Graeme & McKenna, Megan & Angeloni, Lisa & Brown, Emma & Warner, Katy & Nelson, Misty & White, Cecilia & Briggs, Jessica & McFarland, Scott & Crooks, Kevin & Fristrup, Kurt & Wittemyer, George. (2016). A synthesis of two decades of research documenting the effects of noise on wildlife. Biological Reviews. 91. 982-1005. 10.1111/brv.12207. https://www.researchgate.net/publication/279483730_A_synthesis_of_two_decades_of_research_documenting_the_effects_of_noise_on_wildlife.

their nests and feeding areas by unexpected and loud noises.[103] When animals are more severely disturbed, escape is the most common response. Perching or nesting birds may flush (fly up from a perch or nest) and circle the area before landing again. Some birds, particularly waterfowl and seabirds, may leave the area if sufficiently disturbed.[104]

Animal responses to military aircraft training exercises may vary from behavioral or physiological reactions to reductions in fitness (e.g., mortality by collision or stress-related decrease in productivity) or changes in spatial use (e.g., avoidance of certain area that may fragment or compromise the viability of populations). Studies indicate that the factors determining the probability and intensity of animal response depend on the characteristics of the disturbing agent (e.g., size, noise emitted, speed, distance, angle of approach, frequency), which affect the perception of the risk by the animal. The larger and noisier the approaching agent is, the stronger the anti-predator responses will be. Animals have also been shown to react at larger distances when the approach is faster and more directional towards them.[105]

Lawler et al. (2004)[106] documented the following concerns about military overflights and their effect on wildlife:

> "Noise from low-level and high-level military aircraft has the potential to significantly impact ambient noise levels. Of primary concern is the potential for flight activity over wildlife to cause physiological and/or behavioral reactions that reduce the animals' fitness (National Park Service [1995]). The way in which animals respond to overflights could interfere with raising young, habitat use, and physiological energy budgets (National Park Service [1995]). Effects of overflights could be either chronic or acute. Chronic stress can compromise the general health of the animal and be difficult to detect. Acute responses, such as startle and panic behavior, occur in most wildlife species evaluated at noise levels greater than 95 decibels (Dept. of Air Force 1992). Noise events of this magnitude that are produced by military jet aircraft are typically short in duration and are essentially instantaneous events (Dept of the Air Force 1992). Wildlife near and under these types of overflights are unlikely to detect them until the aircraft is above or past them. This activates the sympathetic nervous system (Moller 1978) causing a "startle" effect (Dept of Air Force 1992).
>
> "Disturbance by human activity affects wildlife by increasing the energy invested by an individual in antipredator behavior (Berger et. al. 1983). Both predation and disturbance can indirectly affect population dynamics by increasing energy costs. Costs may include 1) escape behavior (running or moving to different areas), 2) reduction in foraging efficiency by increasing vigilance behavior or by forcing individuals to use habitats in

[103] National Park Service (NPS). 1995. Report on Aircraft Overflights on the National Park System. United States Department of the Interior, National Park Service, July 1995.
[104] *Ibid.*
[105] Mulero-Pázmány, Margarita & Jenni-Eiermann, Susanne & Strebel, Nicolas & Sattler, Thomas & Negro, Juan & Tablado, Zulima. (2017). Unmanned aircraft systems as a new source of disturbance for wildlife: A systematic review. PLOS ONE. 12. 10.1371/journal.pone.0178448.
[106] Lawler, J., Griffith, B., Johnson, D. and Burch, J. 2004. The effects of military jet overflights on Dall's sheep in interior Alaska. The National Park Service, Alaska Region, Fairbanks, Alaska, USA.

which safety is greater by forage quantity and quality are reduced, 3) interruption of maintenance activity such as feeding or ruminating, 4) increased exposure to natural predators, and 5) higher heart and metabolic rates. These costs could reduce reproductive success of individuals and lead to population declines."

The additional stresses related to the greatly increased and expanded military operations proposed in the DEIS are likely to have severely detrimental effects on individual wildlife, threatening their very persistence on some of the most bird and other wildlife habitat left in the southwestern United States. If it does not simply drop the proposal, DAF must further analyze the potential noise and visual impacts to birds and other wildlife and analyze the best available science on these subjects in a supplemental draft EIS.

b. The DEIS's analysis of noise impacts to birds is flawed and inadequate.

"Wildlife includes all animal species (invertebrates, fish, amphibians, reptiles, birds, and mammals) with the exception of those identified as special-status species. These groups all perceive noise disturbances differently" (DEIS at 3-68). With respect to birds, the DEIS states that "that species differ in their response to various types, durations, and sources of noise," and that "it is difficult to generalize animal responses to noise disturbances across species and more work is needed to determine if noise adversely impacts wildlife" (DEIS at 3-77). And yet the DEIS's analysis of impacts to birds makes some categorical, unsupported statements indicating that impacts from combat aircraft training will not be significant (DEIS at 3-81 to 3-82). This does not constitute a "hard look" at the impacts from the Proposed Action on birds.

The DEIS discusses studies of noise impacts to zebra finches—an Australian species that does not occur in southeastern Arizona and southwestern New Mexico (DEIS at 3-81). It also discusses a study of noise impacts to ovenbirds— a species that breeds in the eastern United States and is rarely found in southeastern Arizona and southwestern New Mexico, and in any event is only one of the over 500 species of birds that have been observed and recorded in the Reserve, Morenci, and Tombstone MOAs (DEIS at 3-81); *see* discussion below of frequency of species observation in those MOAs. The studies cited involving raptors, Mexican spotted owl, and waterfowl at least involved some species that are regularly found within the MOAs at issue, but the DEIS discussion of these studies focuses narrowly on conclusions regarding whether there appeared to be permanent physiological damage or population-level effects (DEIS at 3-81 to 3-82). Such data would be almost impossible to collect, particularly regarding physiological damage to individual birds or groups of birds—and in fact none of the studies appear to have involved sufficiently long observational timeframes to make this determination.

The DEIS's cursory analysis of noise impacts to birds relies heavily on annual average noise values. (DEIS at 3-79, describing average annual DNL throughout MOAs and dBC CDNL associated with sonic booms). But birds, and those who seek quiet locations to observe and record them, do not experience annual averages: they experience single-event noise. The analysis at DEIS 3-81 to 3-82 gives short shrift to the potential for noise impacts to birds from the increased number of sorties, lower elevations authorized (for subsonic and supersonic)—despite having described a few pages earlier the "possibility that a location would be subjected to a low-level overflight and animals beneath such a flight would experience a high level of intermittent noise" that could be as high as 131 dB for a fraction of a second (DEIS at 3-79).

Stating that different birds respond differently to aircraft noise, and then trying to generalize impacts from a few studies of specific species, violates NEPA. *Wash. v. U.S. Dep't of the Navy*, 2021 WL 8445582, at *8–9. Merely listing the species that may exist within the MOAs, as the DEIS and its appendix do, without actually analyzing impacts to those species, also violates NEPA's "hard look requirement." *Id.*; *see also Nat'l Audubon Soc'y v. Dep't of the Navy*, 422 F.3d 174, 192–93 (4th Cir. 2005) (EIS was inadequate where the Navy summarized scientific literature in a "cursory" fashion, concluding that impacts would be "minor"—all while repeatedly contending that impacts would be species-specific).

In addition, as noted above, the DEIS misleadingly includes in the text only one "extreme scenario" of an F-16 flight at 100 feet that produces a noise of 131 dBA (DEIS at 3-79). But, in fact, because birds will begin to react to noises as quiet as 40 or 50 dBA,[107] which can cause them to startle (and do the same to any human observing them), the DEIS fails to provide information upon which to evaluate the impacts of noise on birds in the very quiet ambient noise areas that predominate in the MOAs. The tables and charts in Appendix J show that, even 5,000 feet laterally from the overflight point, the noise generated by the combat training flights will still be between 70 and 97 dBA, and no information is offered of noise impacts beyond the 5,000-foot lateral area except what can be gleaned from the three appendix charts that show that, for example, a 10,000 feet AGL F-16 flight produces noise levels about 50 dBA at least six miles away (DEIS Appendix J at J-43 to J-46). Because the DEIS fails to establish the baseline of affected birds, and fails to analyze the impacts of the broadly noisy effects of the combat training overflights *during individual sorties*—when birds actually experience the noise—the DEIS's noise impacts analysis is flawed.

The text of the DEIS describes only the "extreme scenario" in which an animal could experience peak noise level as high as 131 dB for 1/8 of a second (DEIS at 3-79). But tables discussed in the noise analysis, and charts provided in Appendix J, show that there are many more situations in which birds and other wildlife are likely to be exposed to single-event noise that far exceeds the thresholds at which they will react to aircraft, as will be discussed in the next section.

For example, the "extreme scenario" of a 100 feet AGL F-16 flight produces noise levels above 50 dBA as far as *five miles* from the point over which the overflight occurs (DEIS Appendix J at J-44). The DEIS improperly minimizes and fails to disclose the actual potential impact from a 100-foot AGL overflight. Similarly, an overflight at 500 feet AGL F-16 flight produces noise levels above 50 dBA nearly two miles from the overflight point, and a 10,000 feet feet AGL F-16 flight produces noise levels about 50 dBA at least six miles away [108] (DEIS Appendix J at J-45 to J-46). The noise tables for all three aircraft (F-16s, F-35s, and the obsolete

[107] Shannon, Graeme & McKenna, Megan & Angeloni, Lisa & Brown, Emma & Warner, Katy & Nelson, Misty & White, Cecilia & Briggs, Jessica & McFarland, Scott & Crooks, Kevin & Fristrup, Kurt & Wittemyer, George. (2016). A synthesis of two decades of research documenting the effects of noise on wildlife. Biological Reviews. 91. 982-1005. 10.1111/brv.12207. https://www.researchgate.net/publication/279483730_A_synthesis_of_two_decades_of_research_documenting_the_effects_of_noise_on_wildlife.

[108] The noise band in the chart for 10,000 feet AGL overflights only goes down to about 60 dBA at roughly 5.75 miles from the overflight point, making it likely that the 50 dBA noise threshold would not be reached until substantially more than six miles from the overflight point. (DEIS Appendix J at J-46).

A-10s) show that, at 5,000 feet laterally from the overflight point, the aircraft will produce at least 70 to 97 dBA of noise whether flying at 100, 500, or 10,000 feet AGL (DEIS Appendix J at J-43). And, except for the charts that show some information on effects beyond 5,000 lateral feet, no information is offered to show precisely how far away from the overflight points the aircraft will generate the 40 or 50 dBA that trigger wildlife responses. The sparse data that the DEIS does provide reflects data from scientific literature finding that aircraft noise is spatially extensive and is audible for longer in areas with low noise exceedance, likely because low ambient sound levels make it easier to hear all sounds.[109]

The DEIS recognizes that noise from its low-level combat training flights would be "annoying or startling to a person or wildlife," particularly in the very quiet areas that make up the overwhelming majority of the land under the MOAs (DEIS at 3-106). DAF claims that such flights "would be rare" (DEIS at 3-106).

But this is belied by the data presented in the DEIS: The noise data showing that an F-16 flying at 10,000 feet AGL would produce noise of at least 50 dBA at least six miles away (DEIS Appendix at J-46), and the model input data showing that, under the Proposed Action, F-16s are modeled to operate lower than 10,000 feet AGL at least 25% of the time in Ruby/Fuzzy MOA, 10% of the time in Morenci MOA, 5% of the time in Reserve MOA; while A-10s are modeled to operate below 10,000 feet AGL 50% of the time in the Morenci MOA and below 5,000 feet AGL 40% of the time in the Tombstone MOA (with another 30% of the time between 5,000 and 15,000 feet AGL); and F-35s are modeled to spend 15% of their time below 10,000 feet in the Morenci MOA, 15% of their time below 10,000 feet in the Reserve MOA, and 15% of their time below 5,000 feet in the Tombstone MOA (with another 50% of the time between 5,000 and 20,000 feet AGL). These statistics are provided in the DEIS appendices on a confusingly unnumbered page in the document in the section entitled "MODEL INPUT DATA" following page J-52 in the appendices.

Given the plan for 8,000 annual sorties in the Tombstone MOA (with expansion) and 4,050 sorties annually in the Reserve/Morenci MOAs over the Gila region (DEIS App'x at J-22), read together with the data cited in the previous paragraph, it appears that at least 3,500 flights in Tombstone MOA and at least 450 flights in the Morenci/Reserve MOA would involve time at or below 10,000 feet, generating noise above 50 dBA laterally for several miles. This is nearly ten flights per day in the Tombstone MOA and at least one flight per day in the Morenci/Reserve MOA—hardly rare events. The DEIS recognizes that sound exposure throughout the Tombstone MOA would be at least an annual average of 53.6 dBA DNL (DEIS App'x at J-24), with single-event noise levels ranging from 70 to 97 dBA.

The DEIS does not actually analyze the impacts of loud, single-event noises caused by each of its sorties on birds, merely listing which special status birds might be present in which MOAs and offering a few anecdotal studies (including two involving species that are not present in Arizona or New Mexico). Its flight data does not support its conclusion that loud noise events will be rare. Especially where the FAA has specified that the 65 dB DNL standard does <u>not</u> apply to "areas of extreme quiet"—the most important for birds and birders alike, and which constitute

[109] Lynch, E., Joyce, D. & Fristrup, K. 2011. An assessment of noise audibility and sound levels in U.S. National Parks. Landsc. Ecol. 26: 1297–1309.

the vast majority of the land under the MOAs—the agency has an obligation to establish an accurate baseline of the ambient noise levels and evaluate how noise from increased numbers of flights and lower floors for subsonic and supersonic combat training flights will affect those areas of extreme quiet.

But the DEIS offers neither an accurate baseline, nor any analysis, relevant to the "areas of extreme quiet" that predominate in the areas under the MOAs. It expressly disclaims that the "modeled estimates for single event metrics, which describe the noise an observer would experience during an actual aircraft overflight. . . . are not significance indicators but rather provide supplemental information to the public, stakeholders, and decision-makers" (DEIS at 3-29). It is illogical and a violation of NEPA to rely on annual average sound calculations when neither birds, birders, or other wildlife and recreationists experience noise on an average annual basis, and when DAF actually has data related to single noise events that actually reflect real world conditions for each sortie and each aircraft/environment interaction. The DEIS never explains why it considers its annual average noise metrics to be a reliable methodology for evaluating the impacts of the noise from each of its sorties on the human and natural environment that its combat training aircraft affect.

c. The DEIS's analysis of noise impacts to threatened and endangered bird species is flawed and inadequate and do not serve as a "Hard Look" at this issue.

The DEIS describes eight species of birds that will be affected by the Proposed Action which are listed as threatened or endangered under the ESA, four of which have designated critical habitat within the Project Area (DEIS at 3-71, 3-73). But the DEIS provides no data regarding where these bird species are likely to be found, or where their critical habitat occurs. Instead, it offers generalities that do not represent a hard look at the noise impacts that the combat training flights are likely to cause to the species.

eBird data again provides some context about the likely noise impacts to the most imperiled bird species in this region. Although the eBird data set obscures locations and data for Mexican spotted owl because of the great risk to the species from humans for capture or targeting, data is available regarding observations of yellow-billed cuckoo and southwestern willow flycatcher. The following Table (Figure 18) shows that it is not unusual for a birder to observe these protected species while birding in the Cochise County section of the Tombstone MOA.

Observations of Threatened and Endangered Birds
Cochise County - Tombstone MOA

Yellow-billed Cuckoo (*Coccyzus americanus*)

Year	No. of Observations
2019-20	26
2020-21	21
2021-22	25
2022-23	101
2023-24	16

Southwestern Willow Flycatcher (*Empidonax traillii extimus*)

Year	No. of Observations
2019-20	33
2020-21	81
2021-22	51
2022-23	71
2023-24	108

Figure 18: *Observations of Yellow-billed Cuckoo and Southwestern Willow Flycatcher in Cochise County portion of Tombstone MOA – 2019-2024. Source: Cornell Laboratory of Ornithology, 2024.*

For example, between August 1, 2023 and July 31, 2024 in the Cochise County section of the Tombstone MOA (including the proposed expansion), there were 108 birder outings on which a southwestern willow flycatcher was observed, and 16 on which a yellow-billed cuckoo was observed. Averaged over a year, this is roughly one observation every three days. With 8,000 total sorties over the Tombstone MOA planned, there will be roughly 22 sorties per day—of which roughly half, based on the data in the DEIS described above, will generate noise of at least 50 dBA laterally for several miles. Given that the number of observations in eBird is a small subset of both the abundance of the species and of the less obsessive birdwatching focused on this species, the chances that a member of these species is likely to be subject to noise that causes it to startle or flush are fairly high.

The DEIS recognizes that "[n]oise disturbance, particularly from recreationists is listed among the threats to southwestern willow flycatcher" and that "[t]he same potential for disturbance applies to yellow-billed cuckoo," acknowledging also that birds will "run, fly, or crowd in the presence of a sonic boom" (DEIS at 3-88). Although (as described above) the data in the DEIS shows that there will be frequent exposure to noise of at least 50 dBA (where startle effects from noise disturbance begin to occur) throughout the Tombstone MOA, and moderately frequent exposure to such levels in the Reserve/Morenci MOA, the DEIS offers conclusory and unsupported statements that, while "increases in noise levels are expected to occur as a result of the Proposed Action," those levels would "remain generally low"—not true given the data and the very quiet ambient noise levels—and be "episodic rather than chronic" (DEIS at 3-88). But

the DEIS never analyzes the significance of these episodic, and quite frequent, loud noises on these two species.

While the DEIS claims that there is a "low likelihood of a direct overflight" (DEIS at 3-88), the noise data in the DEIS and appendices show that noise of at least 50 dBA is likely to occur up to six miles laterally when overflights occur at 10,000 feet AGL—and the DEIS never analyzes the likelihood of this effect occurring when it focuses myopically on "direct" overflights. In addition, because it has neither mapped the location of nests for ESA-listed species, nor mapped their designated critical habitat, the Air Force has no basis from which to determine how many overflights ae likely to be "direct" and thus no basis for its conclusion that the likelihood of this happening is "low." The DEIS offers no support for its conclusion that the effects of "direct" overflights will be minor, and, without evaluating the effects of noise spreading out beyond the direct overflight route, the DEIS's discussion of noise impacts to southwestern willow flycatcher and yellow-billed cuckoo is inadequate. As illustrated above in the critical habitat maps at Figures 14–17, extensive critical habitat for one or both species is present in the Bagdad, Ruby/Fuzzy, Outlaw, Jackal, Morenci, and Reserve MOAs—virtually guaranteeing that these species will be subject to overflight noise and disturbance in those MOAs

The glaring error in the DEIS's discussion of combat aircraft training impacts to Mexican spotted owl is how it hides the ball about the magnitude of the species's critical habitat that will be affected by noise from the Proposed Action. More than 1.5 million acres of critical habitat occurs in the MOAs, with most of the area under the Reserve MOA being designated critical habitat. No information is offered regarding the abundance of owls or where they concentrate; there is no data or information presented regarding the casual reference to "avoidance" areas for Mexican spotted owl nests that is mentioned at page 1-10 and then never again discussed in the DEIS. There is no baseline presented against which to compare effects, which is concerning given the number of flights that are likely to generate noise greater than 50 dBA over wide areas with noise levels as high as 70 to 97 dBA within 5,000 feet of the flight path.

The studies discussed in the DEIS do not directly address these likely impacts; noise impacts from helicopters are not directly comparable to impacts from combat aircraft overflights (DEIS at 3-81, 3-88 to 3-89). However, another study showed that, at intermediate power settings during 25-second F-16 fly-bys, 42.8 percent of owls showed a low response and 28.6 percent of owls showed an intermediate response, while at the higher power setting, 28.6 percent of owls showed low response and 42.8 percent of owls showed an intermediate response.[110] Although the owls did not flush from their nests (explicable perhaps because their overarching priority is protecting the young therein), the heightened alertness during critical nesting periods suggests that there could be a long-term cost that may not be immediately visible. While immediate disruptions might appear minimal, the cumulative stress over multiple nesting seasons could compromise long-term reproductive success and survival. Of note is that the elevation of overflights in this study monitored overflights at 460 meters (1509 feet)—more than three times higher than the 500-foot floor in the DEIS and 15 times higher than DAF's proposed 100-ft elevation flights. Generalizations from studies that are not directly applicable, without

[110] Johnson, C., Reynolds, R. 2002. Responses of Mexican Spotted Owls to Low-flying Military Jet Aircraft. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. January 2002.

establishing an accurate baseline or analyzing the actual likely effects of the Proposed Action, does not satisfy NEPA.

d. The DEIS fails to adequately analyze impacts to golden eagles and bald eagles protected under the Bald and Golden Eagle Protection Act and Migratory Bird Treaty Act.

The DEIS provides an overly general, cursory review of direct and indirect effects to golden eagles and other raptors. It does not meet the standard for a properly developed environmental impact statement under NEPA. Some of these direct effects include increased noise (including subsonic and sonic booms) and direct mortality. Bald eagles (*Haliaeetus leucocephalus*) and golden eagles (*Aquila chrysaetos*) are protected under the Bald and Golden Eagle Protection Act (BGEPA) and the MBTA. The DEIS claims in passing that DAF purportedly maintains avoidance areas around Bald and Golden Eagle nests in "most of the airspace" (DEIS at 1-10), for which no map or other actual detail is presented, except to later offer the tantalizing detail that such avoidance areas occur only in the Sells and Ruby MOAs (DEIS at 3-76). However, no data is presented about where Bald and Golden Eagle nests exist within the MOAs; several designated Bald Eagle Nesting Areas appear not to have avoidance areas for overflights; and no analysis is offered regarding how likely it is that eagles will be affected by the proposed combat aircraft training or what the magnitude of those effects will be.

Instead, a conclusory statement is offered based on a single study that found that, after military jet overflights and mid-to-high-altitude sonic booms, "[r]e-occupancy and productivity rates were within or above expected values for self-sustaining populations" (DEIS at 3-81). However, that study (Ellis, 1981)[111] did find that the birds observed were noticeably alarmed by the noise stimuli (82–114 dBA). Even these brief reactions can have detrimental effects on individual birds, a consideration the DEIS fails to consider in generalizing about population effects. And the source the DEIS cites for the statement that "most raptors did not show a negative response to overflights, DEIS at 3-81 (citing Manci 1988)[112] noted that low-altitude jets and sonic booms (82-114 dBA) produced "noticeably alarmed" responses in eagles, and that the sudden appearance of helicopters in another study would produce panic, frantic escape behavior (Manci 1988). Without evaluating the effects of single event noise on individual birds, there is no basis for the DEIS's conclusion that there will be no take of Bald and Golden Eagles from the Proposed Action.

e. The DEIS's analysis of noise impacts to birders and birdwatchers is nonexistent and the general analysis of noise impacts fails to evaluate the impacts of single-noise events on people engaged in birding and birdwatching.

The DEIS does not establish the baseline of the number and scope of people who engage in birding and birdwatching in the MOAs. Unsurprisingly, therefore, it contains no analysis of

[111] Ellis, D.H. 1981. Responses of raptorial birds to low level military jets and sonic booms. Results of the 1980-1981 Joint USAF–USFWS Study. Natl. Tech. Infor. Serv., Springfield, Virginia.
[112] Manci, K., Gladwin, D., Villella, R. and Cavendish, M. 1988. Effects of Aircraft Noise and Sonic Booms on Domestic Animals and Wildlife: A Literature Synthesis. U.S. Fish & Wildlife Service, National Ecology Research Center, Fort Collins, Colorado. June 1988.

the impact of the noise from its Proposed Action on people engaged in these activities, which are affected by the increased noise and startling/annoying effects of each sortie. Because the impacts to birders and birdwatchers comes from the effects of these single-noise events, the annual average DNL figures cited do not capture the impacts that loud, sudden noise will cause to birders and to the birds they are trying to observe.

As described above, the three easternmost MOAs (Reserve, Morenci, and Tombstone) attract significant numbers of birders. As shown in Figure 13 above, within the Tombstone MOA (including the expansion area), 7,529 unique observers made 117,865 visits ("unique sampling events") to observe and record birds between August 1, 2019 and July 31, 2024—an average of 23,573 visits per year, or about 65 birding visits per day on average. This represents a small segment of the total number of recreationists who depend on the quiet and beautiful Chiricahua Mountains and other areas under the MOA (such as the Whitewater Draw Wildlife Area, Cochise Stronghold, and the Hachita Mountains) for birdwatching (without recording their observations in eBird). But it also represents a quantifiable baseline of affected recreationists who depend on quiet ambient sound levels to be able to observe birds without the birds startling or flushing (and without themselves being startled by a sonic boom or low elevation combat aircraft swooping overhead)—a group of recreationists who DAF completely ignored in its DEIS.

The Reserve and Morenci MOAs are also important areas for birders, although they do not attract the same numbers as do the lands beneath the Tombstone MOA. During the August 1, 2019 to July 31, 2024 period, 881 unique observers made 6,508 visits to observe and record birds in the lands under the Reserve MOA—an average of 1,302 visits per year, or roughly four per day, with concentrations of birding activity around Big Lake, Crescent Lake, Luna Lake, the Glenwood Fish Hatchery, the Catwalk Recreation Area, the town of Reserve, and National Forest and Bureau of Land Management campgrounds. During the August 1, 2019 to July 31, 2024 period, 456 unique observers made 3,414 visits to observe and record birds in the lands under the Morency MOA—an average of 682 visits per year, or roughly two per day, with concentrations of birding activity around the San Francisco River, the Duncan Birding Trail and other areas near Duncan, AZ, the Gila Box Riparian National Conservation Area, and National Forest campgrounds.

Because the number of birders and birdwatchers who visit the very quiet lands under the MOAs to engage in this type of recreational activity is substantial, the DEIS should have established the baseline and then analyzed how the single event noise would disturb and annoy (if not outright thwart) people who are trying to observe birds.

In addition, the DEIS ignores impacts to areas of significant avian presence and bird enthusiast visitation that are near the MOAs, and affected by combat training flights within the MOAs. Although just outside the boundaries of the Reserve MOA, the Gila Cliff Dwellings and forks of the Gila River nearby are also important and often-visited areas for birdwatchers and birders (and, of course, other people seeking quiet recreation opportunities). The 2016 Gila Cliff Dwellings National Monument Foundation Document describes that 148 bird species have been documented within the Monument, considered to be "extremely diverse" given the Monument's small size. Mexican Spotted Owls may nest within the Monument, which hosts Peregrine Falcon,

Bell's Vireo, and Common Black Hawk, species listed as threatened by the state of New Mexico.[113]

Among the "threats" to the "setting and natural resources" of the Gila Cliff Dwellings, the Park Service included "[a]ircraft overflights above the monument *and surrounding wilderness*, mainly by military aircraft, impact natural ambient sound levels," acknowledging that noise from combat aircraft operations over the Gila Wilderness within the Reserve MOA would spill over to the Monument at levels that would disrupt the quiet natural ambient sounds of that area (emphasis added).[114] Under threats to Wilderness, the Park Service again recognized that "[a]n increase in aircraft overflights could lessen visitors' perception of the remoteness and wildness of the area, as well as degrade the natural soundscape."[115] And DAF is proposing an increase of nearly 20% in the combat aircraft overflights authorized over the Gila Wilderness, to 4,050 per year (or an average of 11 per day, and roughly two more per day than current), while claiming that this will not have a significant effect on the enjoyment of birdwatching and other quiet recreation in the affected areas, a claim that is belied by the National Park Service's threat analysis for the Gila Cliff Dwellings National Monument. DAF should evaluate the "spill-over" noise impacts to important birding areas outside the boundaries of the MOAs.

f. The DEIS analysis of the potential impact from bird strikes is inadequate.

The DEIS offers a cursory analysis of the potential impact from bird strikes, focusing only on strikes as a "safety concern" for aircraft, and not as a threat to birds (DEIS at 3-14 to 3-15). But the DEIS presents almost no data regarding the number of bird strikes that have occurred under the current operations (i.e. the no action alternative), and there is no data provided in the appendices regarding bird strikes. The entire discussion of bird strikes includes not a single citation to any source for the statements made about avian behavior and flight levels (*See* DEIS at 3-14 to 3-15, 3-19, 3-78). This is inadequate to inform the public of the risk of bird strikes and how it might affect birds throughout the MOAs given the low elevation flights that the Proposed Action would authorize. Simply requiring pilots "to follow applicable procedures outlined in their installation's BASH Plan" does not constitute a valid NEPA analysis of the consequences to birds of the Proposed Action (See DEIS at 3-19, 3-78).

Nor is there any data offered to support the statement that "[l]owering the floor of some MOAs in the region would not mean more low-altitude training would occur overall, but rather this training could be accomplished in other locations throughout the region. As such, the overall potential for BASH would not be anticipated to be statistically different with implementation of any of the alternatives and no additional impacts are anticipated" (DEIS at 3-19). The DEIS provides no information on how many flights at each altitude level are actually being proposed – merely the authorization of far lower flight levels than currently allowed, with higher elevation flying being recognized as a way to avoid bird strikes.

The DEIS recognizes that aircraft strikes are a threat to birds: "[a]ircraft may encounter birds at higher altitudes," "[m]igratory waterfowl (e.g., ducks, geese, and swans) are the most

[113] National Park Service (NPS). 2016. Foundation Document, Gila Cliff Dwellings National Monument. June 2016.
[114] *Ibid.*
[115] *Ibid.*

hazardous birds to low-flying aircraft because of their size and their propensity for migrating in large flocks at a variety of elevations and times of day," "strikes involving raptors result in the majority of Class A and Class B mishaps related to bird aircraft strikes. The vast mountainous terrain beneath the training airspace used by Arizona aircrews is subject to bird activity" (DEIS at 3-14 to 3-15).

Yet the only piece of data offered is that "[f]rom 2000–2019, the reported Class A mishaps across all Air Force locations worldwide resulting from bird strikes were 34" (DEIS at 3-15). This says nothing about the *total* bird strikes that have occurred within the MOAs evaluated in this DEIS, nor anything about Class B mishaps, nor even anything about Class A mishaps within these MOAs. That baseline information is critical to understanding how existing operations are killing birds via aircraft strikes, and for the agency to disclose to the public and evaluate the likelihood of increased bird mortality from being hit by combat training aircraft under the increased-sortie, lower-flight-level scenarios contemplated by the Proposed Action.

As the DEIS recognizes, there also are significant differences in the risk of bird mortality due to aircraft strikes in MOAs with significant waterfowl presence. But, since the DEIS includes no information about the prevalence of any species of bird, it cannot offer any insight into where or how many waterfowl and other riparian species are likely to be killed in collisions with combat aircraft. The DEIS seems to recognize that during migration the risk to all species increases as they fly higher and in dense flocks, noting that migratory flights of up to 3,000 feet AGL will regularly occur—far above the flight floors authorized in the Proposed Action (DEIS at 3-15). It notes that "[t]he vast mountainous terrain beneath the training airspace used by Arizona aircrews is subject to bird activity" and that "[t]he potential for bird aircraft strikes is greatest in areas used as migration corridors (flyways) or where birds congregate for foraging or resting (e.g., open water bodies, rivers, and wetlands)" (DEIS at 3-15). But then the DEIS fails to quantify or even evaluate the number of birds that are likely to be killed by aircraft strikes under the Proposed Action.

The DEIS also neglects to include the potential impact of aircraft strikes on federally listed species such as the Mexican spotted owl, yellow-billed cuckoo, or southwestern willow flycatcher that are present throughout the Tombstone MOA, the Gila River Corridor, and in the Gila Wilderness. An aircraft killing or injuring one of these birds would constitute unlawful take under the ESA, yet the DEIS completely fails to address this issue. DAF must prepare a supplemental draft EIS to disclose the necessary baseline data to allow an accurate evaluation of the risk to birds from being struck by aircraft.

K. The DEIS Fails to Adequately Analyze Foreseeable Impacts to Wildlife.

Anthropogenic noise is an increasingly pervasive threat to wildlife around the world. In about two-thirds of U.S. protected areas, sound levels are double the background level due to

noise pollution, surpassing levels known to disrupt wildlife behavior, fitness, and community composition.[116]

In a comprehensive review of two decades of scientific literature on the effects of noise on wildlife, Shannon *et al*. (2016) found that terrestrial wildlife responses commonly begin at noise levels of approximately 40 dBA, and 20% of papers documented impacts below 50 dBA—well below the levels expected from aircraft training exercises.[117] The DEIS admits that the Proposed Action would allow for peak noise levels of 131 dB for 100-ft AGL flights, and 92 dB for 10,000-ft MSL flights, far exceeding the well-established levels of responses detected in Shannon et al.'s review of scientific literature on the topic, yet it brushes off impacts to most species without analysis. This is inadequate.

A wealth of scientific literature shows significant impacts to wildlife from military overflights and other forms of noise pollution. Scientists have established that noise doesn't just affect individual species but can have cascading effects on the entire ecosystem. Senzaki et al. (2020) found that noise pollution from human activities altered species richness and abundance, affecting not just birds but also other species in the community. [118] Noise from overflights and sonic booms could lead to broader ecological consequences, disrupting predator-prey dynamics and altering habitat use by multiple species. The DEIS makes no mention of any of this and chronically omits the best available science examining the impacts of noise on wildlife.

The DEIS continually suggests that because wildlife in the Affected Environment exist in areas where military aircraft already fly, that this somehow proves that wildlife are not being affected by aircraft training activities. However, the DEIS provides no data to support the notion that adverse impacts are not occurring to these wildlife populations or even whether those populations are stable or in decline to support this.

While studies regarding each specific landscape and each of the threatened and endangered species within the MOAs have not been conducted, we can look to the findings of other similar animals that have been better studied. For example, Maier et al. (1998)[119] established that caribou experienced behavioral disruptions during low altitude military overflights from A-10, F-15 and F-16 jets (older models that are significantly less noisy than the F-35 jets that will be commonly used in the MOAs based on the Proposed Action). The study showed that caribou subjected to overflights during post-calving periods were more active and

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[116] Buxton, Rachel & McKenna, Megan & Mennitt, Daniel & Fristrup, Kurt & Crooks, Kevin & Angeloni, Lisa & Wittemyer, George. (2017). Noise pollution is pervasive in U.S. protected areas. Science. 356. 531-533. 10.1126/science.aah4783.

[117] Shannon, Graeme & McKenna, Megan & Angeloni, Lisa & Brown, Emma & Warner, Katy & Nelson, Misty & White, Cecilia & Briggs, Jessica & McFarland, Scott & Crooks, Kevin & Fristrup, Kurt & Wittemyer, George. (2016). A synthesis of two decades of research documenting the effects of noise on wildlife. Biological Reviews. 91. 982-1005. 10.1111/brv.12207. https://www.researchgate.net/publication/279483730_A_synthesis_of_two_decades_of_research_documenting_the_effects_of_noise_on_wildlife.

[118] Senzaki M, Kadoya T, Francis CD. 2020 Direct and indirect effects of noise pollution alter biological communities in and near noise-exposed environments. Proc. R. Soc. B287: 20200176. http://dx.doi.org/10.1098/rspb.2020.0176.

[119] Maier, J., Murphy, S., White, R., & Smith, M. (1998). Responses of Caribou to overflights by low-altitude jet aircraft. *Journal of Wildlife Management*, 62, 752-766. https://doi.org/10.2307/3802352.

moved farther than caribou not subjected to overflights. Harrington and Veitch (1992) reported that females exposed to overflights were more likely to lose their calves.[120] Caribou, like all species of deer and elk, are members of the Cervidae family and are likely to have similar stress responses to mule deer, white-tailed deer and elk. The DEIS did not consider these studies, or many other relevant studies in its flawed and incomplete analysis.

The DEIS continually suggests that immediate responses to military overflights and noise pollution might seem tolerable or short-lived. However, the cumulative effects on behavior, physiology, and habitat use have not been adequately analyzed. These cumulative effects may pose significant risks to long-term wildlife survival. Even small, repeated disturbances can have cascading effects, particularly in sensitive or endangered species like the Mexican spotted owl and Sonoran pronghorn, ultimately leading to population declines. Additional analysis is needed to determine the cumulative effects of the Proposed Action. DAF has already admitted that the science is lacking; this underscores the need for comprehensive studies to occur before the Proposed Action is allowed to move forward.

The additional stresses related to the greatly increased and expanded military operations proposed in the DEIS are likely to have severely detrimental effects on wildlife, threatening reproduction and survival. DAF has failed its obligations to adequately assess impacts to wildlife in this DEIS and omitted much of the best available science.

1. **The DEIS arbitrarily excludes reptiles, small mammals and other wildlife from analysis.**

The flaws in the DEIS analysis of impacts to wildlife are evident from the beginning of the "Natural Resources" Section. Page (3-68) of the DEIS states: "Due to the nature of the Proposed Action, and the fact that no ground disturbance would occur under the airspace, no effects to reptiles, small mammals (except bats), amphibians, fish, and invertebrates, or their associated habitats are anticipated." The DEIS then categorically excludes these species from analysis in the "wildlife" section. This is arbitrary, unscientific, and contradicted by evidence in the record.

USFWS has already expressed a high likelihood of the Proposed Action impacting a wide range of species, including reptiles, amphibians, fish and plants.

During the scoping process, the USFWS stated:

> "We anticipate the proposed action, through noise, sonic booms, potential for fire ignitions, and other actions could affect a suite of federally-listed mammals, birds, reptiles, amphibians, fish, and plants, including, but not limited to the jaguar (*Panthera onca*), Mount Graham red squirrel (*Tamiasciurus hudsonicus grahamensis*), New Mexico meadow jumping mouse (*Zapus hudsonius luteus*), Mexican long-nosed bat (*Leptonycteris nivalis*), Mexican spotted owl (*Strix occidentalis lucida*), southwestern

[120] Harrington, F. H., and A. M. Veitch. 1991. Short-term impacts of low-level jet fighter training on caribou in Labrador. Arctic 44:318-327. AND - 1992. Calving success of woodland caribou exposed to low-level jet overflights. Arctic 45:213-218.

willow flycatcher (*Empidonax traillii extimus*), yellow-billed cuckoo (*Coccyzus americanus*), narrow-headed gartersnake (*Thamnophis rufipunctatus*), northern Mexican gartersnake (*Thamnophis eques megalops*), New Mexican ridge-nosed rattlesnake (*Crotalus willardi obscurus*), and Chiricahua leopard frog *(Rana chiricahuensis*)" (DEIS Appendx L, page 511).

Despite comments from an expert wildlife agency (which DAF decidedly is not) concluding impacts to such wildlife are likely, the DEIS arbitrarily brushes off impacts from the Proposed Action to a host of species, seeming to ignore the clear likelihood of harm that USFWS has warned of from the beginning of the scoping process. The exclusion of all threatened and endangered amphibians, reptiles, fish, small mammals, and invertebrates from analysis in the DEIS is inadequate.

Numerous studies demonstrate sensitivity to noise in reptiles, amphibians, and other wildlife that the DEIS arbitrarily excludes from analysis. The statement alleging that the Proposed Action would cause "no effects" to small mammals, reptiles, amphibians, fish and other invertebrates is easily demonstrated false by a simple search of updated scientific literature.

As noted in Kepas et al. (2023),[121] lizards have shown physiological stress responses and behavioral changes resulting from military overflights at decibel levels much lower than those that would result from the Proposed Action. The DEIS clearly fails to account for the best available science in this section and seeks to minimize clear potential harms to these wildlife species by refusing to analyze these potential impacts.

Kepas et al. (2023), clearly establish that whiptail lizards experience a measurable physiological stress response to DAF overflights. In their study of behavioral and physiological responses of the Colorado checkered whiptail lizards (*Aspidoscelis neotesselatus*) to low-elevation DAF overflights, they state:

> "Behavioral activity shifted in response to noise pollution, which has been observed in a variety of taxa, including reptiles (for review, see for e.g., Warren et al., 2006; Slabbekoorn and Ripmeester, 2008; Popper and Hastings, 2009; Barber et al., 2010; Slabbekoorn et al., 2010). The shift towards more elusive behavior and a lack of movement corroborates other studies which observed "freezing" behavior when exposed to noise disturbance (e.g., Warwick et al., 2013; Mancera et al., 2017)."

The study goes on to conclude:

> "Although *A. neotesselatus* seem to adjust their behavior during flyovers by increasing the time they spend eating to buffer the potentially negative effect of flyovers on energetic pathways, they still suffered a metabolic cost driven by the stress response via ketone accumulation, especially when considering smaller-sized animals. Indeed, plasma ketones were significantly higher during flyover noise disturbance when we accounted

[121] Kepas ME, Sermersheim LO, Hudson SB, Lehmicke AJJ, French SS and Aubry LM (2023) Behavior, stress and metabolism of a parthenogenic lizard in response to flyover noise. Front. Amphib. Reptile Sci. 1:1129253. doi: 10.3389/famrs.2023.1129253.

for body size. An increase in ketones in response to acute and prolonged stress has been documented before (Ricart-Jane et al., 2002; Neuman-Lee et al., 2015). When blood glucose levels are significantly altered due to stress or physical activity, fatty acid metabolism may be initiated (Rojas-Morales et al., 2020)."

A review of the highly relevant Kepas et al. study, in addition to the wealth of scientific literature they cite in their study, proves the DEIS's failure to account for the best available science when arbitrarily eliminating reptiles, small mammals and other species from all analysis. The DEIS also fails to consider impacts to listed plants, including state species of greatest conservation need.

2. The DEIS does not adequately account for impacts to threatened and endangered species and their designated critical habitats.

a. <u>The lack of analysis to designated critical habitat is inadequate.</u>

Noise from military overflights has proliferated throughout wildlife habitat in the Southwest. Buxton et al (2017) establish that noise has become significantly elevated in critical habitats of endangered species, with 1 in 7 experiencing a 10-fold increase in sound levels.[122] The Proposed Action would significantly increase the level of noise and disturbances throughout the habitats of numerous federally protected threatened, endangered, and candidate species in the action area.

Not a single map showing federally designated critical habitats is included in the DEIS. Impacts to designated critical habitat have not been adequately analyzed, and the DEIS has not even bothered to quantify the amount of critical habitat within the MOAs.

We have taken the time to calculate, quantify, and illustrate the critical habitats that will be harmed and degraded by the Proposed Action. In total, the Proposed Action would occur over 1,956,010.73 acres of federally designated critical habitat and 638.22 miles of linear critical habitats (linear measurements are most appropriate to account for narrowly confined critical habitats following rivers streams and riparian areas). We have provided DAF with a map and list of all critical habitats that would be affected by the Proposed Action below. See Figure 19 on the following page for a map of all critical habitats that would be impacted, and Figure 20 for an extensive list of the acreage and linear miles of critical habitats in each MOA that would be harmed and potentially adversely modified by the Proposed Action.

This information should have been provided to the public in the DEIS. Omitting this information from analysis in the DEIS is unacceptable and inadequate, as it omits critical information from the public and interferes with the public's ability to accurately comment on the proposal.

[122] Buxton, Rachel & McKenna, Megan & Mennitt, Daniel & Fristrup, Kurt & Crooks, Kevin & Angeloni, Lisa & Wittemyer, George. (2017). Noise pollution is pervasive in U.S. protected areas. Science. 356. 531-533. 10.1126/science.aah4783.

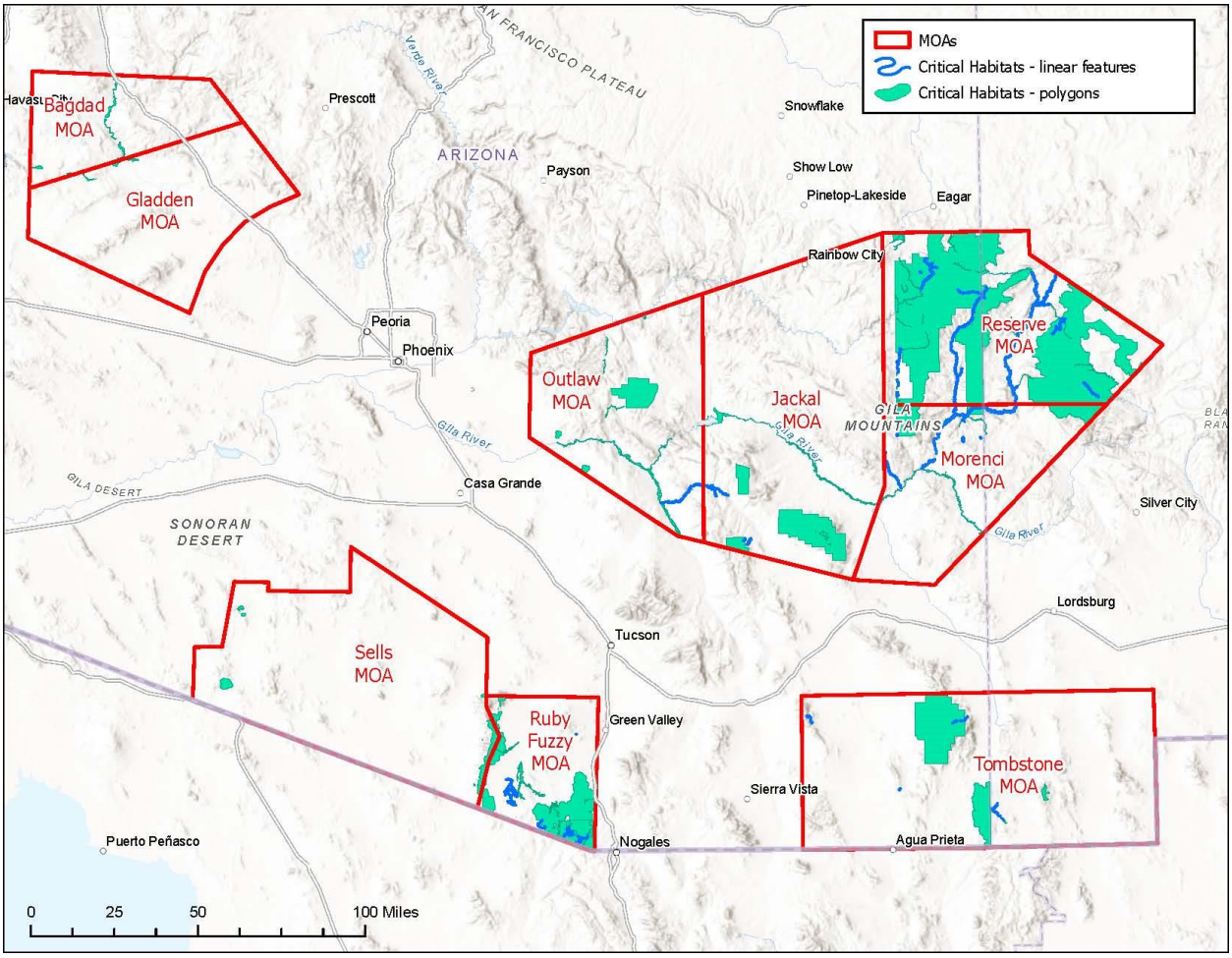

Figure 19: *Map of designated critical habitats within MOAs affected by the Proposed Action. Map by Curt Bradley.*

Figure 20: Critical Habitats by MOA		
MOA	**Species Common Name**	**Acres in MOA**
Bagdad	Northern Mexican gartersnake	1,188.49
Bagdad	Southwestern willow flycatcher	7,466.90
Bagdad	Yellow-billed cuckoo (Western DPS)	2,465.47
Gladden	Northern Mexican gartersnake	1,056.11
Gladden	Southwestern willow flycatcher	3,722.10
Jackal	Chiricahua leopard frog	8.24
Jackal	Mexican spotted owl	143,282.47
Jackal	Mount Graham red squirrel	1,920.22
Jackal	Razorback sucker	10,607.80
Jackal	Southwestern willow flycatcher	9,648.95
Jackal	Yellow-billed cuckoo (Western DPS)	10,611.81
Morenci	Chiricahua leopard frog	1.20
Morenci	Gila chub	1,336.30

Morenci	Mexican spotted owl	87,028.28
Morenci	Narrow-headed garter snake	219.21
Morenci	Razorback sucker	1,603.01
Morenci	Southwestern willow flycatcher	3,177.80
Morenci	Yellow-billed cuckoo (Western DPS)	8,587.12
Outlaw	Acuna cactus	5,162.12
Outlaw	Gila chub	651.75
Outlaw	Mexican spotted owl	52,929.23
Outlaw	Razorback sucker	920.18
Outlaw	Southwestern willow flycatcher	14,723.08
Outlaw	Yellow-billed cuckoo (Western DPS)	17,818.54
Reserve	Chiricahua leopard frog	5.20
Reserve	Gila chub	1,739.84
Reserve	Mexican spotted owl	1,070,002.36
Reserve	Narrow-headed garter snake	12,373.44
Reserve	New Mexico meadow jumping mouse	5,674.45
Reserve	Southwestern willow flycatcher	2,302.27
Reserve	Three Forks Springsnail	17.13
Reserve	Yellow-billed cuckoo (Western DPS)	3,446.01
Ruby/Fuzzy	Beardless chinchweed	776.20
Ruby/Fuzzy	Chiricahua leopard frog	403.76
Ruby/Fuzzy	Jaguar	180,499.69
Ruby/Fuzzy	Mexican spotted owl	48,434.06
Ruby/Fuzzy	Northern Mexican gartersnake	211.47
Ruby/Fuzzy	Sonora chub	47.04
Ruby/Fuzzy	Southwestern willow flycatcher	185.29
Ruby/Fuzzy	Yellow-billed cuckoo (Western DPS)	10,223.58
Sells	Acuna cactus	7,616.18
Sells	Desert pupfish	8.55
Sells	Jaguar	23,271.62
Sells	Sonoyta mud turtle	12.41
Tombstone	Beautiful shiner	10.33
Tombstone	Chiricahua leopard frog	196.69
Tombstone	Jaguar	51,057.18
Tombstone	Mexican spotted owl	146,754.26
Tombstone	New Mexican ridge-nosed rattlesnake	2,988.29
Tombstone	San Bernardino springsnail	1.71
Tombstone	Yaqui catfish	10.33
Tombstone	Yaqui chub	10.33
Tombstone	Yellow-billed cuckoo (Western DPS)	1,594.70
TOTAL		**1,956,010.73**

b. Analysis of impacts to Sonoran pronghorn (Antilocapra americana sonoriensis) is inadequate.

The National Park Service—a cooperating agency for the DEIS—states on their Natural Sounds web page that "the endangered Sonoran pronghorn avoids noisy areas frequented by military jets."[123] The National Park Service/Air Force Western Pacific Regional Sourcebook also demonstrates clear concern for both Sonoran pronghorn and cactus ferruginous pygmy owls, stating that Organ Pipe Cactus National Monument holds sensitive wildlife habitat for the species, which, "because of their tenuous populations, may be particularly vulnerable to stress caused by aircraft noise."[124]

The DEIS considers the studies Krausman et al. (2004) and Krausmann and Harris (2002) in its analysis of the Proposed Action's potential effects on Sonoran pronghorn. The DEIS fails, however, to consider Landon *et al*.'*s* highly relevant 2003 study examining areas of use preferred by Sonoran pronghorn in relation to frequency of noise disturbances.[125] Landon *et al.* established that Sonoran pronghorn used areas with lower levels of noise more than expected and areas with higher levels of noise less than expected, determining "across both [monitoring] periods, pronghorn selected areas with the lowest sound pressure levels and avoided areas with the highest sound pressure levels."

While the DEIS attempts to make the argument that these disturbances are only "temporary" and "not detrimental" (3-80), Landon *et al.* (2003) and the National Park Service itself clearly show a disturbance and avoidance behavior when Sonoran pronghorn experience overflights. The DEIS analysis fails to consider these impacts, or to disclose or confront scientific analysis that conflicts with the agency's conclusions.

c. Analysis of impacts to Mexican spotted owl and cactus ferruginous pygmy owl is inadequate.

The DEIS fails to use the best available science in its analysis of impacts to Mexican spotted owls and cactus ferruginous pygmy owls (CFPO). While the DEIS cites Shannon et al. (2016) once (3-77) to explain that different species react to noise in different ways, it does not factor in the results of this study, which shows clear harm to wildlife, including owls, from non-natural sounds. Shannon et al. (2016) reviewed two decades of research on noise impacts across various species, including birds and owls, showing that anthropogenic noise can lead to reduced biodiversity and altered community structures.[126] Birds that rely heavily on vocal communication

[123] National Park Service. 2018. Effects of Noise on Wildlife. Natural Sounds. Last updated February 2, 2018. Accessed September 2024. https://www.nps.gov/subjects/sound/effects_wildlife.
[124] United States Air Force and National Park Service. 2002. Western Pacific Regional Sourcebook. October 2002. https://npshistory.com/publications/sound/air-force.pdf.
[125] Landon, Deborah & Krausman, Paul & Koenen, Kiana & Harris, Lisa & Ammerman, Loren. (2003). Pronghorn use of areas with varying sound pressure levels. Southwestern Naturalist - SOUTHWEST NATURALIST. 48. 725-728. 10.1894/0038-4909(2003)048<0725:PUOAWV>2.0.CO;2.
[126] Shannon, Graeme & McKenna, Megan & Angeloni, Lisa & Brown, Emma & Warner, Katy & Nelson, Misty & White, Cecilia & Briggs, Jessica & McFarland, Scott & Crooks, Kevin & Fristrup, Kurt & Wittemyer, George. (2016). A synthesis of two decades of research documenting the effects of noise on wildlife. Biological Reviews. 91. 982-1005. 10.1111/brv.12207.

are particularly vulnerable, as noise pollution can mask critical signals used for communication, mating, and predator detection. Such disruptions could be particularly harmful to owls—including Mexican spotted owls and CFPO—which rely heavily on both vocal and auditory cues in their nocturnal environments.

A key and well-studied impact of noise on owls is the reduction of foraging efficiency. Traffic noise has been shown to significantly impair owls' ability to detect prey using auditory cues, a critical aspect of their survival. Studies demonstrate that noise from traffic can reduce the foraging efficiency of wild owls, directly affecting their hunting success and overall fitness.[127] This suggests that noise from overflights, which is often much louder and more sudden, could similarly disrupt the hunting patterns of species like the CFPO. The DEIS fails to analyze these impacts.

The DEIS fails to quantify and analyze the likely impacts the Proposed Action would have on designated critical habitat for Mexican spotted owls. In total, 1,548,430.66 acres of designated critical habitat for Mexican spotted owls would be impacted by the Proposed Action. This is an area almost twice the size of Rhode Island, yet the DEIS does not even acknowledge this.

The DEIS is factually incorrect in its statement that critical habitat for the cactus ferruginous pygmy owl occurs under the MOAs (page 3-73, other instances throughout document). While the owl was relisted under the endangered species act in 2023, USFWS has yet to finalize critical habitat for the species (though the agency has missed its own deadline to do so). More importantly, the DEIS brushes off impacts of noise to both Mexican spotted owls and CFPO and fails to use the best available science for analysis, as explained above. The Proposed Action would pose clear harms to birds and owls, including the federally listed Mexican spotted owl and CFPO.

The National Park Service/Air Force Western Pacific Regional Sourcebook demonstrates clear concern of impacts of DAF overflights to cactus ferruginous pygmy owls, stating that Organ Pipe Cactus National Monument holds sensitive wildlife habitat for the species, which, "because of their tenuous populations, may be particularly vulnerable to stress caused by aircraft noise."[128] This is not mentioned in the DEIS's inadequate analysis of impacts to owls, including the federally listed CFPO and Mexican spotted owl.

The best available scientific information demonstrates a significant effect to Mexican spotted owls and CFPO from cumulative noise impacts that threaten to disrupt essential owl hunting behavior. The Proposed Action will cumulatively generate additional noise at levels that interfere with prey detection or entirely preclude successful hunting by owls. The DEIS has failed to take a hard look at this impact on owl hunting behavior despite readily available reference material.

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[127] Senzaki, M., Yamaura, Y., Francis, C., & Nakamura, F. (2016). Traffic noise reduces foraging efficiency in wild owls. *Scientific Reports*, 6. https://doi.org/10.1038/srep30602.

[128] United States Air Force and National Park Service. 2002. Western Pacific Regional Sourcebook. October 2002. https://npshistory.com/publications/sound/air-force.pdf.

Two readily available studies published in the peer-reviewed scientific literature demonstrate this threat. One such study, J. Tate Mason et al., *Anthropogenic Noise Impairs Owl Hunting Behavior*, 199 Biological Conservation 29, 31 (2016), determined that chronic noise levels of 61 dBA (weighted decibels) so interfered with the hearing of Northern saw-whet owls that the owls were unable to capture any mice at all.[129] Another study, Masayuki Senzaki et al (2016), determined that chronic noise levels of just 40 dBA reduced long-eared and short-eared owls' ability to detect prey, while noise levels of 80 dBA made prey detectability virtually impossible.[130] These findings are likely to be representative of noise impacts on Mexican spotted owls and CFPO because, like the owl species involved in the Mason and Senzaki studies, Mexican spotted owls and CFPO rely heavily upon auditory cues when hunting. While aircraft overflight noises may not be "chronic," these studies demonstrate how noise can harm owls, which the DEIS fails to admit or address.

The DEIS has entirely ignored and overlooked the Mason and Senzaki studies, not even citing them, and instead analyzed noise impacts to owls based on a misreading of a different study. Specifically, the DEIS relies exclusively on one study: Delaney et al. (1999). *Effects of Helicopter Noise on Mexican Spotted Owls.*

The DEIS states "In a 1997 helicopter overflight study, Mexican spotted owls did not flush from a nest or perch unless a helicopter was as close as 330 feet (Delaney et al. 1999)." (3-88). It goes on, "Mexican spotted owls beneath the MOAs could be disturbed from low-level training activity, but the impact would be temporary and minor. The Proposed Action may affect, but is not likely to adversely affect the Mexican spotted owl" (3-89).

While the DEIS relies heavily on Delaney et al. (1999), the Delaney study does not support DAF's conclusion. At the outset, Delaney et al. identified the 92 dBA noise level as the threshold for Mexican spotted owls to flush and fly away in response to helicopter disturbance. The DEIS admits that flight training will regularly lead to decibel levels of 92 dB from an F-35 aircraft when the aircrafts are engaged in routine training above 10,000 feet MSL, and noise levels up to 131 dB for an aircraft flying at 100 feet AGL (DEIS 3-79). Delaney clearly demonstrates that the Proposed Action would likely cause owls to flush from their trees. The DEIS must incorporate an updated and corrected reading of Delaney into its analysis, and include important scientific information related to noise impacts on owls provided by the Mason and Senzaki studies.

d. <u>Analysis of impacts to jaguars and ocelots is inadequate.</u>

The DEIS fails to quantify and analyze the likely impacts the Proposed Action would have on designated critical habitat for jaguars. In total, over a quarter million acres (254,828.49 acres total) of designated critical habitat for jaguars would be impacted by the Proposed Action.

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[129] Mason, J. Tate; McClure, Christopher J.W.; and Barber, Jesse R. (2016). "Anthropogenic Noise Impairs Owl Hunting Behavior". *Biological Conservation, 199*, 29-32. http://dx.doi.org/10.1016/j.biocon.2016.04.009.
[130] Senzaki, M., Yamaura, Y., Francis, C., & Nakamura, F. (2016). Traffic noise reduces foraging efficiency in wild owls. *Scientific Reports*, 6. https://doi.org/10.1038/srep30602.

Studies indicate that overflights and ambient noise can influence the behavior and physiology of large mammals with varying levels of disruption depending on the species and context. Studies have demonstrated the impacts of noise on large cats, particularly pumas, which share many behavioral similarities to jaguar and ocelot. Smith et al. (2017) show that non-natural noise led to reduced feeding time, increased kill rates (due to less feeding time), increased fear responses, and potential cascading ecological effects. The study stated, "Our results support that non-consumptive forms of human disturbance may alter the ecological role of large carnivores,"[131] suggesting broader ecosystem impacts from human disturbances, such as overflights, could impact large cats and have broader ecosystem impacts.

3. The DEIS makes misleading statements about impacts to bats, fails to adequately analyze impacts.

The DEIS contains misleading statements about the proposed action's impacts to bats. The DEIS states "The percent of sorties that occur during the daytime and nighttime would not change under the Proposed Action, and thus, would have no change to impacts on foraging bats." This is an absurd statement. While the first part of the statement is true – there is no change in the *percentage* of sorties flown during the day compared to sorties flown at night, the second part of the statement is nonsensical. As is made clear throughout the DEIS, the Proposed Action *would vastly increase the number of flights during both day and night*. For example, in the Tombstone MOA, the DEIS proposes to more-than-double the number of sorties, from 3,450 annual sorties to 8,000 annual sorties. The current (no action) percentage of day/night sorties in the Tombstone MOA is 89% daytime and 11% nighttime. That means that if DAF is accurately representing current conditions, there are currently 3,070.5 daytime flights and 379.5 nighttime flights. Compare that existing 379.5 annual nighttime flights to the Proposed Action's massive increase—a more than doubling of the current conditions—to 880 nighttime flights. The more than doubling of nighttime flights cannot be brushed off, as the DEIS does, as "no change to impacts on foraging bats"?

This is especially concerning considering the impacts that non-natural noise has on echolocation abilities for bats. Noise has been documented to reduce echolocation bandwidth and fragment habitat, leading to foraging deficiencies in bats. As noted in Bunkley *et al.* (2015) "The effect of noise on the activity levels of low-frequency echolocating bats indicates potential masking of some echolocation call frequencies."[132] The DEIS fails to cite Bunkley or other relevant studies, violating NEPA.

4. The DEIS fails to adequately analyze impacts to bighorn sheep.

The DEIS does not dispute that low-level military aircraft overflights would stress animals and modify their behavior, yet it falsely concludes that these impacts would not be

[131] Smith JA, Suraci JP, Clinchy M, Crawford A, Roberts D, Zanette LY, Wilmers CC. 2017 Fear of the human 'super predator' reduces feeding time in large carnivores. Proc. R. Soc. B 284: 20170433. http://dx.doi.org/10.1098/rspb.2017.0433

[132] Jessie P. Bunkley, Christopher J.W. McClure, Nathan J. Kleist, Clinton D. Francis, Jesse R. Barber. 2015 Anthropogenic noise alters bat activity levels and echolocation calls, Global Ecology and Conservation, Volume 3, 2015, Pages 62-71, ISSN 2351-9894. https://doi.org/10.1016/j.gecco.2014.11.002.

significant since the low-level overflights would be brief and infrequent. Citing Workman et al. (1992), the DEIS states that captive pronghorn, elk and bighorn sheep populations:

> "exhibited an increase in heart rate that lasted for 30 to 90 seconds in response to their first exposure to a sonic boom. Behaviorally, the animals responded to their first exposure to a sonic boom by running a short distance (less than 30 feet reported for elk). After successive sonic booms, the heart rate response decreased greatly and the animals remained alert, but did not run. The authors suggested the animals became habituated in response to successive exposures (Workman et al. 1992)." (DEIS, 3-80).

This use of this outdated study does not provide an accurate case study, especially considering the captive nature of the animals studied. Review of additional scientific literature discloses impacts that are likely greater than Workman et al. suggest.

Frid (2003) explored the responses of Dall's sheep (*Ovis dalli dalli*), a close relative to the bighorn, to overflights by helicopters and fixed-wing aircraft. suggesting that high rates of behavioral disruption caused by human activities could jeopardize the body condition and reproductive success of the species.[133] In this study, Dall's sheep were exposed to experimental overflights by a fixed-wing aircraft and a helicopter. Aircraft approaches that were more direct (as determined by the aircraft's elevation and horizontal distance from sheep) were more likely to elicit fleeing or to disrupt resting. Latency to resume feeding or resting after fixed-wing overflights was longer during more direct approaches. During indirect approaches by helicopters, sheep far from rocky slopes were much more likely to flee than sheep on rocky slopes.

Bleich et al. (1994) observed that bighorn sheep overflown by helicopters during wildlife surveys exhibited marked responses in movement.[134] They suggested that bighorn sheep did not habituate to numerous helicopter overflights, and they noted the potential for disturbance effects to be "exacerbated for animals living in heterogeneous environments, where critical resources are limited and widely distributed," which is especially relevant in the highly variable ecotones in the Affected Environment.

While these studies did not analyze impacts of military aircraft, their results—obtained under study conditions and research methods far more germane to the Proposed Action than the Workman study—provide important insight into the energetic and fitness costs incurred as a function of overflights.

Disease, in addition to climate change, drought, wildfires, increased motorized recreation, and other factors have cumulatively stressed the bighorn populations across their range. The DEIS fails to mention the die-off and the synergistic negative effects of its Proposed Action on already-stressed bighorn populations.

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[133] Frid, Alejandro. April 2003. Dall's sheep responses to overflights by helicopter and fixed-wing aircraft. Biological Conservation, Vol. 110(3):387-399.

[134] Bleich, V.C., Bowyer, R.T., Pauli, A.M., Nicholson, M.C., and Anthes, R.W., 1994. Mountain sheep Ovis canadensis and helicopter surveys: ramifications for the conservation of large mammals. Biological Conservation 70:1-7.

The DEIS fails to consider the studies discussed above. DAF must consider the best available science, further analyze related issues and concerns and the potential negative impacts to bighorn, and prepare a supplemental draft EIS for a full and meaningful public review, if it does not abandon the project altogether.

5. The DEIS fails to consider cumulative impacts to wildlife

The DEIS's disclosure of cumulative impacts on natural resources mentions no other impacts to natural resources other than the border wall (DEIS, 3-90). Although the DEIS concludes that "[t]he proposed training would contribute only insignificant increases to the average acoustic environment and would not create a consistent, significant noise source in any location," it also recognizes that "there would be the possibility that a location would be subjected to a low-level overflight and animals beneath such a flight would experience a sudden onset of high-level noise" (3-90). However, the DEIS does not consider past, present, or future actions that also cause stress to birds and other wildlife. Whether in the cumulative effects section or in the "natural resources" section, the DEIS has failed to evaluate how climate change (and increasingly frequent and severe droughts and temperature spikes within the Project Area) stresses wildlife species for whom additional, acute noise events would add more stress.

The DEIS also must consider impacts from mineral exploration and development, utility and infrastructure development, wildfires and related mitigation activities (e.g. prescribed burns, fire retardant use), livestock grazing, invasive species, groundwater withdrawal, agriculture, residential development, and recreation.

L. <u>The DEIS Analysis of The Potential Impact to Recreation, Including Use of The Continental Divide National Scenic Trail and Arizona Trail, is Inadequate.</u>

1. The DEIS analysis fails to consider impacts to the Continental Divide National Scenic Trail.

The Continental Divide National Scenic Trail (CDNST) was designated by Congress in 1978 as a unit of the National Trails System. The 3,100-mile CDNST traverses nationally significant scenic terrain and areas rich in the heritage and life of the Rocky Mountain West along the Continental Divide between Mexico and Canada. It travels through 20 National Forests, 21 Wilderness Areas, 3 National Parks, 2 National Monuments, 8 BLM resource areas and through the states of Montana, Idaho, Wyoming, Colorado and New Mexico. The vision for the CDNST is a primitive and challenging backcountry trail for the hiker and horseman on or near the Continental Divide to provide people with the opportunity to experience the unique and incredibly scenic qualities of the area. The CDNST passes through Montana, Idaho, Wyoming, Colorado, and New Mexico, and is administered by the U.S. Forest Service in cooperation with the NPS, BLM, and Tribal, state, and local governments in cooperation with numerous partner groups.

a. <u>The DEIS fails to consider noise and other impacts on the Continental Divide National Scenic Trail.</u>

The *Continental Divide National Scenic Trail Comprehensive Management Plan* was approved by the U.S. Forest Service and set forth as policy in 2009. This overarching policy direction serves to implement Congress's direction in the National Trails System Act and should be incorporated into planning direction and project proposal evaluation. The *Comprehensive Plan* also incorporates FSM 2353.42 and 2353.44b.

The Comprehensive Plan states that the CDNST's nature and purposes are "to provide high-quality, scenic and primitive hiking and horseback riding opportunities and to conserve natural, historic and cultural resources along the CDNST corridor." In order to preserve this nature and purpose, the Comprehensive Plan also establishes guidelines for using the US Forest Service's Recreation Opportunity Spectrum (ROS) classes in management of the CDNST. The Comprehensive Plan states that, where possible, the CDNST should be located in areas with an ROS Classification of primitive or semi-primitive. To retain primitive or semi-primitive classification on a stretch of trail, evidence of humans should not be noticeable or should not draw the attention of the trail user.

Lowering the existing floor in the Tombstone MOA from 500 feet AGL to 100 feet AGL and authorizing supersonic flight as low as 5,000 feet directly and significantly increases the likelihood that hikers on the CDNST will experience startlingly low direct overflight or shocking noise from supersonic flight. This directly threatens the primitive nature and ROS classification of the CDNST in the Tombstone MOA. Although the DEIS claims the Proposed Action would cause "little change in the recreational experience," any increase in noise will lessen the feeling of solitude that should be cultivated on the CDNST. Furthermore, even if low overflight is not "frequent or repetitive," it can feel imposing and shocking to hikers, many of whom are not from the region or even the country, and therefore will not know to expect overflights.

The Bootheel region of New Mexico is a unique section of the CDNST. It traverses desert landscapes and the sky islands that many hikers have never experienced before, challenging them with heat and low availability of water. As the home of the Southern Terminus of the CDNST, it marks the beginning or end of a 3,000-mile journey for thru-hikers. Given this point is the beginning of a cumulative experience, it is especially important to preserve the CDNST Experience in this region. The DEIS fails to disclose these clear impacts.

Additionally, authorizing supersonic flight as low as 5,000 feet may have auditory impacts on the CDNST in the Reserve MOA, where the trail is located near the boundary of the MOA. While the DEIS states that the increase in noise from this action would be within the level compatible with recreation, any increase in noise lessens the experience of solitude that is quintessential to the CDNST experience. Furthermore, the Reserve MOA overlaps with the Gila Wilderness. The Gila Wilderness is a critical component of the experience of the CDNST in New Mexico. The DEIS recognizes that the proposed alternative could result in adverse impacts to special status species, including the death of migratory birds and disturbances to the natural behavior of many other species. Any disruption of the ecosystem of the Gila Wilderness risks indirectly compromising and lessening the CDNST experience. Failure to disclose and consider mitigation for these impacts violates NEPA.

i. The DEIS fails to analyze the impacts of increased wildlife risk in relation to the recreational experience on the Continental Divide National Scenic Trail.

Under the Proposed Action, flare use in the Tombstone MOA would nearly double and the minimum height for flare use would be lowered from 5,000 feet AGL to 2,000 feet AGL. This change would significantly increase the risk of flare-caused wildfires in the Tombstone MOA. This concern is supported by Fire Commanders stating that there was a "high probability" that use of flares in military training caused the 2021 Telegraph Fire in Arizona, which burned nearly 200,000 acres. Increasing the use of flares in the Tombstone MOA so significantly, while simultaneously lowering the height from which the flares are dropped, will undoubtedly increase the risk of wildfire in this area. Due to the very arid nature of this region, a wildfire could be hugely damaging to the ecosystem, could threaten communities, could endanger hikers, and could damage or destroy a portion of the CDNST. The DEIS has failed to adequately analyze the increased risk to the safety of hikers and the recreational experience on the CDTC in the Tombstone MOA.

M. The DEIS Analysis of The Potential Impact to General Aviation is Inadequate.

DAF must consider the impact on specific airports, particularly their accessibility by Instrument Flight Rule (IFR) and VFR aircraft. Airports that underlie SUA can be adversely impacted by access limitations for IFR aircraft. Such limitations can have long-term financial impacts on the airport businesses, the aircraft operators, and the surrounding communities.[135]

The DEIS overlooked the increase in civil aviation and aircraft business and the associated economic benefits, especially considering the rapid population growth and increased personal aviation taking place withing the MOAs. It is important to note that there are many light aircraft (Cubs, Chiefs, etc.) that have no electrical systems or radio equipment and that fly out of or into the very small airfields within and surrounding the MOAs. DAF must analyze this issue and consider mitigations including cutouts around existing airports.

N. The DEIS Analysis of Potential Socioeconomic Impacts to Property Values, Real Estate, and Local Economies is Inadequate.

The DAF video shown prior to virtual and public hearings states that "Noise levels *could* affect housing values," but that statement is then contradicted in the DEIS, which states that "it would not be expected that the Proposed Action would have any quantifiable impacts to the existing housing values within the region" (3-117). This lack of transparency in describing the true potential impacts on real estate values is a violation of the intent of NEPA to disclose factual information to the public and a failure to adequately analyze impacts.

Many studies show that property values are affected by noise levels. In addition to the requirement for home sellers to disclose the value-reducing fact that their properties are beneath a DAF combat training zone, a 2003 meta-analysis of property values concluded that the noise

[135] Aircraft Owners and Pilot's Association (AOPA), 2017. Letter to Holloman AFB c/o Cardno, re: Notice of Intent to Prepare an Environmental Impact Statement for the Special Use. From Rune Duke, Director of Airspace and Traffic. September 18, 2017.

discount was about 0.50 to 0.60% per dB. A given property located at 55 dB would sell for about 10-12 percent less if it was located at 75 dB, all other things held constant.[136] Stated differently, under these same circumstances, a $200,000 house would sell for $20,000 to $24,000 less. This is clearly a significant impact, one of potentially life-changing magnitude for the property owner.

A research thesis by DAF Captain Melissa Johnson analyzed DAF aircraft noise and the effect on property values, concluding "it has been found that the noise being created by DAF aircraft is associated with a negative impact on local community housing values."[137] The impact of noise on real estate values is recognized by the City of Chicago, which now instructs county assessors to devalue real estate property taxes in high-noise areas using existing sales data for these areas.[138]

Arizona Statute 28-8484 requires that realtors disclose military aircraft training activity in the area, and there's a reason state legislators passed this law.[139] Realtors and landowners in the Project Area have expressed concerns that this will inevitably affect property values, yet DAF has not adequately analyzed these impacts. Analysis of the effects of the Proposed Action on property values must be undertaken and disclosed and for all MOAs affected by this proposal.

The DEIS fails to evaluate the potential impacts of the proposed action on local economies in southwest New Mexico and southern Arizona. For example, the proposed action could harm one of southwest New Mexico's principal economic assets: quality of life amenities, including the rural nature of small towns and villages in a beautiful landscape, far from the disturbance of big cities, with easy access to wilderness and solitude. According to the National Park Service's sound map, southwest New Mexico is one of the quietest regions in the country. Grant, Hidalgo, and Catron counties are renowned for their relaxed atmosphere, natural beauty, dark skies, and the Gila National Forest and Gila Wilderness.

The local economy in southwest New Mexico is heavily dependent on tourism. In a 2024 independent study by Tourism Economics[140], tourism generated $63.8 million in Grant County, $46.1 million in Hidalgo County, $18.8 million in Catron County. Tourism in southwest New Mexico is becoming increasingly important to our local economies.

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[136] Aliyu, Aliyu, Abdu, I. Garkuwa, I. Singhry, M. Muhammad, H. Baba. (2016). Influence of aircraft noise on residential property values: evidence from current literature. Proceedings of the Academic Conference of Nightingale Publications & Research International on Sustainable Development. Vol. 2 No. 3. 31st March, 2016 – Federal University of Technology, Minna, Education Resource Centre Conference Hall, Niger State, Nigeria.

[137] Captain Melissa R. Johnson, U.S. Air Force. 2006. An analysis of USAF aircraft noise and hedonic property values. Department of the Air Force Air University Air Force Institute of Technology. Wright-Patterson Air Force Base, Ohio. AFIT/GEM/ENV/06M-07.

[138] Chicago Sun-Times. 2016. Assessed value of 8,000 homes cut due to O'Hare jet noise. By Roaslind Rossi. September 22, 2016. https://chicago.suntimes.com/2016/9/22/18345011/assessed-value-of-8-000-homes-cut-due-to-o-hare-jet-noise

[139] Arizona Statute 28-8484. Military airport disclosure; residential property. https://www.azleg.gov/ars/28/08484.htm

[140] Economic Impact of Tourism 2024 prepared by Tourism Economics for the New Mexico Department of Tourism https://www.newmexico.org/industry/resources/research/

The DEIS does not identify in any quantifiable way how the Proposed Action might affect local economies. It falsely states that there would be no impacts to employment industries or recreation. For example:

- "The noise exposure associated with aircraft training within MOAs is distributed across a vast area and no single location or county would be expected to receive a consistently high exposure to noise. Given the expected DNL values and the distribution of the training activity across such a large area, it would not be expected that the Proposed Action would have any quantifiable impacts to the existing housing values within the region." (DEIS 3-116, DEIS 3-117)

- "While it is possible that noise could reduce visitation by some users, there is no way to predict the exact impact that the presence of military aircraft may have on a specific National Forest or National Park. Since the specific impact to visitation cannot be determined, the economic impact cannot be quantified." (DEIS 3-117)

- "The primary employment industries for each of the counties associated with the MOA are not expected to be impacted by the Proposed Action." (DEIS, 3-117)

- "While retail trade and arts, entertainment, and recreation, and accommodation and food services are primary employment industries in many of the counties, the noise exposure from military aircraft is not expected to significantly change those industries." (DEIS 3-117)

Although the DEIS takes the position that the Proposed Action will have no discernable or quantifiable impact on any of the counties, local communities, governments, and business owners strongly disagree. The Grant County Commission passed a resolution on September 12, 2024 requesting that the Air Force:

> "Fully examine the potential economic effects of the preferred alternative on Grant County. According to the 2017 Grant County Comprehensive Plan, 'tourism contributes tens of millions of dollars each year to the economy,' and this figure has increased significantly since 2020. Many tourists and new residents come here because of our peaceful natural surroundings, our gateway location on the Continental Divide Trail, and our dark skies."

The Town of Silver City passed a resolution on October 8, 2024, requesting that the Air Force:

> "Fully examine the potential economic effect that the preferred alternative would have on Silver City, and the surrounding area. Tourism contributes millions of dollars to the local economy, and the preferred alternative could negatively impact tourism by disrupting the area's peaceful natural surroundings, such as hiking along the Continental Divide Trail, and diminish the recreational appeal of the forest."

Three recent strategic economic documents specific to Grant County and Silver City highlight the importance these governments place on their quality of life and their remote location near the Gila Wilderness. Quality of life is the top attraction cited by businesses for being in Grant County, and the #1 response to the survey query, "[w]hat are the three primary reasons you have chosen to live in Grant County?" According to Silver City MainStreet's Community Assessment, Silver City's best strategy is to transform its main constraint (geographical remoteness) into its principal asset (proximity to the Gila Wilderness).

A clean, quiet environment is directly linked to the tourism and outdoor recreation economy in the Gila region. The tourism economy in New Mexico is growing and, in some places, is breaking records.

Birding is an important component of the tourism economy in the region. More than 350 species of birds are found in the Gila Region. This premier birding region attracts birders from in-state and out-of-state. The Southwest New Mexico Birding Trail and Map guides birders to the best locations throughout the Gila Region, including six Important Bird Areas (IBAs) that could be affected by sorties under the Proposed Action.

A 2013 study conducted for the New Mexico Game and Fish Department showed that hunting and angling are significant contributors to Grant County's economy (Southwick Associates, 2014). That year alone, 10,000 people participated in angling in Grant County for 100,000 angler-days, spending $6.5M, supporting 74 jobs, generating $1.9M in labor income, and contributing $10M to federal, state and local taxes. That same year, nearly 7,000 people participated in hunting for nearly 38,000 hunter-days, spending $8.9M, and supporting 112 jobs that generate $2.8 M in labor income and $1.4M in federal, state and local taxes.

Revenues from retirees moving into the area, from entrepreneurs establishing businesses, and from tourists represent significant portions of the local economy. Many of these people are drawn to the Gila Region by its natural beauty and tranquility as well as the outdoor recreational opportunities offered by the nearby mountains, rivers, and forests. Increasing military training in these areas is likely to be significantly harmful to residents. Tourism Economics data shows that tourism generates $128.7 million in southwest New Mexico, including the New Mexico Bootheel (Tombstone A/B MOA) and Gila Region (Reserve and Morenci MOAs).

The communities under the MOAs in the Proposed Action generate a substantial proportion of their economies from natural resource-based tourism. It is not adequate under NEPA to state that the impact can't be quantified. Certainly, the contribution to the local economies through land based recreational activities can be quantified and that data is available.

O. The DEIS Does Not Adequately Disclose or Analyze Impacts to Environmental Justice Communities.

1. DAF's demographic analysis is flawed and misleading.

The use of county level demographic data in the DEIS Environmental Justice (EJ) analysis obscures significant minority and low-income populations in the affected area. The

DEIS use of counties dilutes minority and low-income representation by including large populations outside of the affected area in the analysis. EPA's 2016[141] "Promising Practices for EJ Methodologies in NEPA Reviews" provides authoritative guidance to DAF in the application of CEQ's 1997 EJ guidance.[142] EPA directs DAF and other agencies to "Select the appropriate geographic unit of analysis for the affected environment (e.g., census block, block group)." EPA explains that "Selecting a geographic unit of analysis (e.g., county, state, or region) without sufficient justification may portray minority [and low-income] population percentages inaccurately by artificially diluting their representation within the selected unit of analysis" (EPA 2016).

Figures 21 and 22, below, compare results from the DEIS EJ analysis (county data) with the results of our EJ analysis using tract data. The DEIS EJ analysis evaluates a population of 6.9 million people, 39.0% of whom are minority and 13.0% of whom are low-income (DEIS p. 3-119, calculated from table). The problem here is that a disproportionate number of the higher income and non-minority populations in the counties included in the DEIS analysis do not live within or adjacent to the proposed MOAs. The EJ analysis shown in Figure 2 evaluates the 249,000 people who reside within or adjacent to the MOAs, finding that 50.2% are minority and 19.6% are low-income. In effect, the DEIS evaluates a population 27 times larger than the population that would be affected by the MOAs.

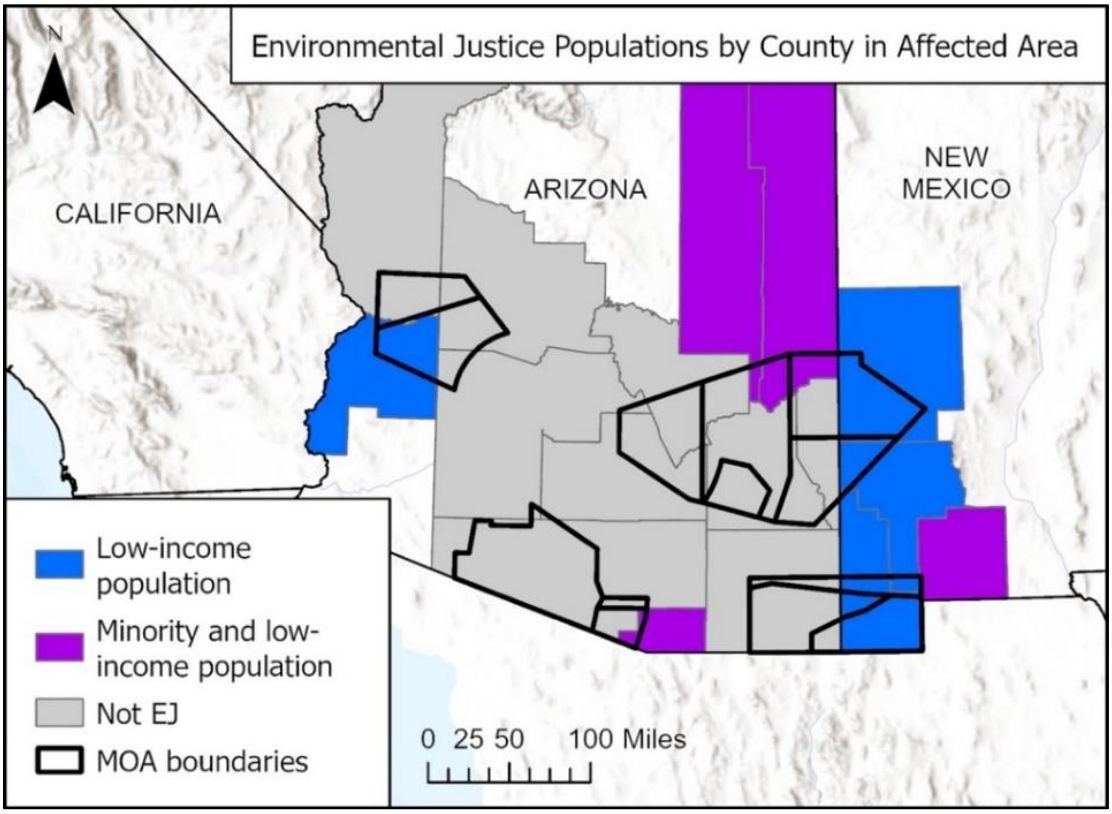

Figure 21. *Minority and low-income populations defined in DEIS using 2020 county data.*

[141] EPA. (2016). Promising Practices for EJ Methodologies in NEPA Reviews.
[142] Council on Environmental Quality. (1997). Environmental Justice: Guidance Under the National Environmental Policy Act.

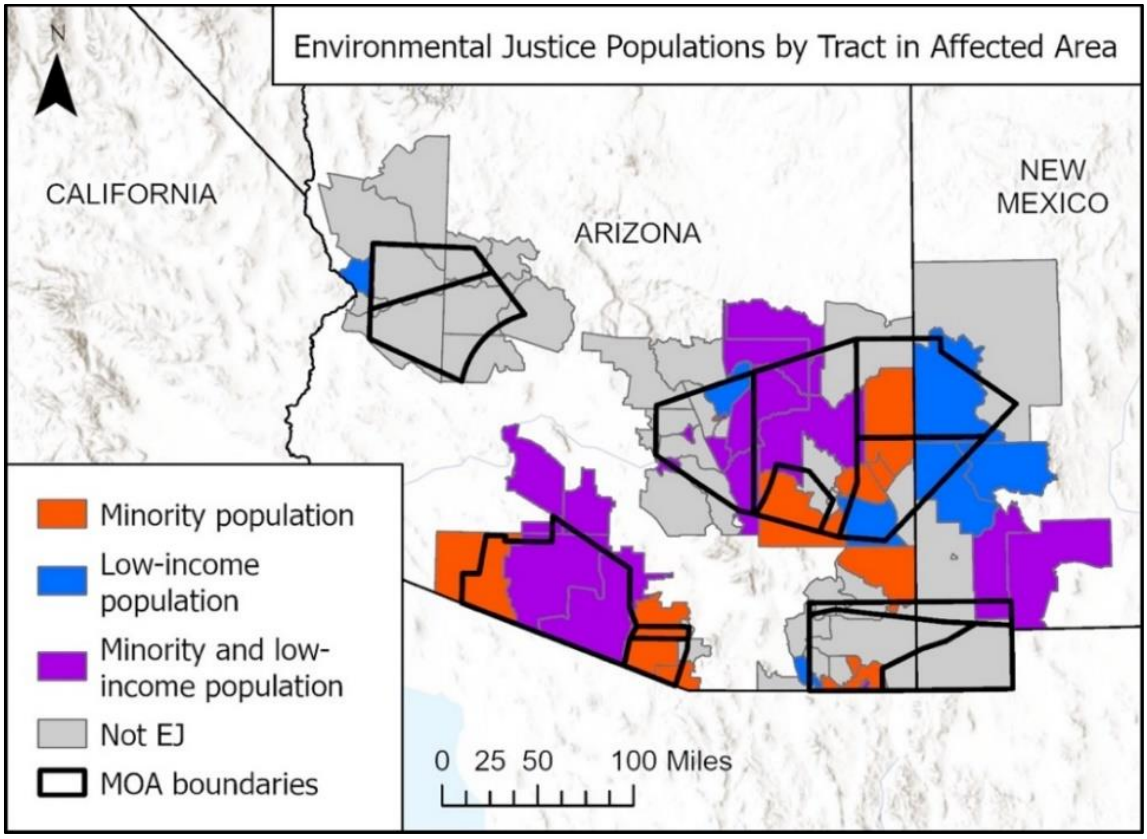

Figure 22: *Minority and low-income populations properly identified using 2020-2021 census tract data, using thresholds defined in DEIS (>50% minority, >20% low-income).*

The DEIS correctly defines EJ populations as areas with >50% total minority population or areas with >20% low-income populations (DEIS 3-119). We urge DAF to re-do the EJ analysis using U.S. Census block group or tract data. DAF could further improve analytic precision by weighting Census tract demographics by the percent of each tract's area contained within the MOAs. This approach, or another reasoned effort to match the EJ analysis area to the MOAs, will reveal that the entire study area should be considered an EJ population because it is >50% minority and nearly 20% low-income. Maps that display the geographic distribution of minority and low-income populations in relation to the affected area and MOAs, for example, Figures 1 and 2, should also be provided in the EIS. EJ maps would further benefit by geospatial incorporation of project impacts, such as the expected noise decibels expected in each MOA based on the flight regulations and number of sorties. Ignoring this data, and using methods that dilute the project's impacts on EJ populations would arbitrarily and capriciously underrepresent these impacts.

a. The EJ environmental effects analysis must correct inaccuracies about the distribution of impacts in relation to EJ populations, evaluate the distribution of beneficial impacts in relation to EJ populations, and incorporate changes to the proposed project and/or mitigation to address adverse EJ impacts.

The DEIS claims that the proposed training would "impact all counties and areas beneath the MOAs equally" and that "no population would be exposed to a disproportionate number of

overflights" (DEIS p. 3-122). The reality is that the MOAs have different subsonic and supersonic altitudes and different numbers of annual sorties (DEIS p. 2-7 to 2-19), resulting in different impacts to different populations, some or all of which are EJ populations. To determine whether any EJ population will experience disproportionately high and adverse impacts, the EJ analysis must assess specific impacts in relation to the distribution of EJ populations on an appropriate geographical scale (e.g., Census tract).[143] The EIS must take into account differences in the number, frequency, magnitude, and intensity of impacts, and must then analyze the geographic distribution of these proposed impacts in relationship to the known distribution of EJ populations in the affected area.

The DEIS must also evaluate the distribution of beneficial impacts in relation to EJ populations. In the case of MOAs, the benefit of improved pilot training could be said to be greater national security for the nation as a whole. Given this, the DEIS must address the fact that the adverse impacts of the proposed action disproportionately affect these specific EJ populations while the benefits are shared by the entire nation.

If this analysis finds that EJ populations (e.g. Census tracts) within the MOAs are more likely than not to experience disproportionately "high and adverse human health or environmental effects" then modifications to the proposed action, mitigation actions, or both are necessary and required and should be developed in coordination with local governments and community organizations.[144] DAF should refer to President Biden's Justice40 Initiative for a list of covered federal programs that address environmental justice.[145]

P. The DEIS Does Not Adequately Disclose or Analyze Impacts to Cultural Resources.

1. The cultural resource analysis does not adequately disclose or evaluate the topographic amplifications of noise and vibration impacts to cultural resources, especially standing architectural resources. Additional analyses must be completed or additional no-fly areas designated to ensure protection of highly significant and sensitive cultural resources located in cliff alcoves and canyon walls.

The experimental data and models referenced in the DEIS describe potential impacts to architectural features in relation to subsonic noise decibels and supersonic overburden pressure (DEIS p. 3-133). The DEIS claims that "only sounds lasting more than 1 second above a sound level of 130 dB are potentially damaging to structural components" and that "structural damage from sonic booms should be expected only for overpressures over 10 psf" (pp. 3-133 and 3-134). Because the DEIS claims overflights peak at 130 dB for less than 1/8 second, and overburdens peak at 8.3 psf, the DEIS concludes that "structural damage to historic structures would be

[143] EPA. (2016). Promising Practices for EJ Methodologies in NEPA Reviews. p. 44.

[144] Clinton, W. J. (1994). Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. Order, 12898.

[145] "Justice40 Initiative." *The White House*, The United States Government, 28 Feb. 2024, www.whitehouse.gov/environmentaljustice/justice40/.

unlikely" (3-136). This analysis fails to take into account the effect of canyon topography on sound dynamics. Canyon walls cause sounds to reverberate, amplifying the duration, magnitudes, and intensities of overflight sounds and pressures. Archaeology Southwest staff members personally attest to the much greater noise levels and startle effect of overflights within canyons compared to those on level ground. In April 2023, Archaeology Southwest staff member John Welch saw and heard boulders and cobbles fall from the south wall of Salt River Canyon in the immediate wake of the deafening boom of a twin-jet, below-rim supersonic flight.

Cultural resources that are especially vulnerable to abrupt changes in sound, pressure, and vibration include standing masonry, adobe, and composite walls and roofs, many of which are nearly 1,000 years old (DEIS 3-134). Within the affected area, the majority of standing archaeological structures occur in alcoves, rock shelters, and caves along canyon walls. Given the noise and vibration amplifying effects of these topographic settings, DAF is advised to perform additional data collection on overflight sound decibels and durations within canyons and adjacent to plateaus to determine if there will be significant impacts to cultural resources.

Given the high potential for significant adverse impacts, DAF should include an alternative that prohibits overflights below canyon rims in all major canyons within the Tombstone, Jackal, Outlaw, and Reserve MOAs, and especially within Salt River above Lake Roosevelt, Black River, Aravaipa Creek, Bonita Creek, Bonito Creek, Canyon Creek, Cherry Creek, San Carlos River, John Long Canyon, Rucker Canyon, Apache Box, Cave Creek, and the entire south rim of the Nantanes Plateau. DAF should further consult with Tribes and land managers to identify additional canyons, plateau rims, or other topographic features that require special consideration and complete avoidance of overflights below canyon rims to protect cultural resources having known sensitivities to auditory and vibratory effects.

2. The cultural resource analysis proposes insensitive and inadequate mitigation for adverse impacts to Traditional Cultural Properties.

With regard to Traditional Cultural Properties (TCPs), the DEIS recognizes that "Noise, including infrequent sonic booms and startle effect impacts to Traditional Cultural Properties, may be related to interference with ceremonies and other traditional activities at sacred sites. Undisturbed habitats, resources, and settings are considered to be critical to religious practices (NPS 1994)" (DEIS p. 3-136). To address adverse effects to TCPs, the DEIS suggests that "Establishing temporary or seasonal altitude restrictions would be one way to reduce adverse effects on these properties" and that "Ongoing government-to-government consultation between DAF and Tribal Nations could identify measures to reduce intrusive impacts" (DEIS p. 3-136).

The suggestion that adverse impacts could only be mitigated on a temporary or seasonal basis is insensitive to and out of step with the values and interests of the cultural and religious leaders and practitioners who rely on TCPs and sacred places. That suggestion is also impractical and inconsistent with Federal fiduciary responsibilities for the welfare of Tribes and their members. Tribal members must be able to visit sacred places at the times of their choosing, free from the threats of auditory and visual intrusions. As DAF proceeds with government-to-government consultations with affected and interested Tribes, and unless all affected Tribes advise otherwise, DAF should establish permanent flight restrictions within about 10 miles of

well-known TCPs, including *Chi'chil Biłdagoteel* (Oak Flat) Historic District and TCP, the "Salt Song Trail" cultural landscape, Mount Baldy, *I'itoi Mo'o* (Montezuma's Head), *'Oks Daha* (Old Woman Sitting), and the Holy Mountains of the White Mountain and Cibecue Apache, notably Sierra Ancha, Picketpost Mountain, and Four Peaks (Tonto N.F.); Green's Peak, Escudilla, Reno Mountain, and Rose Peak (Apache-Sitgreaves N.F.); Mt. Graham, Pinnacle Ridge, Chiricahua Peak, Cochise Head, the Dragoon Range, and Bassett Peak (Coronado N.F.).

The DEIS's claims that there would be no significant adverse effects to environmental justice populations or cultural resources are based on incomplete data, faulty analyses, and an insensitive and incomplete understanding of the distributions and sensitivities of cultural resources. We request that the DEIS be corrected to identify and analyze the full spectra of foreseeable impacts to EJ populations and cultural resources. Regardless of the preferred alternative, we advise DAF to specify in a supplemental DEIS a suite of avoidance and/or mitigation measures that are clearly responsive to the special needs of EJ communities and to the standing historical architecture, cultural landscapes, and TCPs clearly imperiled by the Proposed Action.

Q. The DEIS Does Not Adequately Analyze Impacts to National Park Service Resources at Chiricahua and Organ Pipe Cactus National Monuments

DAF's training activities should be conducted in such a manner to reduce its impairment to the national park units of Organ Pipe Cactus National Monument and Chiricahua National Monument. The No Action Alternative outlined in the DEIS is the only alternative that would not impair the ecological, acoustic, recreational, and wildlife values characteristic of these two important Southern Arizona national monuments.

Chiricahua National Monument and Organ Pipe Cactus National Monument are truly special places. Chiricahua is, among other things, renowned for its unique and stunning rhyolite rock formations, longstanding historical record, and quiet and peaceful landscapes. The park also preserves a biologically diverse Sky Island ecosystem and its distinct wildlife. Organ Pipe encompasses an incredible stretch of the Sonoran Desert, home to the unique Organ Pipe Cactus, as well as an incredibly rich cultural landscape that includes the unique and threatened Quitobaquito Springs. Importantly, these National Park Service (NPS) units have important soundscapes that must be protected. Increased sorties, particularly low-elevation and supersonic flights, will negatively impact the soundscapes by drowning out natural quiet, disrupting the peace and solitude that visitors venture to these remote parks for. With the close to 250,000 annual combined visitors to Chiricahua National Monument and Organ Pipe Cactus National Monument,[146] the potential for affecting the park experiences of thousands of people is high under the current proposal.

We are extremely concerned that actions taken by DAF to expand training locations, increase the number of flights, and lower the floor for training flights, particularly supersonic flights, will harm and impair the resources for which these park units were designated; in particular, lending to increased noise, increased risk to public safety, and increased risk to natural

[146] National Park Service. 2024. STATS NPS Visitor Use Statistics. Chiricahua National Monument, Organ Pipe Cactus National Monument https://irma.nps.gov/Stats/

resources due to dropping of chaff and use of flares over the national parks units. This expansion would adversely affect hundreds of thousands of visitors per year, and the DEIS fails to take a hard look at these clearly foreseeable impacts of noise pollution on people and wildlife. Impairment caused by acoustic effects of pilot training; risk of fire from flares; risks to water resources, soils, and public safety; risks to the intrinsic value of wilderness in Chiricahua National Monument and Organ Pipe Cactus National Monument, and other natural and cultural areas central to the region's tourism and outdoor-based economy are all inadequately assessed in the DEIS.

1. Purpose, Need, and Considerations in Alternatives fail to account for national park units

The purpose and need statement for this NEPA analysis should explicitly include DAF's obligation to consider ways to eliminate, minimize and/or mitigate impairment to public lands with special designations, including Chiricahua and Organ Pipe Cactus National Monuments. Consistent with such a purpose and need statement, DAF's NEPA analysis must develop and fully analyze alternatives that completely avoid an increase in jet training flights over the two parks and alternatives that minimize and/or mitigate impairment to the park units if such flights do occur. *See* 40 C.F.R. §§ 1500.2(e),1502.13, 1502.14, 1502.16(g) and (h) (2024).

The Sky Islands and the Sonoran Desert Biosphere Region are unique and important landscapes that include two national parks, significant Wilderness Areas, a National Natural Landmark (Barfoot Park), and Arizona's only UNESCO Biosphere Reserve. We are particularly concerned about the impacts of the Proposed Action on the parks' wildlife and visitors and insist that your analysis take the requisite "hard look" at noise effects for Chiricahua National Monument and Organ Pipe Cactus National Monument, which as written, the DEIS fails to do. Federal regulations require that "[u]nique characteristics of the geographic area such as proximity to historic or cultural resources, *park lands*, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas" must be considered when evaluating an agency action's intensity. 40 C.F.R. § 1508.27(b)(3) (2019) (emphasis added). See also 40 C.F.R. § 1501.3(d)(2)(ii) (2024) (in evaluating an action's "intensity," agencies must analyze adverse effects on "parks").[147] The DEIS must clearly define the resources and values of the two national park units, and must assess the impacts of the different alternatives against the resources and values of these NPS units. Chiricahua National Monument's Foundation Document describes the importance of natural sounds and wilderness in the park. The Foundation Document also already notes the impairment that flights can have on wilderness experiences, "As backpackers ascend into higher elevations of the park, they are faced with ... distinct disturbances to their opportunity to experience solitude: low flying flights degrading the natural soundscape."[148] Organ Pipe Cactus National Monument has its wilderness described as a fundamental value and resource in its Foundation Document, which notes that "remote solitude" is a key part of this wilderness

[147] NEPA's 2020 CEQ NEPA regulations, since superseded, contain no discussion of intensity factors.
[148] National Park Service. 2016. Foundation Document—Chiricahua National Monument. Department of the Interior. https://www.npshistory.com/publications/foundation-documents/chir-fd-2016.pdf

experience for visitors.[149] These fundamental resources of both park units would be degraded by DAF's Proposed Action. The DEIS fails to take a hard look at these impacts.

2. Clearly foreseeable impacts on national park units are not adequately analyzed

National Park units and Wilderness Areas impacted by DAF's Proposed Action provide solitude and peace to people seeking undisturbed solace, along with adventure, hunting and fishing. The areas provide opportunities for fishing, hunting, backpacking, horseback riding and camping, and contain hundreds of miles of hiking trails. They also provide habitat for a multitude of diverse species of flora and fauna, serving as places where endangered and threatened species find refuge and ecosystems are able to function with little human manipulation. These protected lands enhance local communities by offering economic benefits, clean air and clean water, and by preserving natural environments for hunting, fishing, hiking, sightseeing, and other forms of quiet, minimal-impact recreation.

The Proposed Action and all other action alternatives would significantly damage Chiricahua National Monument and Organ Pipe Cactus National Monument, putting the region at increased risk of catastrophic wildfire from flares, increased noise, environmental effects from chaff, contamination of water, and negative impacts to tourism and local outdoor-based economies. Since an analysis of water resources wasn't carried forward in this DEIS, the chaff is of concern as it can have a significant impact to these fragile ecosystems (refer to previous sections on inadequate analysis of impacts of Chaff for more information).

In the Sells MOA, which includes Organ Pipe Cactus National Monument, the number of annual combat training flights, including supersonic flights, increases by up to 20% for a potential total of 17,810 in all action alternatives. In the Tombstone MOA, which could include a portion of Chiricahua National Monument and currently includes its contiguous landscape, the number of combat training flights permitted is increased up to 131%, for 8,000 sorties annually in all action alternatives. 99% of the Organ Pipe Cactus Wilderness is under the Sells MOA (Table 3.7-4 on p. 3-99 in DEIS). The Proposed Action is of particular concern for Chiricahua National Monument as it authorizes supersonic flight down to 5,000 feet AGL in the Tombstone MOA. The Proposed Action also lowers the floor of the Tombstone MOA to 100 feet AGL and authorizes the use of chaff within that MOA.

Lowering the floor of the Tombstone MOA to 100 feet AGL is extremely concerning and highly likely to negatively impact on Chiricahua National Monument. Authorizing supersonic flights down to 5,000 AGL in the Tombstone MOA will cause impairment through significant noise effects on wildlife, residents, and visitors at Chiricahua National Monument. The Proposed Action also expands the Tombstone MOA by approximately 10 nautical miles to further threaten Chiricahua National Monument. We question why the expansion of the Tombstone MOA into lands over Chiricahua National Monument is necessary, as the DEIS does not adequately describe this.

[149] National Park Service. 2016. Foundation Document—Organ Pipe Cactus National Monument. Department of the Interior. https://www.nps.gov/orpi/getinvolved/upload/ORPI_FD_SP.pdf

The newly added airspace would affect a portion of the southern part of Chiricahua National Monument. According to the DEIS, it would include over 3,500 acres of Chiricahua National Monument and its designated Wilderness Area (3-94). The proposal to expand the Tombstone MOA would include 34% of the Chiricahua National Monument Wilderness Area as well as a large percentage of its adjacent Wilderness Areas that connect the Chiricahua Mountains. This would further jeopardize the resources that Chiricahua National Monument was established to protect, as well as the surrounding Wilderness Areas. The DEIS failed to analyze this.

According to the DEIS, the portion of Chiricahua National Monument included in the Tombstone MOA expansion would experience a reportable noise increase (3-103):

> "The Chiricahua National Monument Wilderness is not currently beneath a MOA but the proposed Tombstone Expansion would overlie this Wilderness. The change in subsonic noise exposure (DNL) would likely be noticeable in this area and a person recreating in the area could experience the occasional low-level overflight. As described previously, the sound may be annoying or startling to a person or wildlife, may mask natural sounds like bird calls or rustling leaves, or temporarily interrupt outdoor conversation" (3-104).

While this impact is acknowledged, the harms resulting from such a reportable noise increased are not disclosed.

In addition to analyzing the impacts of sonic booms on wildlife, recreationalists and landowners, we encourage DAF to explore the effects that sonic booms can have on rock formations like the rhyolite rock pinnacles in Chiricahua National Monument. The park is renowned for these fragile and emblematic rock structures. Sonic booms could affect the stability of these structures, which attract tourists from around the world.

The question of training flight timing is also one of importance to the national parks. The number of day and night sorties is not made clear in the proposal. Both day and night flights can influence important wildlife in the national park units, as well as visitors who choose to camp at the campgrounds. The proposed alternatives for the MOAs do not analyze adverse impacts on the visitor experience at campground sites in either Chiricahua National Monument or Organ Pipe Cactus National Monument. Although a small section of Chiricahua National Monument is included in the Tombstone MOA expansion, due to the park's size and geography, effects of these training flights will be felt and heard in the entire park. There are also homes within the parks for staff. This demonstrate that these national park sites in the Sells and Tombstone MOAs are occupied areas and that is an important consideration for this DEIS.

In any scenario where flight training changes or modifications occur, we encourage DAF to provide training schedules and advanced notice to NPS and USFWS. This would enable agency scientists to better inform, educate, and prepare themselves, the residents of the park units, and the combined 250,000 visitors a year that come to Chiricahua and Organ Pipe Cactus National Monuments. Such notice would also allow for NPS and USFWS to explore how these flights affect wildlife through their data collection on their collared Sonoran Pronghorn populations.

The DEIS states that there may be effects to Saguaro National Park (1-13). Since that unit is outside of the described MOAs, we ask that DAF provide more information and analysis on those potential effects specific to Saguaro National Park, which is an important and iconic park known across the nation and the world. It is also important to note that many national parks benefit from Indigenous engagement and working with Tribal Nations. This proposal is concerning given that it strongly affects Native American communities in southern Arizona, who are the traditional stewards of Arizona's national parks.

3. Noise impacts on Organ Pipe and Chiricahua National Monuments and surrounding landscapes

DAF has not adequately evaluated noise impacts of expanding training on quality of life, public safety, environment, endangered species, and natural and cultural resources and local economies in general, or regarding Organ Pipe Cactus and Chiricahua National Monuments specifically.

NPS has been working to improve soundscape experiences for visitors for decades. DAF's Proposed Action would erode years of effort. According to the NPS Natural Sounds and Night Skies Division:

> "Although it cannot be seen, noise has a presence all its own that can affect park resources. Noise colors the experiences of park visitors, wildlife, and entire ecosystems. It can originate from inside and outside park boundaries. Recent studies have found that more than 60% of protected areas are exposed to noise that masks more than half of the natural sounds that would otherwise be heard. This loss of natural sounds detracts from visitors' enjoyment and interferes with wildlife communication and behavior."[150]

According to an NPS Natural Sounds and Night Skies Division Acoustic Environment and Soundscape Resource Summary at Organ Pipe Cactus National Monument:

> "acoustic resources protection and noise reduction are related to the following park priorities:
>
> - enhancing visitor experience,
> - conducting interpretive programs and park events,
> - remote and desert settings throughout the park,
> - preserving quality wildlife habitat,
> - quality camping experiences,
> - and wilderness character." [151]

[150] National Park Service. Natural Sounds and Night Skies Division. Last updated March 23, 2018. Accessed September 2024. https://www.nps.gov/subjects/sound/noise.htm

[151] National Park Service. *No date given.* Acoustic Environment and Soundscape Resource Summary Organ Pipe Cactus National Monument. Natural Resource Stewardship and Science Natural Sounds & Night Skies Division. https://npshistory.com/publications/orpi/resource-briefs/acoustic.pdf

The DEIS does not adequately analyze the impacts of the Proposed Action's clearly foreseeable likelihood to impair on these fundamental resource values of Organ Pipe Cactus and to Chiricahua National Monuments, and to undo years of National Park Service efforts to minimize noise impacts.

There is no sound in nature that compares to a supersonic boom. While sound analogies can be helpful for conceptualizing the impact of noise, anthropogenic noise, like that of military overflights and combat training, would not occur on the landscape naturally. This increase in noise levels has been shown to present challenges associated with protecting endangered species and species of special conservation need: "Many animal species use sound to communicate, to detect prey and avoid predation. Noise can mask communication, cause behavioral changes, interfere with daily cycles, and can cause stress. Increased noise levels reduce the distance and area over which animals can perceive important acoustic signals." (DEIS, 3-77). This could have important implications for wildlife at Organ Pipe Cactus National Monument, including the threatened Sonoran pronghorn and the Cactus ferruginous pygmy-owl (CFPO). The CFPO is a species that is extremely vocal. Noise from the proposed training flights could affect communication and its ability to find mates and reproduce, which is a serious concern for an already-threatened population (refer to Section J of these comments "*The DEIS Fails to Adequately Analyze Foreseeable Impacts to Wildlife"* for further details of the Proposed Action's impacts to Sonoran pronghorn and CFPO.)

The DEIS cites a 1992 study regarding the responses of captive ungulates to sonic booms, which suggests that the animals became habituated to sonic booms (3-80). The use of this outdated study does not provide an accurate case study or parallel for the local species, particularly the Sonoran pronghorn in Organ Pipe Cactus National Monument. The existing limited data on pronghorn reactions to sonic booms makes it questionable if the "behavioral impacts would be brief and minor" as stated in the DEIS (3-87). Yet, the DEIS concludes that, "the proposed training would contribute only insignificant increases to the average acoustic environment and would not create a consistent, significant noise source in any location" (3-90). This is inaccurate, as the average acoustic environment is not how wildlife (or humans) experience noise. Animals hear the actual noise as it occurs in the present, not as a Day-Night Average Sound Level (DNL). Wildlife experience noise impacts from shorter term and punctuated events, like those of supersonic flights. This noise increase also has implications for public safety. The loud, sudden noises which result from low-flying aircraft can also easily frighten horses and mules, who may throw their riders, causing injuries and even fatalities to equestrians, hunters, packers, and outfitters who frequent areas throughout the Sonoran Desert and the Chiricahua Mountains. The DEIS failed to adequately analyze this, violating NEPA's hard look requirement.

4. Impact of chaff and fire risk on national park units and Wilderness Areas has not been adequately analyzed

Chaff release will be authorized and the minimum release altitude of burning flare cartridges would be lowered in the Tombstone MOA under the Proposed Action and the Sells MOA would see an annual increase in chaff usage under the Proposed Action. Increased use of flares in the Tombstone MOA would cause particularly concerning impacts to Chiricahua

Mountains, which has already suffered severe human-caused wildfires burning 223,000 acres in the mountain range, including significant portions of the Chiricahua National Monument.[152]

The DEIS states that “Fire risk associated with flares stems from an unlikely, but possible, scenario of a flare reaching the ground or vegetation while still burning. If a flare struck the ground while still burning, it could ignite surface material and cause a fire” (3-17), and “the probability of ignition given a hot inert item reaching the surface can be assessed based on the moisture content of 'fuel’ (vegetation and other combustible materials on the ground), which can be derived from local meteorological history and current conditions” (3-21). This potential use of flares is of severely concerning for our national park units in Southern Arizona, which, given regional drought and climate change, are at high risk for devastating wildfires.

The DEIS does not take a hard look at the potential impacts of chaff on the environment and public health, including drift of the chaff; chaff’s impact on waters and species in the area; and potential for inhalation of the chaff fibers or degraded debris that have accumulated over time. The Proposed Action will impact both Chiricahua and Organ Pipe Cactus National Monuments and, the dropping of chaff onto those landscapes would harm the wilderness characteristics of the greater landscapes and increase wildlife risk to surrounding communities. The impact of chaff on water quality is also inadequately addressed in the DEIS; the dumping of chaff, residual plastic chaff, and flare materials into national park units, Wilderness Areas, and any other waterways and drainages as the Proposed Action would do, could have an adverse impact on downstream municipalities, ecosystems, agriculture, and recreational interests.

5. Failure to assess the value of national parks, Wilderness Areas, and wild places

Visitors go to national parks and Wilderness Areas to seek quiet, peace, and solitude. In addition to the economic values lent by recreational use and hunting and fishing, the national parks and Wilderness Areas affected by the Proposed Action are pristine and unique regions featuring rich biodiversity, thriving ecosystems, crucial wildlife corridors, migratory bird habitats, historical and cultural resources, and intrinsic qualities such as solitude, dark skies, and quiet acoustics.

Chiricahua National Monument and Organ Pipe Cactus National Monument are two sites of incredible cultural, ecological, geological, and economic value. Indigenous peoples have thousands of years of history protected and told in these parks. 95% of Organ Pipe is designated as wilderness while 86% of Chiricahua National Monument is designated wilderness. Chiricahua National Monument is also being considered for designation as a National Park, which is currently a bipartisan legislative effort in Congress. This is a testament to the unique values that the park unit offers, the same values which would be significantly impacted by DAF’s Proposed Action.

Chiricahua and Organ Pipe Cactus National Monuments each hold an incredible record of cultural and archeological history from Indigenous peoples who inhabited these areas since time

[152] National Park Service. 2024. Chiricahua National Monument -- Horseshoe Two Fire- 2011. Last updated May 6, 2024. Accessed September 2024. https://home.nps.gov/chir/learn/nature/horseshoe-two-fire-2011.htm

immemorial. Chiricahua National Monument holds a palimpsest of historical moments, including the Apache Wars and history of settlers at places like the Faraway Ranch. Organ Pipe Cactus National Monument has been a significant and special place for the Tohono O'odham and Hia C-ed O'odham communities since time immemorial. The DEIS states:

> "In addition, NPS acts on behalf of the Secretary of the Interior in undertakings that may impact National Historic Landmarks per NHPA and its implementing regulations at 36 CFR Part 800, of which there are eight (Ventana Cave, Point of Pines, Sierra Bonita, Kinishba, Double Adobe, San Bernardino, Phelps Dodge General Office Building, and Fort Apache/Theodore Roosevelt School) in the project area. The DAF is consulting with NPS on potential effects to these properties" (1-13).

DAF must share this analysis of potential impacts on historic properties, structures and archaeological sites with the public (while exempting culturally sensitive and location-specific information that should not be made public due to resource protection concerns), and disclose impacts to these sites in any subsequently prepared NEPA analysis.

6. Impacts to tourism, outdoor recreation, and local economies surrounding national park units have not been adequately analyzed

The DEIS does not acknowledge the economic importance of national park units in its analysis, nor the potential effects of increased, low altitude flights on the tourism economy. Increased noise and visual intrusion of the Proposed Action has the clear potential to reduce tourism and outdoor recreation opportunities, such as hunting, hiking, camping, bird watching, fishing, horse/mule packing, and visitation at national park units in southern Arizona. Recreation is a major contributor to local economies and quality of life in southern Arizona. Chiricahua and Organ Pipe Cactus National Monuments draw millions of dollars and hundreds of thousands of visitors to communities and recreational lands in this region each year. The economic benefits of recreation-based tourism must be analyzed by the DEIS, and not discounted. Together in 2023, Chiricahua and Organ Pipe Cactus National Monuments brought in close to $17 million in visitor spending and supported over 200 jobs.[153]

These statistics are not even mentioned, much less analyzed, in the DEIS, violating NEPA's hard look mandate.

R. <u>There is No Analysis in the DEIS of Impacts to Veterans, People with PTSD, and Others with Behavioral Health Issues.</u>

The DEIS includes no analysis of the impact of noise on veterans, people with Post Traumatic Stress Disorder (PTSD), and people with other similar behavioral health issues. When this issue was raised in scoping comments, DAF elected not to address it saying "Section 3.4, Noise provides the results of the noise study. Other resource areas address those noise impacts on various human and environmental resources" (D-131).

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[153] National Park Service. 2024. Visitor Spending Effects - Economic Contributions of National Park Visitor Spending. Chiricahua and Organ Pipe Cactus National Monuments. Accessed September 2024. https://www.nps.gov/subjects/socialscience/vse.htm

This issue is extremely important to military service men and women and was brought up by many, both in scoping and during public comments on the DEIS. The callous dismissal of these significant issues violates NEPA's hard look command.

This topic is particularly important rural areas and Tribal Nations that would bear the brunt of the burden of the Proposed Action, as a significant number of veterans and other people with PTSD have often sought out quiet areas to manage their conditions.

The American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR) defines PTSD as "an anxiety disorder that develops in relation to an event which creates psychological trauma in response to actual or threatened death, serious injury, or sexual violation."[154] Factors associated with developing PTSD include the intensity of the trauma, losing a loved one, and/or being injured during the trauma. Other factors include intensity of the event, proximity to the event, control over the event, as well as the help and support offered during and after the event.

PTSD flashbacks can be triggered by things that remind people of the original traumatic event. For veterans, loud overflight noise is an obvious trigger.[155] We again express our dismay that no analysis on impact to veterans and other people living with PTSD was included in the DEIS. This illustrates a remarkable and callus failure of DAF to care for its own service men and women. A supplemental DEIS should include this analysis.

S. The DEIS Fails to Adequately Analyze Impacts to Livestock and Ranching.

The DEIS states, "The Proposed Action is not expected to have a significant impact on domestic animals or livestock. The noise from overflights may startle domestic animals, but detrimental harm is unlikely. Thus, the Proposed Action would not significantly impact ranching or livestock Industries" (3-117). This is inadequate.

Domestic animals and livestock are shown to experience panic and fear responses leading to injury from loud noises and sonic booms.[156] Scientists have also raised concerns about livestock eating chaff.[157] Beyond causing harm to animals themselves, the many ranchers manage livestock as a part of their daily lives, especially those who do so on horseback, have expressed fear of animals experiencing sonic booms and other loud aircraft noise that could cause accidents and falls. These concerns are especially pronounced in Tribal and rural communities, which are disproportionately targeted by the Proposed Action.

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[154] American Psychiatric Association, 2013. Diagnostic and statistical manual of mental disorders, 5th ed. Arlington, VA: American Psychiatric Publishing.
[155] U.S. Department of Veterans Affairs. 2024. Trauma Reminders: Triggers. PTSD: National Center for PTSD. Accessed October 2024. https://www.ptsd.va.gov/understand/what/trauma_triggers.asp
[156] Manci, K.M., D.N. Gladwin, R. Villella, and M.G. Cavendish. 1988. Effects of aircraft noise and sonic booms on domestic animals and wildlife: a literature synthesis. U.S. Fish and Wildl. Serv. National Ecology Research Center, Ft. Collins, CO. NERC-88/29. 88 pp.
[157] Spargo, Barry, D. Arfsten, and C. Wilson. Human and Environmental Health Issues Related to Use of Radio Frequency Chaff. Navy Medicine, Volume 92, No. 5 (September-October 2001):12-16.

The DEIS failed to take a hard look at these issues while brushing off impacts without meaningful analysis. DAF must gather more data, review existing scientific literature, and analyze the effects of this proposal on livestock, domestic animals, and ranchers in a supplemental DEIS.

T. The DEIS Fails to Adequately Analyze Impacts to Equestrians and Pack Animals, Including Safety Issues of Riders Thrown from Horses.

Loud, low-flying aircraft can easily spook horses and mules, which may throw their riders, causing injuries and even fatalities to equestrians, hunters, packers, and outfitters who frequent areas throughout the MOAs. Horse Packing and travel, hunting with horses, and guiding with horses occurs with regularity throughout the region. However, the increased potential danger to riders is completely left out of this analysis.

The DEIS gives contradictory information saying both that animals will acclimatize to startle noises from military training noise, and that the chances of repeated startle events in any one place is remote so the chances for repeated annoyances are minimal. Additionally, no information on compensation for injuries is provided in the DEIS. This analysis is incomplete and inadequate.

U. The DEIS Fails to Fully Analyze the Cumulative Impacts on the Gila Region and Southwest New Mexico from Increased use of VR-176 and VR-263.

The Gila Region, particularly those areas of the Gila National Forest and Wilderness lying beneath Visual Route (VR)-176, already experiences the negative impacts to noise, startle to livestock, danger to horse riders, and depreciation of the value of recreational properties due to DAF's existing low-altitude combat training. Low flying aircraft below 500 feet already skim ridge tops, fly river corridors and disrupt communities. The cumulative impact of the additional low level, or mid-level flights on the Gila National Forest, Wilderness Areas, and forest communities has not been evaluated in the current DEIS. Communities such as Gila Hot Springs, Reserve, Glenwood, Pleasanton, Gila, Cliff, Mimbres, and many others, are already experiencing negative impacts from low altitude training activity in VR-176 and VR-263

The avoidance zones created by DAF (see Figure 23 below) to mitigate these impacts over small rural communities in the Gila are constantly being violated. DAF has shown limited capability or interest in following up on which aircraft are buzzing rural communities and valleys. Military pilot training is consistently violating the existing minimum floor over the Gila Wilderness and the Gila Cliff Dwellings National Monument. It has proven near impossible to stop these violations, even though these incidents are routinely and systematically reported to DAF bases and the FAA (see Appendix C: Nuisance Flight Reports).

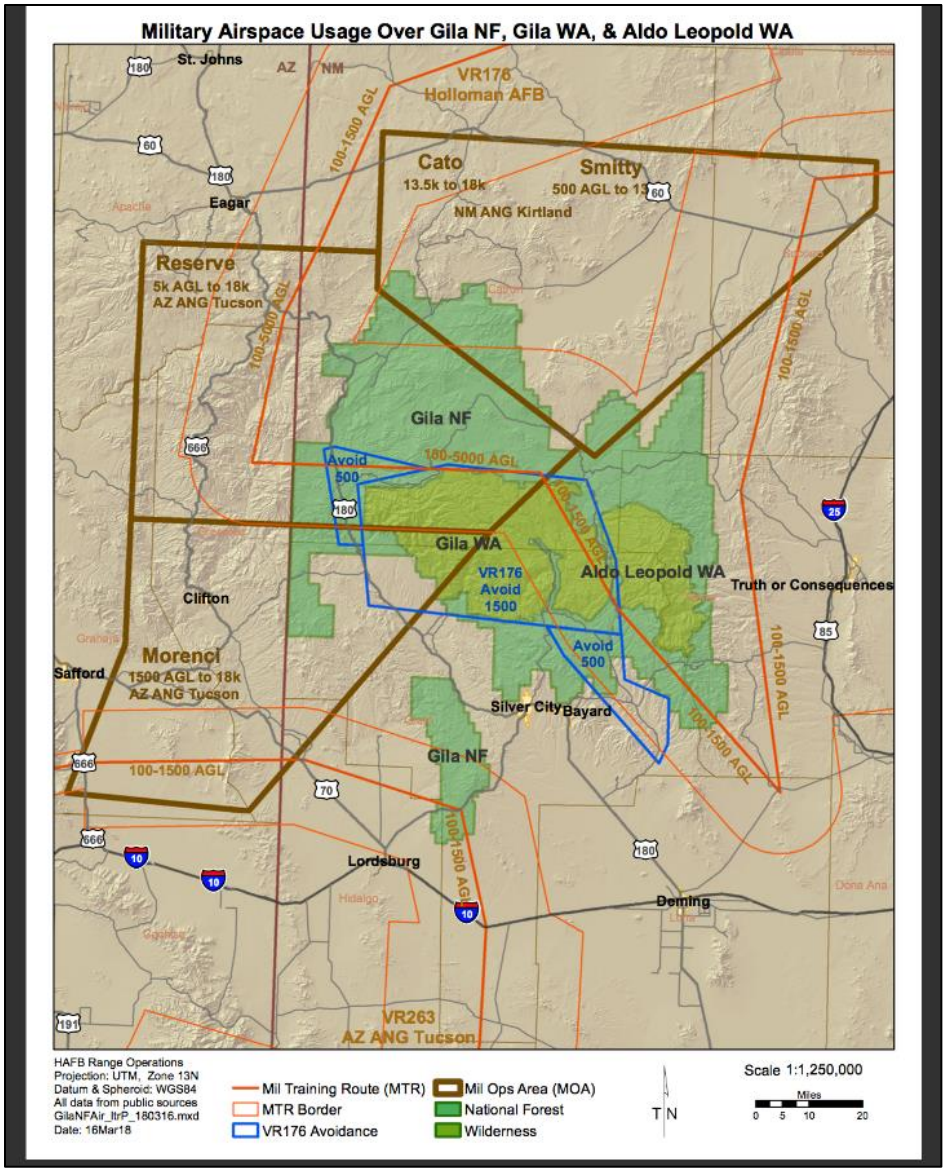

Figure 23: *Military Airspace and Avoidance Areas over the Gila Region and Gila and Aldo Leopold Wilderness*

Avoidance areas over the Gila Wilderness have been insufficient to protect communities and important natural and cultural resources because the DAF has failed to ensure that its pilots adhere to these avoidance areas guidelines.

With a significant increase in military training for the Reserve and Morenci MOAs under the Proposed Action, substantially more sorties will be expected to utilize VR 176 and 263 when returning to their bases and connecting their missions across the MOAs. The Gila region can expect to see a cumulative effect of even more training missions violating the avoidance area regulations. This will exacerbate an already untenable situation, leading to even more harassment of local communities. Based on the fact that DAF continues to refuse to respond to nuisance reports and near-constant complaints from local residents, how can we expect DAF to monitor or enforce a clear likelihood of increased violations?

Below is an example of one recent nuisance report, submitted on February 9th, 2024 — to which DAF was unresponsive — from a hiker who was not in an active MOA, but within the 30 mile corridor of VR-176, just north of the Morenci MOA. See Appendix C: Nuisance Flight Reports, for more complaints collected in 2023 and 2024.

> "I was hiking with my two dogs on the Continental Divide Trail on Friday, February 9, 2024. The section of the trail I was on at the time is in the series of low hills and gullies. The trail was curving around the side of a hill. Without any warning the jet came into view around the curve of the hill. It was coming straight at me. It was so low I did not have to tilt my head back to see the jet under the brim of my ball cap. The wings were in a vertical position as the jet hugged the hill and the jet engine was making a high-pitched screaming noise. My dogs tried to bolt but I was able to hold onto their leashes. The jet rapidly disappeared around the curve of the hill behind me. My ears were ringing for about 10 minutes and I had low-level ear pain in one ear for about 2 minutes. I was terrified, looking right into an oncoming jet. I didn't know if it was going to crash, being so close to the ground and the hill. I didn't know if I would be injured by the noise or jet fuel. I could not believe it was happening -- how could that be lawful or allowable? How could I be subjected to that when peacefully and legally using a recreational trail on public lands? The jet was so low and the trail there is so well trodden that the pilot would have had no doubt that he/she was buzzing a hiking trail, and as he/she was hugging a hillside he/she would have had no idea what or who was on the trail as he/she rounded the curves."

These types of impacts must be disclosed in any subsequently prepared NEPA analysis.

V. <u>The DEIS Analysis of Safety and Aircraft "Mishaps" (Crashes) Is Inadequate.</u>

The DEIS says that "pilots of aircraft are instructed to avoid direct overflight of population centers at very low altitudes" (3-18). Based on first person reports from residents within the MOAs, frequent, low altitude flights over populated areas are already happening, often in violation of existing regulations. (See Appendix C: Nuisance Flight Reports.) The Proposed Action would vastly expand these dangerous and bothersome flights, and significantly increase the risk of a crash over one of these populated areas where low-elevation flights have already become common.

Secondly, the DEIS says that the "limited amount of time the aircraft is over any specific geographic area limits the probability that a disabled aircraft would impact a populated area" (3-18). Again, the many nuisance flight reports demonstrate that flights are being concentrated in certain populated areas, making a catastrophic crash more likely in these areas. It's common sense that greatly expanding low-elevation sorties would increase the likelihood of crashes. This is especially concerning given that the Proposed Action would vastly increase low-elevation maneuvers over some of the most populated areas in the MOA's like the Tombstone MOA.

In addition, there have already been numerous DAF "mishaps" or crashes. According to the Air Force Times, "Six F-16s have been involved in accidents so far this year. About three Fighting Falcons have been totaled each year on average for the past decade."[158]

Serious crashes have included: an F-16 crash on the Tohono O'odham Nation in 2004 that killed a Singaporean pilot[159]; an F-16 crash near Douglas, AZ in 2015 that killed an Iraqi pilot[160]; an F-16 crash near Bagdad, AZ that killed a Taiwanese pilot in 2016[161]; an F-16 crash near Safford, AZ that killed an Iraqi pilot[162]; and a non-fatal F-35 crash near Albuquerque in 2024.[163] There are many other crashes not included here. This shocking number of serious, often fatal crashes the local area belies DAF's assertion that the probability of a crash is extremely low, and with substantially increased numbers of flights, that probability increases.

The use of military drones is not mentioned in the DEIS. A local news outlet recently reported "22 incidents between October 2022 and June 2023 where Air Force fighter pilots reported seeing or colliding with drones in mid-flight."[164] We request that data and analysis on the use of both civilian and military drones in the MOAs be included in an updated safety analysis in a supplemental DEIS.

VIII. DAF'S CREDIBILITY FOR THIS DEIS IS UNDERCUT BY EXISTING FAILURES TO ADHERE TO SUA AND FAA RULES AND REGULATIONS

Throughout the DEIS, DAF acknowledges Code of Federal Regulations Section 91.119 which defines FAA minimum safe altitudes for all flights. For example, the DEIS says "In accordance with FAA minimum safe altitudes (14 CFR § 91.119), aircraft must avoid congested areas of a city, town, or settlement or any open-air assembly of people by 1,000 feet above the highest obstacle within a horizontal radius of 2,000 feet of the aircraft. Outside congested areas, aircraft must avoid persons, vessels, vehicles, or structures by 500 feet." In fact, this is part of the

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[158] Air Force Times. 2022. Fighter pilot who tailed a civilian plane blamed for destroying F-16. By Rachel S. Cohen. December 2, 2022. https://www.airforcetimes.com/news/your-air-force/2022/12/02/fighter-pilot-who-tailed-a-civilian-plane-blamed-for-destroying-f-16/

[159] U.S. Air Force. Officials announce F-16 accident investigation findings. December 7, 2004. https://www.af.mil/News/Article-Display/Article/135447/officials-announce-f-16-accident-investigation-findings/

[160] CNN. Iraqi pilot dies in F-16 crash in Arizona. By Cameron Tankersley and Joshua Berlinger. June 26, 2015. https://www.cnn.com/2015/06/26/us/arizona-f-16-crash/index.html

[161] AP News. Military: Human remains found at Arizona F-16 crash site. January 21, 2016. https://apnews.com/general-news-1ffbc9c257e64900a9d051762c68f4a6

[162] AP News. Iraqi student pilot killed in Arizona F-16 crash identified. September 6, 2017. https://apnews.com/general-news-d4a21a03097c4870884600d24e5e3085

[163] Military News. 2024. F-35 Crashes Outside of Albuquerque Airport; Pilot in Serious Condition. By Drew F. Lawrence and Thomas Novelly. May 29, 2024. https://military.com/daily-news/2024/05/29/f-35-crashes-outside-of-albuquerque-airport-pilot-serious-condition.html

[164] Arizona's Family News. Report: Fighter jet that collided with drone mid-air in southern Arizona suffered no damage. By Morgan Loew and Cody Lillich. April 5, 2024. https://www.azfamily.com/2024/04/05/report-fighter-jet-that-collided-with-drone-mid-air-southern-arizona-suffered-no-damage/

rationale DAF uses to claim that there are no significant impacts of noise, dangerous aircraft crashes, and other safety risks as a result of this proposal.

However, these rules have been broken regularly and routinely over the past two years. This has documented by hundreds of nuisance flight reports made to DAF and ANG (see Appendix C: Nuisance Flight Reports.)

Data on actual military flights has been requested from DAF under FOIA to corroborate these violations. However, those requests were denied, and there is a pending lawsuit on that issue. These persistent and well-documented violations demonstrate DAF's inability to enforce or abide by existing regulations. Enforcement of and accountability to existing rules and regulations must be ensured before DAF is allowed to vastly expand airspace, as the Proposed Action would do.

We once again request that military flight data from all MOAs in the Action Area between January 1, 2022, and October 9, 2024 be disclosed, that this data be analyzed for FAA and airspace violations, and that a plan be developed to minimize this in the future. We request that a supplemental DEIS include these data.

IX. CONCLUSION

The DEIS is fundamentally flawed and demands either abandonment or a complete rewrite. The proposal seeks to convert vast public, Tribal, and private lands in Arizona and New Mexico into low-elevation military training zones without fully considering the environmental, cultural, and social impacts. The DEIS's stated purpose is based on misleading claims, such as the inclusion of nearly 19,000 flight hours from soon-to-be-retired A-10 aircraft, which inflates the supposed airspace shortage. Furthermore, the DEIS fails to address that future aircraft at Davis-Monthan Air Force Base do not require low-elevation or supersonic airspace, making the need for expanded training zones unwarranted. DAF has ignored the fact that BMGR, with adjustments such as weekend training, could fully accommodate the remaining airspace demands.

The DEIS also violates NEPA by failing to consider reasonable alternatives. Viable options, such as increasing the use of BMGR or restricting training to its existing areas, were arbitrarily dismissed without proper analysis. These alternatives would have mitigated much of the environmental harm, yet DAF has not justified why the expansion of low-altitude training across the 10 MOAs in the Project Area is necessary. Instead, DAF has relied on flawed assumptions that exaggerate the need for additional airspace.

Equally concerning is DAF's exclusion of key impacted populations, including Tribal Nations, Cochise County, and other impacted communities, from the decision-making process. No public hearings were held in Cochise County, Arizona, or on Indigenous lands, despite these areas being at the center of the proposed action's impacts. Public comments during the scoping phase were either dismissed or inadequately addressed, and DAF failed to respond substantively to concerns regarding environmental degradation, noise pollution, and violations of federal

airspace regulations. Until these critical issues are addressed through a transparent and legally compliant process, the DEIS remains unacceptable and indefensible.

REFERENCES:

AP News. Iraqi student pilot killed in Arizona F-16 crash identified. September 6, 2017. https://apnews.com/general-news-d4a21a03097c4870884600d24e5e3085.

AP News. Military: Human remains found at Arizona F-16 crash site. January 21, 2016. https://apnews.com/general-news-1ffbc9c257e64900a9d051762c68f4a6.

Air Force Times. 2022. Fighter pilot who tailed a civilian plane blamed for destroying F-16. By Rachel S. Cohen. December 2, 2022. https://www.airforcetimes.com/news/your-air-force/2022/12/02/fighter-pilot-who-tailed-a-civilian-plane-blamed-for-destroying-f-16/.

U.S. Air Force. Officials announce F-16 accident investigation findings. December 7, 2004. https://www.af.mil/News/Article-Display/Article/135447/officials-announce-f-16-accident-investigation-findings/.

Aircraft Owners and Pilot's Association (AOPA), 2017. Letter to Holloman AFB c/o Cardno, re: Notice of Intent to Prepare an Environmental Impact Statement for the Special Use. From Rune Duke, Director of Airspace and Traffic. September 18, 2017.

Aliyu, Aliyu, Abdu, I. Garkuwa, I. Singhry, M. Muhammad, H. Baba. 2016. Influence of aircraft noise on residential property values: evidence from current literature. Proceedings of the Academic Conference of Nightingale Publications & Research International on Sustainable Development. Vol. 2 No. 3. 31st March, 2016 – Federal University of Technology, Minna, Education Resource Centre Conference Hall, Niger State, Nigeria**.**

American Psychiatric Association, 2013. Diagnostic and statistical manual of mental disorders, 5th ed. Arlington, VA: American Psychiatric Publishing.

Arizona's Family News. Report: Fighter jet that collided with drone mid-air in southern Arizona suffered no damage. By Morgan Loew and Cody Lillich. April 5, 2024. https://www.azfamily.com/2024/04/05/report-fighter-jet-that-collided-with-drone-mid-air-southern-arizona-suffered-no-damage/.

Balch, Jennifer, V. Iglesias, A.L. Mahood, M.C. Cook, C. Amaral, A. DeCastro, S. Leyk, T.L. McIntosh, R.C Nagy, L. St. Denis, T. Tuff, E. Verleye, A.P. Williams, C.A. Kolden. 2024. The fastest-growing and most destructive fires in the US (2001 to 2020). *Science* 386,425-431(2024). DOI: 10.1126/science.adk5737.

Bleich, V.C., Bowyer, R.T., Pauli, A.M., Nicholson, M.C., and Anthes, R.W., 1994. Mountain sheep Ovis canadensis and helicopter surveys: ramifications for the conservation of large mammals. Biological Conservation 70:1-7.

Bunkley, J. Christopher J.W. McClure, Nathan J. Kleist, Clinton D. Francis, Jesse R. Barber. 2015. Anthropogenic noise alters bat activity levels and echolocation calls, Global Ecology and Conservation,

Volume 3, 2015, Pages 62-71, ISSN 2351-9894. https://doi.org/10.1016/j.gecco.2014.11.002.

Buxton, Rachel & McKenna, Megan & Mennitt, Daniel & Fristrup, Kurt & Crooks, Kevin & Angeloni, Lisa & Wittemyer, George. (2017). Noise pollution is pervasive in U.S. protected areas. Science. 356. 531-533. 10.1126/science.aah4783.

Citizens for Safe Water Around Badger. 2024. Does U.S. Military Chaff Contain PFAS? https://cswab.org/does-u-s-military-chaff-contain-pfas/.

Chicago Sun-Times. 2016. Assessed value of 8,000 homes cut due to O'Hare jet noise. By Roaslind Rossi. September 22, 2016. https://chicago.suntimes.com/2016/9/22/18345011/assessed-value-of-8-000-homes-cut-due-to-o-hare-jet-noise.

CNN. Iraqi pilot dies in F-16 crash in Arizona. By Cameron Tankersley and Joshua Berlinger. June 26, 2015. https://www.cnn.com/2015/06/26/us/arizona-f-16-crash/index.html.

Cornell Laboratory of Ornithology. 2023. eBird_Basic_Dataset_Metadata_v1.15. Revised July 12, 2023. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Cornell Laboratory of Ornithology. 2024(a). Summary Sheets for eBird Basic Dataset. Version: EBD _relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Cornell Laboratory of Ornithology. 2024(b). Raw Data (Excel Format) for eBird Basic Dataset. Version: EBD _relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Cornell Laboratory of Ornithology. 2024(c). Raw Data (Text Format) for eBird Basic Dataset. Version: EBD _relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Clinton, W. J. (1994). Executive Order on Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. Order, 12898.

Ellis, D.H. 1981. Responses of raptorial birds to low level military jets and sonic booms. Results of the 1980-1981 Joint USAF–USFWS Study. Natl. Tech. Infor. Serv., Springfield, Virginia.

Environmental Protection Agency. 2024. Research on Per- and Polyfluoroalkyl Substances (PFAS). Accessed September 2024. https://www.epa.gov/chemical-research/research-and-polyfluoroalkyl-substances-pfas.

Environmental Protection Agency. 1971. The Effects of Sonic Boom and Similar Impulsive Noise on Structures. December 31, 1971. Washington D.C. 20460. https://nepis.epa.gov/Exe/tiff2png.cgi/9101C5O3.PNG?-r+75+-g+7+D%3A%5CZYFILES%5CINDEX%20DATA%5C70THRU75%5CTIFF%5C00002729%5C9101C5O3.TIF.

Federal Communications Commission. 2021. FOURTEENTH BROADBAND DEPLOYMENT REPORT. GN Docket No. 20-269. Released: January 19, 2021. https://docs.fcc.gov/public/attachments/FCC-21-18A1.pdf.

FICUN stands for Federal Interagency Committee for Urban Noise. 1980. Guidelines for Considering Noise in Land Use Planning and Control. Formalized as regulations by the Federal Aviation Administration (FAA) in 1981.

Fidell, Stephen. "The Schultz curve 25 years later: A research perspective" *Journal of the Acoustical Society of America*. Volume 114, Issue 6 December 2003 https://pubs.aip.org/asa/jasa/article-abstract/114/6/3007/544386/The-Schultz-curve-25-years-later-A-research?redirectedFrom=PDF.

Fields, James M. A Review of an Updated Synthesis of Noise/Annoyance Relationships, July 1994 prepared for NASA. https://ntrs.nasa.gov/api/citations/19940029797/downloads/19940029797.pdf.

Frid, Alejandro. April 2003. Dall's sheep responses to overflights by helicopter and fixed-wing aircraft. Biological Conservation, Vol. 110(3):387-399.

Gjestland, Truls. 2019. In International Civil Aviation Organization 2019 Environment Report. Pp89-92. https://www.icao.int/environmental-protection/Documents/EnvironmentalReports/2019/ENVReport2019_pg89-92.pdf.

Harrington, F. H., and A. M. Veitch. 1991. Short-term impacts of low-level jet fighter training on caribou in Labrador. Arctic 44:318-327. AND - 1992. Calving success of woodland caribou exposed to low-level jet overflights. Arctic 45:213-218.

International Chemical Secretariat. 2022. The Teflon chemical PTFE is often touted as a safe cousin of toxic PFAS. But is it really? Accessed September 2024 https://chemsec.org/the-teflon-chemical-ptfe-is-often-touted-as-a-safe-cousin-of-toxic-pfas-but-is-it-really/.

Johnson, C., Reynolds, R. 2002. Responses of Mexican Spotted Owls to Low-flying Military Jet Aircraft. U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. January 2002.

Johnson, Melissa R. U.S. Air Force Capatin. 2006. An analysis of USAF aircraft noise and hedonic property values. Department of the Air Force Air University Air Force Institute of Technology. Wright-Patterson Air Force Base, Ohio. AFIT/GEM/ENV/06M-07.

Military News. 2024. F-35 Crashes Outside of Albuquerque Airport; Pilot in Serious Condition. By Drew F. Lawrence and Thomas Novelly. May 29, 2024. https://military.com/daily-news/2024/05/29/f-35-crashes-outside-of-albuquerque-airport-pilot-serious-condition.html.

Kepas ME, Sermersheim LO, Hudson SB, Lehmicke AJJ, French SS and Aubry LM (2023) Behavior, stress and metabolism of a parthenogenic lizard in response to flyover noise. Front. Amphib. Reptile Sci. 1:1129253. doi: 10.3389/famrs.2023.1129253.

Ketcham, Shari & Koprowski, John. 2013. Impacts of Wildfire on Wildlife in Arizona: A Synthesis. School of Natural Resources and the Environment, University of Arizona, Tucson, Arizona.

Landon, Deborah & Krausman, Paul & Koenen, Kiana & Harris, Lisa & Ammerman, Loren. (2003). Pronghorn use of areas with varying sound pressure levels. Southwestern Naturalist - SOUTHWEST NATURALIST. 48. 725-728. 10.1894/0038-4909(2003)048<0725:PUOAWV>2.0.CO;2.

Lawler, J., Griffith, B., Johnson, D. and Burch, J. 2004. The effects of military jet overflights on Dall's sheep in interior Alaska. The National Park Service, Alaska Region, Fairbanks, Alaska, USA.

Lynch, E., Joyce, D. & Fristrup, K. 2011. An assessment of noise audibility and sound levels in U.S. National Parks. Landsc. Ecol. 26: 1297–1309.

Machado, Anderson Abel de Souza; W. Kloas; C Zarfl; S. Hempel; and M.C. Rillig, 2017. Microplastics as an emerging threat to terrestrial ecosystems. Global Change Biology, Volume 24, Issue 4, April 2018, Pages 1405-1416).

Maier, J., Murphy, S., White, R., & Smith, M. (1998). Responses of Caribou to overflights by low-altitude jet aircraft. *Journal of Wildlife Management*, 62, 752-766. https://doi.org/10.2307/3802352

Manci, K., Gladwin, D., Villella, R. and Cavendish, M. 1988. Effects of Aircraft Noise and Sonic Booms on Domestic Animals and Wildlife: A Literature Synthesis. U.S. Fish & Wildlife Service, National Ecology Research Center, Fort Collins, Colorado. June 1988.

Mason, J. Tate; McClure, Christopher J.W.; and Barber, Jesse R. (2016). "Anthropogenic Noise Impairs Owl Hunting Behavior". *Biological Conservation, 199,* 29-32. http://dx.doi.org/10.1016/j.biocon.2016.04.009.

Mulero-Pázmány, Margarita & Jenni-Eiermann, Susanne & Strebel, Nicolas & Sattler, Thomas & Negro, Juan & Tablado, Zulima. (2017). Unmanned aircraft systems as a new source of disturbance for wildlife: A systematic review. PLOS ONE. 12. 10.1371/journal.pone.0178448.

National Academy of Engineering "Technology for a Quieter America" 2010. http://nap.edu/12928

National Audubon Society. 2024. Chiricahua Mountains IBA, Apr. 26, 2024. https://gis.audubon.org/portal/apps/dashboards/ab402cba1acc461d924783cf0f5e181c#site=2286

National Park Service. 2024. Visitor Spending Effects - Economic Contributions of National Park Visitor Spending. Chiricahua and Organ Pipe Cactus National Monuments. Accessed September 2024. https://www.nps.gov/subjects/socialscience/vse.htm.

National Park Service. 2024. Chiricahua National Monument -- Horseshoe Two Fire- 2011. Last updated May 6, 2024. Accessed September 2024. https://home.nps.gov/chir/learn/nature/horseshoe-two-fire-2011.htm

National Park Service. 2016. Foundation Document, Gila Cliff Dwellings National Monument. June 2016.

National Park Service. 2016. Foundation Document—Chiricahua National Monument. Department of the Interior. https://www.npshistory.com/publications/foundation-documents/chir-fd-2016.pdf .

National Park Service. 2016. Foundation Document—Organ Pipe Cactus National Monument. Department of the Interior. https://www.nps.gov/orpi/getinvolved/upload/ORPI_FD_SP.pdf.
National Park Service. 1995. Report on Aircraft Overflights on the National Park System. United States Department of the Interior, National Park Service, July 1995.

National Park Service. 2018. Effects of Noise on Wildlife. Natural Sounds. Last updated February 2, 2018. Accessed September 2024. https://www.nps.gov/subjects/sound/effects_wildlife.

National Park Service. 2024. STATS NPS Visitor Use Statistics. Chiricahua National Monument, Organ Pipe Cactus National Monument https://irma.nps.gov/Stats/.

National Park Service. Natural Sounds and Night Skies Division. Last updated March 23, 2018. Accessed September 2024. https://www.nps.gov/subjects/sound/noise.

National Park Service. *No date.* Acoustic Environment and Soundscape Resource Summary Organ Pipe Cactus National Monument. Natural Resource Stewardship and Science Natural Sounds & Night Skies Division. https://npshistory.com/publications/orpi/resource-briefs/acoustic.pdf.

New Mexico Environment Department (NMED). 2019. Maps and List of Wetlands Within United States Forest Service Wilderness Areas in New Mexico Designated as Outstanding National Resource Waters. New Mexico Environment Department, Surface Water Quality Bureau, January 23, 2019.

PubChem, 2020a. Calcium oxide, Sodium trifluoroacetate, Safety and Hazards and Toxicity. U.S. National Library of Medicine, National Institutes of Health, Bethesda, MD. https://pubchem.ncbi.nlm.nih.gov/.

PubChem, 2020b. Sodium trifluoroacetate, Safety and hazards and Toxicity. U.S. National Library of Medicine, National Institutes of Health, Bethesda, MD. https://pubchem.ncbi.nlm.nih.gov/compound/517019.

PubChem. 2020. Magnesium oxide, Safety and Hazards and Toxicity. U.S. National Library of Medicine, National Institutes of Health, Bethesda, MD. https://pubchem.ncbi.nlm.nih.gov/.

PubChem, 2020d. Boron, Safety and Hazards and Toxicity. U.S. National Library of Medicine, National Institutes of Health, Bethesda, MD. https://pubchem.ncbi.nlm.nih.gov/compound/5462311.

PubChem, 2020e. Potassium perchlorate, Safety and Hazards and Toxicity. U.S. National Library of Medicine, National Institutes of Health, Bethesda, MD. https://pubchem.ncbi.nlm.nih.gov/compound/516900.

PubChem, 2020f. Barium chromate, Safety and Hazards and Toxicity. U.S. National Library of Medicine, National Institutes of Health, Bethesda, MD. https://pubchem.ncbi.nlm.nih.gov/compound/25136.

Senzaki, M., Yamaura, Y., Francis, C., & Nakamura, F. (2016). Traffic noise reduces foraging efficiency in wild owls. *Scientific Reports*,6. https://doi.org/10.1038/srep30602.

Senzaki M, Kadoya T, Francis CD. 2020 Direct and indirect effects of noise pollution alter biological communities in and near noise-exposed environments. Proc. R. Soc. B287: 20200176. http://dx.doi.org/10.1098/rspb.2020.0176.

Shannon, Graeme & McKenna, Megan & Angeloni, Lisa & Brown, Emma & Warner, Katy & Nelson, Misty & White, Cecilia & Briggs, Jessica & McFarland, Scott & Crooks, Kevin & Fristrup, Kurt & Wittemyer, George. (2016). A synthesis of two decades of research documenting the effects of noise on wildlife. Biological Reviews. 91. 982-1005. 10.1111/brv.12207. https://www.researchgate.net/publication/279483730_A_synthesis_of_two_decades_of_research_documenting_the_effects_of_noise_on_wildlife.

Smith JA, Suraci JP, Clinchy M, Crawford A, Roberts D, Zanette LY, Wilmers CC. 2017 Fear of the human 'super predator' reduces feeding time in large carnivores. Proc. R. Soc. B 284: 20170433. http://dx.doi.org/10.1098/rspb.2017.0433.

Spargo, Barry, D. Arfsten, and C. Wilson. Human and Environmental Health Issues Related to Use of Radio Frequency Chaff. Navy Medicine, Volume 92, No. 5 (September-October 2001):12-16.

U.S. Air Force (USAF). 1997. Environmental Effects of Self-Protection Chaff and Flares. U.S. Air Force Air Combat Command, August 1997.

U.S. Air Force (USAF). 2011. Environmental Effects of Training With Defensive Countermeasures. Science Applications International Corporation (SAIC), Hampton, VA, October 2011.

United States Air Force and National Park Service. 2002. Western Pacific Regional Sourcebook. October 2002. https://npshistory.com/publications/sound/air-force.pdf.

USDA Forest Service, Rocky Mountain Research Station, Keeping It Wild 2: An Updated Interagency Strategy to Monitor Trends in Wilderness Character Across the National Wilderness Preservation System, General Technical Report RMRS-GTR-340 (Oct. 2015), *available at* https://www.fs.usda.gov/rm/pubs/rmrs_gtr340.pdf [hereinafter Keeping It Wild 2].

U.S. Department of Veterans Affairs. 2024. Trauma Reminders: Triggers. PTSD: National Center for PTSD. Accessed October 2024. https://www.ptsd.va.gov/understand/what/trauma_triggers.asp.

U.S. Forest Service (USFS) & National Park Service (NPS). 1990. Interagency Aircraft Overflight Sound Project Update, June 30, 1990.

Shannon, G., McKenna, M.F., Angeloni, L.M., Crooks, K.R., Fristrup, K.M., Brown, E., Warner, K.A., Nelson, M.D., White, C., Briggs, J., McFarland, S., and Wittemyer, G. 2016. A synthesis of two decades of research documenting the effects of noise on wildlife. Biological Reviews 91 (2016) 982-1005.

Taylor, R.C.1997. Location Checklist to the birds of the Chiricahua mountains. Borderland Productions, Tucson, AZ

World Health Organization. Environmental Noise Guidelines for the European Region, 2018. https://iris.who.int/bitstream/handle/10665/279952/9789289053563-eng.pdf?sequence=1

APPENDIX A: FEDERAL PUBLIC LANDS IMPACTED BY PROPOSED ACTION

Impacts to federal public lands that would be affected by DAF's Proposed Action were not sufficiently analyzed in the DEIS. These lands include four National Forests (Gila, Apache-Sitgreaves, Tonto, Coronado), 12 U.S. Forest Service designated Wilderness Areas; 3 US Forest Service Wilderness Study Areas; 18 Bureau of Land Management (BLM) designated Wilderness Areas, 9 BLM Wilderness Study Areas, 22 BLM Areas of Critical Environmental Concern (ACEC), 4 BLM Research Natural Areas (RNA); 1 BLM Riparian National Conservation Area (Gila Box); 4 National Wildlife Refuges (Buenos Aires, Leslie Canyon, San Bernardino, and Bill Williams River) and 2 National Monuments (Chiricahua National Monument and Organ Pipe Cactus National Monument); and two National Park Service-managed designated Wilderness Areas. Additionally, 83 miles of the Continental Divide National Scenic Trail, the Arizona National Scenic Trail, and the Catwalk National Recreation Trail could be affected.

Specific Federal public lands In Arizona impacted by the proposal

- **Bureau of Land Management** - Baker Canyon Wilderness Study Area (WSA), Guadalupe Canyon Area of Critical Environmental Concern (ACEC), Aravaipa Canyon Wilderness, Turkey Creek Riparian ACEC, Table Mountain RNA ACEC, Desert Grasslands RNA ACEC , Sombrero Butte, Bear Springs Badlands ACEC, North Santa Teresa Wilderness Area, Needles Eye Wilderness Area, White Canyon Wilderness Area, Fishhooks Wilderness Area, Gila Box Riparian National Conservation Area, 111 Ranch RNA ACEC, Cuerda de Lena ACEC, Baboquivari Peak Wilderness Area, Baboquivari Peak ACEC, Arrastra Mountain Wilderness, Poachie Desert Tortoise Habitat ACEC, Burro Creek Riparian and Cultural ACEC, Three Rivers Riparian ACEC, Tres Alamos Wilderness, Harcuvar Mountains Wilderness, Rawhide Mountains Wilderness, East Cactus Plain Wilderness, Cactus Plain Wilderness Study Area, Swansea Historic District ACEC, Swansea Wilderness, Aubrey Peak Wilderness, McCracken Desert Tortoise Habitat ACEC, Upper Burro Creek Wilderness (West), Upper Burro Creek, Wilderness (East), Harquahala Mountains Wilderness, Harquahala Mountains ACEC, Hummingbird Springs Wilderness, Big Horn Mountains Wilderness, Clay Hills Research Natural Area ACEC.

- **National Park Service** - Chiricahua National Monument, Organ Pipe Cactus National Monument. Organ Pipe Cactus Wilderness, Chiricahua Wilderness.

- **US Forest Service** – Barfoot Park National Natural Landmark, Coronado National Forest-Chiricahua and Dragoon Mountains, Chiricahua Wilderness, Mt Graham. Galiuro Mountains, Santa Teresa Mountains; Galiuro Wilderness, Santa Teresa Wilderness; Tonto National Forest - Superstition Wilderness, White Canyon Wilderness, Salt River Canyon Wilderness; Recreation Area, Williams Lake Recreation Area, Big Lake Recreation Area, Pajarito Mountains; Pajarito Wilderness.

Apache Sitgreaves National Forest- Escudilla Wilderness, Mount Baldy Wilderness, Bear Wallow Wilderness. Blue Range Primitive Area, Lee Valley

- **US Fish and Wildlife Service** – San Bernardino National Wildlife Refuge, Leslie Canyon National Wildlife Refuge, Buenos Aires National Wildlife Refuge, Bill Williams River National Wildlife Refuge

Specific Federal public lands in New Mexico impacted by the proposal

- **Bureau of Land Management** - Central Peloncillo Mountains ACEC, Gray Peak WSA, Antelope Pass Research Natural Area (RNA) ACEC, Guadalupe Canyon ACEC, Guadalupe Canyon WSA, Alamo Hueco WSA, Alamo Hueco ACEC, Big Hatchet Mountains WSA, Big Hatchet Mountains ACEC, Cowboy Spring ACEC, Cowboy Spring WSA, Whitmire Canyon WSA, Apache Box ACEC, Apache Box WSA.

- **US Forest Service** – Coronado National Forest: Peloncillo Mountains, Bark Robinson WSA. Gila National Forest: Blue Range Wilderness, Gila Wilderness, Hells Hole WSA, San Francisco National Forest: Canyon WSA, Catwalk National Recreation Trail

- **Other lands of National Significance –** National Audubon Society Animas Mountain Bird Conservation Area.Continental Divide National Scenic Trail with approximately 67 miles that lie within the Tombstone MOA and 16 miles of the Continental Divide National Scenic Trail in the Reserve MOA. Catwalk National Recreation Trail.

APPENDIX B: eBIRD DATA FOR ALL COUNTIES UNDER MOAS

Results from Cochise County 2023/24 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2023 to July 31, 2024

- Total Rows: One year observations captured within boundaries of Tombstone MOA – **359,504**
- F/G = Common/Scientific Name: Number of unique species observed **– 411**
- K = Observation Count: Number of birds documented – **3,761,641**
- AA = Locality: Number of unique localities where observations were made – **2,408**
- AB = Locality ID: Number of unique location IDs where observations were made – **2,539**
- AF = Observation Date: Number of calendar days on which observations were made – **366**
- AH = Observer ID: Number of different persons making and documenting observations – **2,339**
- AI = Sampling Event Identifier: Unique combination of location, date, observer & start time – **25,739**

Source: eBird Basic Dataset. Version: EBD _relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Federally Listed Species One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2023-July 31, 2024				
Common Name	**Scientific Name**	**Status**	**Total Number Observations**	**Total Number Sighted**
Yellow-billed Cuckoo	Coccyzus americanus	T	16	17
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	108	132
Mexican Spotted Owl	Strix occidentalis lucida	T	XX	XX
Northern Aplomado Falcon	Falco femoralis septentrionalis	E*	0	0

T = Threatened E = Endangered

*Experimental Population

XX eBird obscures locations and data for Mexican Spotted Owls from public data sets as a "Sensitive Species" at risk from humans for capture or targeted killing (https://support.ebird.org/en/support/solutions/articles/48000803210-sensitive-species-in-ebird#anchorSSList).

Results from Cochise County 2023/24 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2023 to July 31, 2024

Arizona Species of Greater Conservation Need One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2023-July 31, 2024			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Goshawk	Accipiter gentilis	2	0
Apache Northern Goshawk	Accipiter gentilis apache		0
Northern Goshawk	Accipiter gentilis atricapillus		0
Wood Duck	Aix sponsa		4
Arizona grasshopper sparrow[1]	Ammodramus savannarum ammolegus	2	16
Western Grasshopper Sparrow[1]	Ammodramus savannarum perpallidus	2	
Five-striped Sparrow	Amphispiza quinquestriata	2	0
Sprague's Pipit	Anthus spragueii	2	1
Buff-collared Nightjar	Antrostomus ridgwayi	2	0
Golden Eagle	Aquila chrysaetos	2	130
Western Burrowing Owl	Athene cunicularia hypugaea	2	30
White-eared Hummingbird	Basilinna leucotis		438
American Bittern	Botaurus lentiginosus	2	0
Gray Hawk	Buteo plagiatus		399
Ferruginous Hawk	Buteo regalis	2	164
Lucifer Hummingbird	Calothorax lucifer	3	462
Northern Beardless-Tyrannulet	Camptostoma imberbe	2	63
Swainson's Thrush	Catharus ustulatus	2	192
Baird's Sparrow	Centronyx bairdii	2	0
Mountain Plover	Charadrius montanus	2	0
Western Snowy Plover	Charadrius nivosus nivosus	2	0
Common Nighthawk	Chordeiles minor	2	9
American Dipper	Cinclus mexicanus	2	0
Evening Grosbeak	Coccothraustes vespertinus	2	0
Yellow-billed Cuckoo (Western DPS)	Coccyzus americanus	1	16
Gilded Flicker	Colaptes chrysoides	2	0
Masked Bobwhite	Colinus virginianus ridgwayi	1	0
Olive-sided Flycatcher	Contopus cooperi	2	299
Broad-billed Hummingbird	Cynanthus latirostris	2	5140
Dusky Grouse	Dendragapus obscurus	2	0
Fulvous Whistling-Duck	Dendrocygna bicolor		0
Arizona Woodpecker	Dryobates arizonae	2	2726
Gray Catbird	Dumetella carolinensis	3	510
Reddish Egret	Egretta rufescens		0
Buff-breasted Flycatcher	Empidonax fulvifrons		683
Northern Buff-breasted Flycatcher	Empidonax fulvifrons pygmaeus	2	0
Southwestern Willow Flycatcher	Empidonax traillii extimus	1	0
Rivoli's Hummingbird	Eugenes fulgens	2	2948
Eared Quetzal	Euptilotis neoxenus		0
Northern Aplomado Falcon	Falco femoralis septentrionalis	1	0

Results from Cochise County 2023/24 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2023 to July 31, 2024

COMMON NAME	Scientific Name	SGCN	# of Observations
Peregrine Falcon	Falco peregrinus		151
American Peregrine Falcon	Falco peregrinus anatum	1	0
MacGillivray's Warbler	Geothlypis tolmiei	2	0
Cactus Ferruginous Pygmy-owl	Glaucidium brasilianum cactorum	1	0
Mountain Pygmy-owl	Glaucidium gnoma gnoma	2	248
California Condor	Gymnogyps californianus	1	0
Pinyon Jay	Gymnorhinus cyanocephalus	2	0
Bald Eagle	Haliaeetus leucocephalus	1	0
Bald Eagle - Winter Population	Haliaeetus leucocephalus (wintering pop.)		0
Bald Eagle - Sonoran Desert Population	Haliaeetus leucocephalus pop. 3		0
Harlequin Duck	Histrionicus histrionicus		0
Mississippi Kite	Ictinia mississippiensis	2	0
Yellow-eyed Junco	Junco phaeonotus	2	4373
Blue-throated Mountain-gem	Lampornis clemenciae	2	4921
Loggerhead Shrike	Lanius ludovicianus	2	1839
Black Rail	Laterallus jamaicensis		0
California Black Rail	Laterallus jamaicensis coturniculus	3	0
Whiskered Screech-owl	Megascops trichopsis	2	40
Gila Woodpecker	Melanerpes uropygialis	2	394
Gould's Turkey*	Meleagris gallopavo mexicana		3
Lincoln's Sparrow	Melospiza lincolnii	2	1699
Abert's Towhee	Melozone aberti	2	634
Dusky-capped Flycatcher	Myiarchus tuberculifer	2	2524
Sulphur-bellied Flycatcher	Myiodynastes luteiventris	2	592
Rose-throated Becard	Pachyramphus aglaiae	2	0
Large-billed Savannah Sparrow[1]	Passerculus sandwichensis rostratus	2	0
Chihuahua Savannah Sparrow[1]	Passerculus sandwichensis rufofuscus	2	0
Varied Bunting	Passerina versicolor		135
Brown Pelican	Pelecanus occidentalis		0
Canada Jay	Perisoreus canadensis	2	0
Arizona Botteri's Sparrow[2]	Peucaea botterii arizonae	2	59
Rufous-winged Sparrow	Peucaea carpalis	2	267
Black-billed Magpie	Pica hudsonia	2	0
Pine Grosbeak	Pinicola enucleator	2	0
White-faced Ibis	Plegadis chihi		153
Mexican Chickadee	Poecile sclateri	2	1773
Black-capped Gnatcatcher	Polioptila nigriceps	2	0
Vesper Sparrow	Pooecetes gramineus	2	366
Desert Purple Martin	Progne subis hesperia	2	6
Yuma Ridgway's Rail	Rallus obsoletus yumanensis	1	0
Violet-crowned Hummingbird	Ramosomyia violiceps	2	236
Thick-billed Parrot	Rhynchopsitta pachyrhyncha	1	0
Yellow Warbler	Setophaga petechia		1962
Azure Bluebird	Sialia sialis fulva	2	0
California Least Tern	Sternula antillarum browni		1

Results from Cochise County 2023/24 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2023 to July 31, 2024

COMMON NAME	Scientific Name	SGCN	# of Observations
Mexican Spotted Owl	Strix occidentalis lucida	1	0
LeConte's Thrasher	Toxostoma lecontei	2	0
Pacific Wren	Troglodytes pacificus	2	0
Elegant Trogon	Trogon elegans	2	1182
Thick-billed Kingbird	Tyrannus crassirostris	2	431
Arizona Bell's Vireo[3]	Vireo bellii arizonae		912
Gray Vireo	Vireo vicinior	2	4

*Records indicated hundreds to thousands of turkey observed, but only 23 specifically identified in comments as Mexicana subspecies (Gould's).

[1] Subspecies of these sparrows not distinguished in the eBird database. Numbers have been combined as one, Grasshopper Sparrow

[2] All noted observations of Botteri's sparrow were presumed to be Arizona subspecies

[3]Not all Bell's vireo were distinguished between subpopulations (i.e., Arizona vs. Western)

SGCN = Species of Greater Conservation Need

Tiers

The list of SGCN was further categorized into three tiers reflecting the Department's management commitments and priorities; tiers were ranked as follows:

Tier 1: Deemed vulnerable (scored a "1") in at least one of the seven categories AND matches at least one of the following:

– Federally listed as endangered or threatened under the Endangered Species Act (ESA).

– Recently removed from ESA and currently requires post-delisting monitoring.

– Is specifically covered under a signed conservation agreement (CCA) or a signed conservation agreement with assurances (CCAA) or a Conservation Strategy and Assessment or Strategic Conservation Plan. Closed season species (i.e., no take permitted) as identified in Arizona Game and Fish Commission Orders 40, 41, 42 or 43.

Tier 2: Deemed vulnerable (scored a "1") in at least one of the seven categories described, but matched none of the additional criteria for Tier 1.

Tier 3: Species with "unknown status" in at least one of the seven categories but don't rise to a Tier 2. These species are those for which we are unable to assess status, and thus represent priority research and information needs. As more information becomes available, their tier status will be re-evaluated.

Source: Special Status Species by Taxonomic Group, Arizona Game and Fish Department, Heritage Data Management System, 4/12/2023

Results from Cochise County 2022/23 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2022 to July 31, 2023

- Total Rows: One year observations captured within boundaries of Tombstone MOA – **347,591**
- F/G = Common/Scientific Name: Number of unique species observed **–444**
- K = Observation Count: Number of birds documented **– 5,576,070**
- AA = Locality: Number of unique localities where observations were made **– 2,388**
- AB = Locality ID: Number of unique location IDs where observations were made – **2,551**
- AF = Observation Date: Number of calendar days on which observations were made – **365**
- AH = Observer ID: Number of different persons making and documenting observations – **2,446**
- AI = Sampling Event Identifier: Unique combination of location, date, observer & start time – **24,447**

Source: eBird Basic Dataset. Version: EBD _relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Federally Listed Species One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2022-July 31, 2023				
Common Name	**Scientific Name**	**Status**	**Total Number Observations**	**Total Number Sighted**
Yellow-billed Cuckoo	Coccyzus americanus	T	101	151
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	71	89
Mexican Spotted Owl	Strix occidentalis lucida	T	XX	XX
Northern Aplomado Falcon	Falco femoralis septentrionalis	E*	0	0

T = Threatened E = Endangered

*Experimental Population

XX eBird obscures locations and data for Mexican Spotted Owls from public data sets as a "Sensitive Species" at risk from humans for capture or targeted killing (https://support.ebird.org/en/support/solutions/articles/48000803210-sensitive-species-in-ebird#anchorSSList).

Results from Cochise County 2022/23 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2022 to July 31, 2023

Arizona Species of Greater Conservation Need One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2022-July 31, 2023			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Goshawk	Accipiter gentilis	2	0
Apache Northern Goshawk	Accipiter gentilis apache		0
Northern Goshawk	Accipiter gentilis atricapillus		0
Wood Duck	Aix sponsa		3
Arizona grasshopper sparrow	Ammodramus savannarum ammolegus	2	64*
Western Grasshopper Sparrow	Ammodramus savannarum perpallidus	2	64*
Five-striped Sparrow	Amphispiza quinquestriata	2	0
Sprague's Pipit	Anthus spragueii	2	0
Buff-collared Nightjar	Antrostomus ridgwayi	2	1*
Golden Eagle	Aquila chrysaetos	2	201
Western Burrowing Owl	Athene cunicularia hypugaea	2	82*
White-eared Hummingbird	Basilinna leucotis		330
American Bittern	Botaurus lentiginosus	2	1
Gray Hawk	Buteo plagiatus		257
Ferruginous Hawk	Buteo regalis	2	207
Lucifer Hummingbird	Calothorax lucifer	3	540
Northern Beardless-Tyrannulet	Camptostoma imberbe	2	96
Swainson's Thrush	Catharus ustulatus	2	27
Baird's Sparrow	Centronyx bairdii	2	16
Mountain Plover	Charadrius montanus	2	70
Western Snowy Plover	Charadrius nivosus nivosus	2	0
Common Nighthawk	Chordeiles minor	2	27
American Dipper	Cinclus mexicanus	2	0
Evening Grosbeak	Coccothraustes vespertinus	2	533
Yellow-billed Cuckoo (Western DPS)	Coccyzus americanus	1	101
Gilded Flicker	Colaptes chrysoides	2	24
Masked Bobwhite	Colinus virginianus ridgwayi	1	0
Olive-sided Flycatcher	Contopus cooperi	2	240
Broad-billed Hummingbird	Cynanthus latirostris	2	4526
Dusky Grouse	Dendragapus obscurus	2	0
Fulvous Whistling-Duck	Dendrocygna bicolor		0
Arizona Woodpecker	Dryobates arizonae	2	2438
Gray Catbird	Dumetella carolinensis	3	85
Reddish Egret	Egretta rufescens		0
Buff-breasted Flycatcher	Empidonax fulvifrons		690
Northern Buff-breasted Flycatcher	Empidonax fulvifrons pygmaeus	2	*
Southwestern Willow Flycatcher	Empidonax traillii extimus	1	71
Rivoli's Hummingbird	Eugenes fulgens	2	2446
Eared Quetzal	Euptilotis neoxenus		0

Results from Cochise County 2022/23 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2022 to July 31, 2023

Arizona Species of Greater Conservation Need One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2022-July 31, 2023			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Aplomado Falcon	Falco femoralis septentrionalis	1	0
Peregrine Falcon	Falco peregrinus		154
American Peregrine Falcon	Falco peregrinus anatum	1	*
MacGillivray's Warbler	Geothlypis tolmiei	2	108
Cactus Ferruginous Pygmy-owl	Glaucidium brasilianum cactorum	1	0
Mountain Pygmy-owl	Glaucidium gnoma gnoma	2	0
California Condor	Gymnogyps californianus	1	0
Pinyon Jay	Gymnorhinus cyanocephalus	2	5
Bald Eagle	Haliaeetus leucocephalus	1	22
Bald Eagle - Winter Population	Haliaeetus leucocephalus (wintering pop.)		*
Bald Eagle - Sonoran Desert Population	Haliaeetus leucocephalus pop. 3		0
Harlequin Duck	Histrionicus histrionicus		0
Mississippi Kite	Ictinia mississippiensis	2	0
Yellow-eyed Junco	Junco phaeonotus	2	2732
Blue-throated Mountain-gem	Lampornis clemenciae	2	4270
Loggerhead Shrike	Lanius ludovicianus	2	2040
Black Rail	Laterallus jamaicensis		0
California Black Rail	Laterallus jamaicensis coturniculus	3	0
Whiskered Screech-owl	Megascops trichopsis	2	580
Gila Woodpecker	Melanerpes uropygialis	2	381
Gould's Turkey	Meleagris gallopavo mexicana		2622*
Lincoln's Sparrow	Melospiza lincolnii	2	1452
Abert's Towhee	Melozone aberti	2	412
Dusky-capped Flycatcher	Myiarchus tuberculifer	2	2133
Sulphur-bellied Flycatcher	Myiodynastes luteiventris	2	658
Rose-throated Becard	Pachyramphus aglaiae	2	1
Large-billed Savannah Sparrow	Passerculus sandwichensis rostratus	2	0
Chihuahua Savannah Sparrow	Passerculus sandwichensis rufofuscus	2	980*
Varied Bunting	Passerina versicolor		162
Brown Pelican	Pelecanus occidentalis		0
Canada Jay	Perisoreus canadensis	2	0
Arizona Botteri's Sparrow	Peucaea botterii arizonae	2	233*
Rufous-winged Sparrow	Peucaea carpalis	2	170
Black-billed Magpie	Pica hudsonia	2	0
Pine Grosbeak	Pinicola enucleator	2	0
White-faced Ibis	Plegadis chihi		368
Mexican Chickadee	Poecile sclateri	2	1373
Black-capped Gnatcatcher	Polioptila nigriceps	2	2
Vesper Sparrow	Pooecetes gramineus	2	917
Desert Purple Martin	Progne subis hesperia	2	3*

Results from Cochise County 2022/23 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2022 to July 31, 2023

Arizona Species of Greater Conservation Need One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2022-July 31, 2023			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Yuma Ridgway's Rail	Rallus obsoletus yumanensis	1	0
Violet-crowned Hummingbird	Ramosomyia violiceps	2	200
Thick-billed Parrot	Rhynchopsitta pachyrhyncha	1	0
Yellow Warbler	Setophaga petechia		1282
Azure Bluebird	Sialia sialis fulva	2	0
California Least Tern	Sternula antillarum browni		0
Mexican Spotted Owl	Strix occidentalis lucida	1	XX
LeConte's Thrasher	Toxostoma lecontei	2	0
Pacific Wren	Troglodytes pacificus	2	0
Elegant Trogon	Trogon elegans	2	964
Thick-billed Kingbird	Tyrannus crassirostris	2	325
Arizona Bell's Vireo	Vireo bellii arizonae		1225*
Gray Vireo	Vireo vicinior	2	1

*subspecies unknown

SGCN = Species of Greater Conservation Need

Tiers

The list of SGCN was further categorized into three tiers reflecting the Department's management commitments and priorities; tiers were ranked as follows:

Tier 1: Deemed vulnerable (scored a "1") in at least one of the seven categories AND matches at least one of the following:

– Federally listed as endangered or threatened under the Endangered Species Act (ESA).
– Recently removed from ESA and currently requires post-delisting monitoring.
– Is specifically covered under a signed conservation agreement (CCA) or a signed conservation agreement with assurances (CCAA) or a Conservation Strategy and Assessment or Strategic Conservation Plan. Closed season species (i.e., no take permitted) as identified in Arizona Game and Fish Commission Orders 40, 41, 42 or 43.

Tier 2: Deemed vulnerable (scored a "1") in at least one of the seven categories described, but matched none of the additional criteria for Tier 1.

Tier 3: Species with "unknown status" in at least one of the seven categories but don't rise to a Tier 2. These species are those for which we are unable to assess status, and thus represent priority research and information needs. As more information becomes available, their tier status will be re-evaluated.

Source: Special Status Species by Taxonomic Group, Arizona Game and Fish Department, Heritage Data Management System, 4/12/2023

Results from Cochise County 2021/22 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2021 to July 31, 2022

- Total Rows: One year observations captured within boundaries of Tombstone MOA – **307,109**
- F/G = Common/Scientific Name: Number of unique species observed **–427**
- K = Observation Count: Number of birds documented – **7,179,287**
- AA = Locality: Number of unique localities where observations were made – **2,330**
- AB = Locality ID: Number of unique location IDs where observations were made – **2,447**
- AF = Observation Date: Number of calendar days on which observations were made – **365**
- AH = Observer ID: Number of different persons making and documenting observations – **2,331**
- AI = Sampling Event Identifier: Unique combination of location, date, observer & start time - **24,450**

Source: eBird Basic Dataset. Version: EBD _relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Federally Listed Species One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2021-July 31, 2022				
Common Name	**Scientific Name**	**Status**	**Total Number Observations**	**Total Number Sighted**
Yellow-billed Cuckoo	Coccyzus americanus	T	25	26
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	51	54
Mexican Spotted Owl	Strix occidentalis lucida	T	XX	XX
Northern Aplomado Falcon	Falco femoralis septentrionalis	E*	0	0

T = Threatened E = Endangered

*Experimental Population

XX eBird obscures locations and data for Mexican Spotted Owls from public data sets as a "Sensitive Species" at risk from humans for capture or targeted killing (https://support.ebird.org/en/support/solutions/articles/48000803210-sensitive-species-in-ebird#anchorSSList).

Results from Cochise County 2021/22 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2021 to July 31, 2022

Arizona Species of Greater Conservation Need One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2021-July 31, 2022			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Goshawk	Accipiter gentilis	2	0
Apache Northern Goshawk	Accipiter gentilis apache		0
Northern Goshawk	Accipiter gentilis atricapillus		0
Wood Duck	Aix sponsa		26
Arizona grasshopper sparrow	Ammodramus savannarum ammolegus	2	20*
Western Grasshopper Sparrow	Ammodramus savannarum perpallidus	2	20*
Five-striped Sparrow	Amphispiza quinquestriata	2	0
Sprague's Pipit	Anthus spragueii	2	0
Buff-collared Nightjar	Antrostomus ridgwayi	2	0
Golden Eagle	Aquila chrysaetos	2	305
Western Burrowing Owl	Athene cunicularia hypugaea	2	14*
White-eared Hummingbird	Basilinna leucotis		73
American Bittern	Botaurus lentiginosus	2	0
Gray Hawk	Buteo plagiatus		198
Ferruginous Hawk	Buteo regalis	2	165
Lucifer Hummingbird	Calothorax lucifer	3	0
Northern Beardless-Tyrannulet	Camptostoma imberbe	2	0
Swainson's Thrush	Catharus ustulatus	2	134
Baird's Sparrow	Centronyx bairdii	2	0
Mountain Plover	Charadrius montanus	2	0
Western Snowy Plover	Charadrius nivosus nivosus	2	0
Common Nighthawk	Chordeiles minor	2	12
American Dipper	Cinclus mexicanus	2	0
Evening Grosbeak	Coccothraustes vespertinus	2	0
Yellow-billed Cuckoo (Western DPS)	Coccyzus americanus	1	25
Gilded Flicker	Colaptes chrysoides	2	19
Masked Bobwhite	Colinus virginianus ridgwayi	1	0
Olive-sided Flycatcher	Contopus cooperi	2	235
Broad-billed Hummingbird	Cynanthus latirostris	2	4327
Dusky Grouse	Dendragapus obscurus	2	0
Fulvous Whistling-Duck	Dendrocygna bicolor		0
Arizona Woodpecker	Dryobates arizonae	2	2508
Gray Catbird	Dumetella carolinensis	3	151
Reddish Egret	Egretta rufescens		0
Buff-breasted Flycatcher	Empidonax fulvifrons		480
Northern Buff-breasted Flycatcher	Empidonax fulvifrons pygmaeus	2	480*
Southwestern Willow Flycatcher	Empidonax traillii extimus	1	51
Rivoli's Hummingbird	Eugenes fulgens	2	2511
Eared Quetzal	Euptilotis neoxenus		0

Results from Cochise County 2021/22 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2021 to July 31, 2022

Arizona Species of Greater Conservation Need One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2021-July 31, 2022			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Aplomado Falcon	Falco femoralis septentrionalis	1	0
Peregrine Falcon	Falco peregrinus		157
American Peregrine Falcon	Falco peregrinus anatum	1	157*
MacGillivray's Warbler	Geothlypis tolmiei	2	116
Cactus Ferruginous Pygmy-owl	Glaucidium brasilianum cactorum	1	0
Mountain Pygmy-owl	Glaucidium gnoma gnoma	2	0
California Condor	Gymnogyps californianus	1	0
Pinyon Jay	Gymnorhinus cyanocephalus	2	0
Bald Eagle	Haliaeetus leucocephalus	1	63
Bald Eagle - Winter Population	Haliaeetus leucocephalus (wintering pop.)		*
Bald Eagle - Sonoran Desert Population	Haliaeetus leucocephalus pop. 3		*
Harlequin Duck	Histrionicus histrionicus		0
Mississippi Kite	Ictinia mississippiensis	2	0
Yellow-eyed Junco	Junco phaeonotus	2	2683
Blue-throated Mountain-gem	Lampornis clemenciae	2	3683
Loggerhead Shrike	Lanius ludovicianus	2	1466
Black Rail	Laterallus jamaicensis		0
California Black Rail	Laterallus jamaicensis coturniculus	3	0
Whiskered Screech-owl	Megascops trichopsis	2	693
Gila Woodpecker	Melanerpes uropygialis	2	239
Gould's Turkey	Meleagris gallopavo mexicana		2558*
Lincoln's Sparrow	Melospiza lincolnii	2	1507
Abert's Towhee	Melozone aberti	2	468
Dusky-capped Flycatcher	Myiarchus tuberculifer	2	2164
Sulphur-bellied Flycatcher	Myiodynastes luteiventris	2	722
Rose-throated Becard	Pachyramphus aglaiae	2	0
Large-billed Savannah Sparrow	Passerculus sandwichensis rostratus	2	0
Chihuahua Savannah Sparrow	Passerculus sandwichensis rufofuscus	2	754*
Varied Bunting	Passerina versicolor		134
Brown Pelican	Pelecanus occidentalis		0
Canada Jay	Perisoreus canadensis	2	0
Arizona Botteri's Sparrow	Peucaea botterii arizonae	2	125*
Rufous-winged Sparrow	Peucaea carpalis	2	170
Black-billed Magpie	Pica hudsonia	2	0
Pine Grosbeak	Pinicola enucleator	2	0
White-faced Ibis	Plegadis chihi		173
Mexican Chickadee	Poecile sclateri	2	1311
Black-capped Gnatcatcher	Polioptila nigriceps	2	3
Vesper Sparrow	Pooecetes gramineus	2	775
Desert Purple Martin	Progne subis hesperia	2	11

Results from Cochise County 2021/22 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2021 to July 31, 2022

Arizona Species of Greater Conservation Need One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2021-July 31, 2022			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Yuma Ridgway's Rail	Rallus obsoletus yumanensis	1	0
Violet-crowned Hummingbird	Ramosomyia violiceps	2	380
Thick-billed Parrot	Rhynchopsitta pachyrhyncha	1	0
Yellow Warbler	Setophaga petechia		1075
Azure Bluebird	Sialia sialis fulva	2	0
California Least Tern	Sternula antillarum browni		0
Mexican Spotted Owl	Strix occidentalis lucida	1	XX
LeConte's Thrasher	Toxostoma lecontei	2	0
Pacific Wren	Troglodytes pacificus	2	0
Elegant Trogon	Trogon elegans	2	1131
Thick-billed Kingbird	Tyrannus crassirostris	2	279
Arizona Bell's Vireo	Vireo bellii arizonae		911*
Gray Vireo	Vireo vicinior	2	0

*subspecies unknown

SGCN = Species of Greater Conservation Need

Tiers

The list of SGCN was further categorized into three tiers reflecting the Department's management commitments and priorities; tiers were ranked as follows:

Tier 1: Deemed vulnerable (scored a "1") in at least one of the seven categories AND matches at least one of the following:

– Federally listed as endangered or threatened under the Endangered Species Act (ESA).
– Recently removed from ESA and currently requires post-delisting monitoring.
– Is specifically covered under a signed conservation agreement (CCA) or a signed conservation agreement with assurances (CCAA) or a Conservation Strategy and Assessment or Strategic Conservation Plan. Closed season species (i.e., no take permitted) as identified in Arizona Game and Fish Commission Orders 40, 41, 42 or 43.

Tier 2: Deemed vulnerable (scored a "1") in at least one of the seven categories described, but matched none of the additional criteria for Tier 1.

Tier 3: Species with "unknown status" in at least one of the seven categories but don't rise to a Tier 2. These species are those for which we are unable to assess status, and thus represent priority research and information needs. As more information becomes available, their tier status will be re-evaluated.

Source: Special Status Species by Taxonomic Group, Arizona Game and Fish Department, Heritage Data Management System, 4/12/2023

Results from Cochise County 2020/21 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2020 to July 31, 2021

- Total Rows: One year observations captured within boundaries of Tombstone MOA – **303,692**
- F/G = Common/Scientific Name: Number of unique species observed **—431**
- K = Observation Count: Number of birds documented – **3,420,378**
- AA = Locality: Number of unique localities where observations were made – **2,328**
- AB = Locality ID: Number of unique location IDs where observations were made – **2,405**
- AF = Observation Date: Number of calendar days on which observations were made – **365**
- AH = Observer ID: Number of different persons making and documenting observations – **1,989**
- AI = Sampling Event Identifier: Unique combination of location, date, observer & start time - **20,901**

Source: eBird Basic Dataset. Version: EBD _relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Federally Listed Species One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2020-July 31, 2021				
Common Name	**Scientific Name**	**Status**	**Total Number Observations**	**Total Number Sighted**
Yellow-billed Cuckoo	Coccyzus americanus	T	21	28
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	81	104
Mexican Spotted Owl	Strix occidentalis lucida	T	XX	XX
Northern Aplomado Falcon	Falco femoralis septentrionalis	E*	0	0

T = Threatened E = Endangered

*Experimental Population

XX eBird obscures locations and data for Mexican Spotted Owls from public data sets as a "Sensitive Species" at risk from humans for capture or targeted killing (https://support.ebird.org/en/support/solutions/articles/48000803210-sensitive-species-in-ebird#anchorSSList).

Results from Cochise County 2020/21 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2020 to July 31, 2021

Arizona Species of Greater Conservation Need One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2020-July 31, 2021			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Goshawk	Accipiter gentilis	2	0
Apache Northern Goshawk	Accipiter gentilis apache		0
Northern Goshawk	Accipiter gentilis atricapillus		0
Wood Duck	Aix sponsa		21
Arizona grasshopper sparrow	Ammodramus savannarum ammolegus	2	15*
Western Grasshopper Sparrow	Ammodramus savannarum perpallidus	2	15*
Five-striped Sparrow	Amphispiza quinquestriata	2	0
Sprague's Pipit	Anthus spragueii	2	24
Buff-collared Nightjar	Antrostomus ridgwayi	2	0
Golden Eagle	Aquila chrysaetos	2	257
Western Burrowing Owl	Athene cunicularia hypugaea	2	27*
White-eared Hummingbird	Basilinna leucotis		14
American Bittern	Botaurus lentiginosus	2	2
Gray Hawk	Buteo plagiatus		263
Ferruginous Hawk	Buteo regalis	2	76
Lucifer Hummingbird	Calothorax lucifer	3	541
Northern Beardless-Tyrannulet	Camptostoma imberbe	2	400
Swainson's Thrush	Catharus ustulatus	2	509
Baird's Sparrow	Centronyx bairdii	2	0
Mountain Plover	Charadrius montanus	2	0
Western Snowy Plover	Charadrius nivosus nivosus	2	3*
Common Nighthawk	Chordeiles minor	2	15
American Dipper	Cinclus mexicanus	2	54
Evening Grosbeak	Coccothraustes vespertinus	2	5
Yellow-billed Cuckoo (Western DPS)	Coccyzus americanus	1	21
Gilded Flicker	Colaptes chrysoides	2	24
Masked Bobwhite	Colinus virginianus ridgwayi	1	0
Olive-sided Flycatcher	Contopus cooperi	2	185
Broad-billed Hummingbird	Cynanthus latirostris	2	3552
Dusky Grouse	Dendragapus obscurus	2	0
Fulvous Whistling-Duck	Dendrocygna bicolor		0
Arizona Woodpecker	Dryobates arizonae	2	2089
Gray Catbird	Dumetella carolinensis	3	19
Reddish Egret	Egretta rufescens		0
Buff-breasted Flycatcher	Empidonax fulvifrons		296
Northern Buff-breasted Flycatcher	Empidonax fulvifrons pygmaeus	2	296*
Southwestern Willow Flycatcher	Empidonax traillii extimus	1	81
Rivoli's Hummingbird	Eugenes fulgens	2	2429
Eared Quetzal	Euptilotis neoxenus		882

Results from Cochise County 2020/21 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2020 to July 31, 2021

Arizona Species of Greater Conservation Need One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2020-July 31, 2021			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Aplomado Falcon	Falco femoralis septentrionalis	1	0
Peregrine Falcon	Falco peregrinus		161
American Peregrine Falcon	Falco peregrinus anatum	1	161*
MacGillivray's Warbler	Geothlypis tolmiei	2	513
Cactus Ferruginous Pygmy-owl	Glaucidium brasilianum cactorum	1	0
Mountain Pygmy-owl	Glaucidium gnoma gnoma	2	0
California Condor	Gymnogyps californianus	1	0
Pinyon Jay	Gymnorhinus cyanocephalus	2	0
Bald Eagle	Haliaeetus leucocephalus	1	2
Bald Eagle - Winter Population	Haliaeetus leucocephalus (wintering pop.)		2*
Bald Eagle - Sonoran Desert Population	Haliaeetus leucocephalus pop. 3		0
Harlequin Duck	Histrionicus histrionicus		0
Mississippi Kite	Ictinia mississippiensis	2	0
Yellow-eyed Junco	Junco phaeonotus	2	5085
Blue-throated Mountain-gem	Lampornis clemenciae	2	3055
Loggerhead Shrike	Lanius ludovicianus	2	1526
Black Rail	Laterallus jamaicensis		0
California Black Rail	Laterallus jamaicensis coturniculus	3	0
Whiskered Screech-owl	Megascops trichopsis	2	652
Gila Woodpecker	Melanerpes uropygialis	2	432
Gould's Turkey	Meleagris gallopavo mexicana		2320*
Lincoln's Sparrow	Melospiza lincolnii	2	1966
Abert's Towhee	Melozone aberti	2	637
Dusky-capped Flycatcher	Myiarchus tuberculifer	2	2318
Sulphur-bellied Flycatcher	Myiodynastes luteiventris	2	567
Rose-throated Becard	Pachyramphus aglaiae	2	0
Large-billed Savannah Sparrow	Passerculus sandwichensis rostratus	2	0
Chihuahua Savannah Sparrow	Passerculus sandwichensis rufofuscus	2	281*
Varied Bunting	Passerina versicolor		199
Brown Pelican	Pelecanus occidentalis		0
Canada Jay	Perisoreus canadensis	2	0
Arizona Botteri's Sparrow	Peucaea botterii arizonae	2	92*
Rufous-winged Sparrow	Peucaea carpalis	2	187
Black-billed Magpie	Pica hudsonia	2	0
Pine Grosbeak	Pinicola enucleator	2	0
White-faced Ibis	Plegadis chihi		133
Mexican Chickadee	Poecile sclateri	2	1297
Black-capped Gnatcatcher	Polioptila nigriceps	2	15
Vesper Sparrow	Pooecetes gramineus	2	564
Desert Purple Martin	Progne subis hesperia	2	10*

Results from Cochise County 2020/21 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2020 to July 31, 2021

Arizona Species of Greater Conservation Need One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2020-July 31, 2021			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Yuma Ridgway's Rail	Rallus obsoletus yumanensis	1	0
Violet-crowned Hummingbird	Ramosomyia violiceps	2	183
Thick-billed Parrot	Rhynchopsitta pachyrhyncha	1	0
Yellow Warbler	Setophaga petechia		911
Azure Bluebird	Sialia sialis fulva	2	0
California Least Tern	Sternula antillarum browni		0
Mexican Spotted Owl	Strix occidentalis lucida	1	XX
LeConte's Thrasher	Toxostoma lecontei	2	0
Pacific Wren	Troglodytes pacificus	2	0
Elegant Trogon	Trogon elegans	2	508
Thick-billed Kingbird	Tyrannus crassirostris	2	244
Arizona Bell's Vireo	Vireo bellii arizonae		720*
Gray Vireo	Vireo vicinior	2	6

*subspecies unknown

SGCN = Species of Greater Conservation Need

Tiers

The list of SGCN was further categorized into three tiers reflecting the Department's management commitments and priorities; tiers were ranked as follows:

Tier 1: Deemed vulnerable (scored a "1") in at least one of the seven categories AND matches at least one of the following:

– Federally listed as endangered or threatened under the Endangered Species Act (ESA).
– Recently removed from ESA and currently requires post-delisting monitoring.
– Is specifically covered under a signed conservation agreement (CCA) or a signed conservation agreement with assurances (CCAA) or a Conservation Strategy and Assessment or Strategic Conservation Plan. Closed season species (i.e., no take permitted) as identified in Arizona Game and Fish Commission Orders 40, 41, 42 or 43.

Tier 2: Deemed vulnerable (scored a "1") in at least one of the seven categories described, but matched none of the additional criteria for Tier 1.

Tier 3: Species with "unknown status" in at least one of the seven categories but don't rise to a Tier 2. These species are those for which we are unable to assess status, and thus represent priority research and information needs. As more information becomes available, their tier status will be re-evaluated.

Source: Special Status Species by Taxonomic Group, Arizona Game and Fish Department, Heritage Data Management System, 4/12/2023

Results from Cochise County 2019/20 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2019 to July 31, 2020

- Total Rows: One year observations captured within boundaries of Tombstone MOA – **169,654**
- F/G = Common/Scientific Name: Number of unique species observed **–395**
- K = Observation Count: Number of birds documented – **2,666,946**
- AA = Locality: Number of unique localities where observations were made – **1,452**
- AB = Locality ID: Number of unique location IDs where observations were made – **1,516**
- AF = Observation Date: Number of calendar days on which observations were made – **366**
- AH = Observer ID: Number of different persons making and documenting observations – **1,393**
- AI = Sampling Event Identifier: Unique combination of location, date, observer & start time - **12,346**

Source: eBird Basic Dataset. Version: EBD _relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Federally Listed Species One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2019-July 31, 2020				
Common Name	**Scientific Name**	**Status**	**Total Number Observations**	**Total Number Sighted**
Yellow-billed Cuckoo	Coccyzus americanus	T	26	36
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	33	39
Mexican Spotted Owl	Strix occidentalis lucida	T	XX	XX
Northern Aplomado Falcon	Falco femoralis septentrionalis	E*	0	0

T = Threatened E = Endangered

*Experimental Population

XX eBird obscures locations and data for Mexican Spotted Owls from public data sets as a "Sensitive Species" at risk from humans for capture or targeted killing (https://support.ebird.org/en/support/solutions/articles/48000803210-sensitive-species-in-ebird#anchorSSList).

Results from Cochise County 2019/20 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2019 to July 31, 2020

Arizona Species of Greater Conservation Need One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2019-July 31, 2020			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Goshawk	Accipiter gentilis	2	0
Apache Northern Goshawk	Accipiter gentilis apache		0
Northern Goshawk	Accipiter gentilis atricapillus		0
Wood Duck	Aix sponsa		26
Arizona grasshopper sparrow	Ammodramus savannarum ammolegus	2	10*
Western Grasshopper Sparrow	Ammodramus savannarum perpallidus	2	10*
Five-striped Sparrow	Amphispiza quinquestriata	2	0
Sprague's Pipit	Anthus spragueii	2	0
Buff-collared Nightjar	Antrostomus ridgwayi	2	0
Golden Eagle	Aquila chrysaetos	2	141
Western Burrowing Owl	Athene cunicularia hypugaea	2	27*
White-eared Hummingbird	Basilinna leucotis		148
American Bittern	Botaurus lentiginosus	2	3
Gray Hawk	Buteo plagiatus		127
Ferruginous Hawk	Buteo regalis	2	146
Lucifer Hummingbird	Calothorax lucifer	3	271
Northern Beardless-Tyrannulet	Camptostoma imberbe	2	197
Swainson's Thrush	Catharus ustulatus	2	37
Baird's Sparrow	Centronyx bairdii	2	0
Mountain Plover	Charadrius montanus	2	0
Western Snowy Plover	Charadrius nivosus nivosus	2	2*
Common Nighthawk	Chordeiles minor	2	13
American Dipper	Cinclus mexicanus	2	0
Evening Grosbeak	Coccothraustes vespertinus	2	0
Yellow-billed Cuckoo (Western DPS)	Coccyzus americanus	1	26
Gilded Flicker	Colaptes chrysoides	2	33
Masked Bobwhite	Colinus virginianus ridgwayi	1	0
Olive-sided Flycatcher	Contopus cooperi	2	121
Broad-billed Hummingbird	Cynanthus latirostris	2	1711
Dusky Grouse	Dendragapus obscurus	2	0
Fulvous Whistling-Duck	Dendrocygna bicolor		0
Arizona Woodpecker	Dryobates arizonae	2	1133
Gray Catbird	Dumetella carolinensis	3	20
Reddish Egret	Egretta rufescens		0
Buff-breasted Flycatcher	Empidonax fulvifrons		308
Northern Buff-breasted Flycatcher	Empidonax fulvifrons pygmaeus	2	0
Southwestern Willow Flycatcher	Empidonax traillii extimus	1	33
Rivoli's Hummingbird	Eugenes fulgens	2	1327
Eared Quetzal	Euptilotis neoxenus		172

Results from Cochise County 2019/20 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2019 to July 31, 2020

Arizona Species of Greater Conservation Need One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2019-July 31, 2020			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Aplomado Falcon	Falco femoralis septentrionalis	1	0
Peregrine Falcon	Falco peregrinus		86
American Peregrine Falcon	Falco peregrinus anatum	1	86*
MacGillivray's Warbler	Geothlypis tolmiei	2	83
Cactus Ferruginous Pygmy-owl	Glaucidium brasilianum cactorum	1	0
Mountain Pygmy-owl	Glaucidium gnoma gnoma	2	0
California Condor	Gymnogyps californianus	1	0
Pinyon Jay	Gymnorhinus cyanocephalus	2	0
Bald Eagle	Haliaeetus leucocephalus	1	15
Bald Eagle - Winter Population	Haliaeetus leucocephalus (wintering pop.)		15*
Bald Eagle - Sonoran Desert Population	Haliaeetus leucocephalus pop. 3		15*
Harlequin Duck	Histrionicus histrionicus		0
Mississippi Kite	Ictinia mississippiensis	2	0
Yellow-eyed Junco	Junco phaeonotus	2	2324
Blue-throated Mountain-gem	Lampornis clemenciae	2	2034
Loggerhead Shrike	Lanius ludovicianus	2	1182
Black Rail	Laterallus jamaicensis		0
California Black Rail	Laterallus jamaicensis coturniculus	3	0
Whiskered Screech-owl	Megascops trichopsis	2	494
Gila Woodpecker	Melanerpes uropygialis	2	182
Gould's Turkey	Meleagris gallopavo mexicana		1014*
Lincoln's Sparrow	Melospiza lincolnii	2	430
Abert's Towhee	Melozone aberti	2	102
Dusky-capped Flycatcher	Myiarchus tuberculifer	2	1459
Sulphur-bellied Flycatcher	Myiodynastes luteiventris	2	658
Rose-throated Becard	Pachyramphus aglaiae	2	0
Large-billed Savannah Sparrow	Passerculus sandwichensis rostratus	2	295*
Chihuahua Savannah Sparrow	Passerculus sandwichensis rufofuscus	2	295*
Varied Bunting	Passerina versicolor		112
Brown Pelican	Pelecanus occidentalis		0
Canada Jay	Perisoreus canadensis	2	0
Arizona Botteri's Sparrow	Peucaea botterii arizonae	2	141*
Rufous-winged Sparrow	Peucaea carpalis	2	88
Black-billed Magpie	Pica hudsonia	2	0
Pine Grosbeak	Pinicola enucleator	2	0
White-faced Ibis	Plegadis chihi		135
Mexican Chickadee	Poecile sclateri	2	1032
Black-capped Gnatcatcher	Polioptila nigriceps	2	15
Vesper Sparrow	Pooecetes gramineus	2	321
Desert Purple Martin	Progne subis hesperia	2	3*

Results from Cochise County 2019/20 Dataset – Localities in Tombstone MOA 9/9/2024
August 1, 2019 to July 31, 2020

Arizona Species of Greater Conservation Need One-Year Cochise County Observations w/in Tombstone MOA Aug 1, 2019-July 31, 2020			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Yuma Ridgway's Rail	Rallus obsoletus yumanensis	1	0
Violet-crowned Hummingbird	Ramosomyia violiceps	2	183
Thick-billed Parrot	Rhynchopsitta pachyrhyncha	1	0
Yellow Warbler	Setophaga petechia		493
Azure Bluebird	Sialia sialis fulva	2	0
California Least Tern	Sternula antillarum browni		0
Mexican Spotted Owl	Strix occidentalis lucida	1	XX
LeConte's Thrasher	Toxostoma lecontei	2	0
Pacific Wren	Troglodytes pacificus	2	5
Elegant Trogon	Trogon elegans	2	467
Thick-billed Kingbird	Tyrannus crassirostris	2	124
Arizona Bell's Vireo	Vireo bellii arizonae		369*
Gray Vireo	Vireo vicinior	2	11

*subspecies unknown

SGCN = Species of Greater Conservation Need

Tiers

The list of SGCN was further categorized into three tiers reflecting the Department's management commitments and priorities; tiers were ranked as follows:

Tier 1: Deemed vulnerable (scored a "1") in at least one of the seven categories AND matches at least one of the following:

– Federally listed as endangered or threatened under the Endangered Species Act (ESA).
– Recently removed from ESA and currently requires post-delisting monitoring.
– Is specifically covered under a signed conservation agreement (CCA) or a signed conservation agreement with assurances (CCAA) or a Conservation Strategy and Assessment or Strategic Conservation Plan. Closed season species (i.e., no take permitted) as identified in Arizona Game and Fish Commission Orders 40, 41, 42 or 43.

Tier 2: Deemed vulnerable (scored a "1") in at least one of the seven categories described, but matched none of the additional criteria for Tier 1.

Tier 3: Species with "unknown status" in at least one of the seven categories but don't rise to a Tier 2. These species are those for which we are unable to assess status, and thus represent priority research and information needs. As more information becomes available, their tier status will be re-evaluated.

Source: Special Status Species by Taxonomic Group, Arizona Game and Fish Department, Heritage Data Management System, 4/12/2023

Results from Luna County 5-Year Dataset – Localities in Tombstone MOA 9/9/2024

August 1, 2019 to July 31, 2024

- Total Rows: Observations captured within boundaries of Tombstone MOA – **47**
- F/G = Common/Scientific Name: Number of unique species observed **–29**
- K = Observation Count: Number of birds documented – **287**
- AA = Locality: Number of unique localities where observations were made – **6**
- AB = Locality ID: Number of unique location IDs where observations were made – **6**
- AF = Observation Date: Number of calendar days on which observations were made – **6**
- AH = Observer ID: Number of different persons making and documenting observations – **10**
- AI = Sampling Event Identifier: Unique combination of location, date, observer & start time - **10**

Source: eBird Basic Dataset. Version: EBD _relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Federally Listed Species 5-Year Luna County Observations w/in Tombstone MOA Aug 1, 2019-July 31, 2024				
Common Name	**Scientific Name**	**Status**	**Total Number Observations**	**Total Number Sighted**
Yellow-billed Cuckoo	Coccyzus americanus	T	0	0
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	0	0
Mexican Spotted Owl	Strix occidentalis lucida	T	XX	XX
Northern Aplomado Falcon	Falco femoralis septentrionalis	E*	0	0

T = Threatened E = Endangered

*Experimental Population

XX eBird obscures locations and data for Mexican Spotted Owls from public data sets as a "Sensitive Species" at risk from humans for capture or targeted killing (https://support.ebird.org/en/support/solutions/articles/48000803210-sensitive-species-in-ebird#anchorSSList).

Results from Luna County 5-Year Dataset – Localities in Tombstone MOA 9/9/2024

August 1, 2019 to July 31, 2024

New Mexico Special Status Species 5 Year Luna County Observations w/in Tombstone MOA Aug 1, 2019-July 31, 2024			
Common Name	**Scientific Name**	**Special Status**	**# of Observations**
Brown Pelican	Pelecanus occidentalis	Endangered	0
Aplomado Falcon	Falco femoralis	Endangered	0
White-Tailed Ptarmigan	Lagopus leucura	Endangered	0
Whooping Crane	Grus americana	Endangered	0
Least Tern	Sterna antillarum	Endangered	0
Common Ground-Dove	Columbina passerina	Endangered	0
Buff-Collared Nightjar	Caprimulgus ridgway	Endangered	0
Elegant Trogon	Trogon elegans	Endangered	0
Northern Beardless-Tyrannulet	Camptostoma imberbe	Endangered	0
(Southwestern) Willow Flycatcher	Empidonax traillii extimus	Endangered	0
Thick-Billed Kingbird	Tyrannus crassirostris	Endangered	0
(Arizona) Grasshopper Sparrow	Ammodramus savannarum ammolegus	Endangered	0
Neotropic Cormorant	Nannopterum brasilianum	Threatened	0
Bald Eagle	Haliaeetus leucocephalus	Threatened	0
Common Black-Hawk	Buteogallus anthracinus	Threatened	0
Peregrine Falcon	Falco peregrinus	Threatened	0
(Gould's) Wild Turkey	Meleagris gallopavo mexicana	Threatened	0
Piping Plover,	Charadrius melodus	Threatened	0
Whiskered Screech-Owl	Megascops trichopsis	Threatened	0
Boreal Owl	Aegolius funereus	Threatened	0
Broad-Billed Hummingbird	Cynanthus latirostris	Threatened	0
White-Eared Hummingbird	Basilinna leucotis	Threatened	0
Violet-Crowned Hummingbird	Ramosomyia violiceps	Threatened	0
Lucifer Hummingbird	Calothorax lucifer	Threatened	0
Costa's Hummingbird	Calypte costae	Threatened	0
Gila Woodpecker	Melanerpes uropygialis	Threatened	0
Bell's Vireo	Vireo bellii	Threatened	0
Gray Vireo	vireo vicinior	Threatened	0
Abert's Towhee	Melozone aberti	Threatened	0
Baird's Sparrow	Centronyx bairdii	Threatened	0
Yellow-Eyed Junco	Junco phaeonotus	Threatened	0
Varied Bunting	Passerina versicolor	Threatened	0

Source: New Mexico Department of Game and Fish, Wildlife Management and Fisheries Management Division, 2024 Biennial Review and Recommendations
Authority: Wildlife Conservation Act (17-2-37 through 17-2-46 NMSA 1978)

Results from Hidalgo County 5-Year Dataset – Localities in Tombstone MOA 9/9/2024

August 1, 2019 – July 31, 2024

- Total Rows: Observations captured within boundaries of Tombstone MOA – **88,455**
- F/G = Common/Scientific Name: Number of unique species observed **–349**
- K = Observation Count: Number of birds documented **– 358,377**
- AA = Locality: Number of unique localities where observations were made – **1,906**
- AB = Locality ID: Number of unique location IDs where observations were made – **2,027**
- AF = Observation Date: Number of calendar days on which observations were made – **1,317**
- AH = Observer ID: Number of different persons making and documenting observations – **2,720**
- AI = Sampling Event Identifier: Unique combination of location, date, observer & start time - **9,580**

Source: eBird Basic Dataset. Version: EBD _relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Federally Listed Species 5-Year Hidalgo County Observations w/in Tombstone MOA Aug 1, 2019-July 31, 2024				
Common Name	**Scientific Name**	**Status**	**Total Number Observations**	**Total Number Sighted**
Yellow-billed Cuckoo	Coccyzus americanus	T	3	3
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	0	0
Mexican Spotted Owl	Strix occidentalis lucida	T	XX	XX
Northern Aplomado Falcon	Falco femoralis septentrionalis	E*	0	0

T = Threatened E = Endangered

*Experimental Population

XX eBird obscures locations and data for Mexican Spotted Owls from public data sets as a "Sensitive Species" at risk from humans for capture or targeted killing (https://support.ebird.org/en/support/solutions/articles/48000803210-sensitive-species-in-ebird#anchorSSList).

Results from Hidalgo County 5-Year Dataset – Localities in Tombstone MOA 9/9/2024

August 1, 2019 – July 31, 2024

New Mexico Special Status Species 5 Year Hidalgo County Observations w/in Tombstone MOA Aug 1, 2019-July 31, 2024			
Common Name	**Scientific Name**	**Special Status**	**# of Observations**
Brown Pelican	Pelecanus occidentalis	Endangered	0
Aplomado Falcon	Falco femoralis	Endangered	0
White-Tailed Ptarmigan	Lagopus leucura	Endangered	0
Whooping Crane	Grus americana	Endangered	0
Least Tern	Sterna antillarum	Endangered	0
Common Ground-Dove	Columbina passerina	Endangered	182
Buff-Collared Nightjar	Caprimulgus ridgway	Endangered	0
Elegant Trogon,	Trogon elegans	Endangered	16
Northern Beardless-Tyrannulet	Camptostoma imberbe	Endangered	84
(Southwestern) Willow Flycatcher,	Empidonax traillii extimus	Endangered	0
Thick-Billed Kingbird	Tyrannus crassirostris	Endangered	80
(Arizona) Grasshopper Sparrow	Ammodramus savannarum ammolegus	Endangered	0
Neotropic Cormorant	Nannopterum brasilianum	Threatened	3
Bald Eagle	Haliaeetus leucocephalus	Threatened	0
Common Black-Hawk	Buteogallus anthracinus	Threatened	21
Peregrine Falcon	Falco peregrinus	Threatened	53
(Gould's) Wild Turkey	Meleagris gallopavo mexicana	Threatened	0
Piping Plover,	Charadrius melodus	Threatened	0
Whiskered Screech-Owl	Megascops trichopsis	Threatened	128
Boreal Owl,	Aegolius funereus	Threatened	0
Broad-Billed Hummingbird	Cynanthus latirostris	Threatened	296
White-Eared Hummingbird	Basilinna leucotis	Threatened	0
Violet-Crowned Hummingbird	Ramosomyia violiceps	Threatened	75
Lucifer Hummingbird	Calothorax lucifer	Threatened	154
Costa's Hummingbird	Calypte costae	Threatened	11
Gila Woodpecker	Melanerpes uropygialis	Threatened	303
Bell's Vireo	Vireo bellii	Threatened	324
Gray Vireo	vireo vicinior	Threatened	33
Abert's Towhee	Melozone aberti	Threatened	27
Baird's Sparrow	Centronyx bairdii	Threatened	16
Yellow-Eyed Junco	Junco phaeonotus	Threatened	1
Varied Bunting	Passerina versicolor	Threatened	192

Source: New Mexico Department of Game and Fish, Wildlife Management and Fisheries Management Division, 2024 Biennial Review and Recommendations

Authority: Wildlife Conservation Act (17-2-37 through 17-2-46 NMSA 1978)

Results from Hidalgo County 5-Year Dataset – Localities in Morenci MOA 9/9/2024

August 1, 2019 to July 31, 2024

- Total Rows: Observations captured within boundaries of Morenci MOA – **5**
- F/G = Common/Scientific Name: Number of unique species observed **–5**
- K = Observation Count: Number of birds documented – **12**
- AA = Locality: Number of unique localities where observations were made – **1**
- AB = Locality ID: Number of unique location IDs where observations were made – **2**
- AF = Observation Date: Number of calendar days on which observations were made – **1**
- AH = Observer ID: Number of different persons making and documenting observations – **1**
- AI = Sampling Event Identifier: Unique combination of location, date, observer & start time - **2**

Source: eBird Basic Dataset. Version: EBD _relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Federally Listed Species 5-Year Hidalgo County Observations w/in Morenci MOA Aug 1, 2019-July 31, 2024				
Common Name	**Scientific Name**	**Status**	**Total Number Observations**	**Total Number Sighted**
Yellow-billed Cuckoo	Coccyzus americanus	T	0	0
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	0	0
Mexican Spotted Owl	Strix occidentalis lucida	T	xxx	xxx
Northern Aplomado Falcon	Falco femoralis septentrionalis	E*	0	0

T = Threatened E = Endangered

*Experimental Population

XX eBird obscures locations and data for Mexican Spotted Owls from public data sets as a "Sensitive Species" at risk from humans for capture or targeted killing (https://support.ebird.org/en/support/solutions/articles/48000803210-sensitive-species-in-ebird#anchorSSList).

Results from Hidalgo County 5-Year Dataset – Localities in Morenci MOA 9/9/2024

August 1, 2019 to July 31, 2024

New Mexico Special Status Species 5 Year Hidalgo County Observations w/in Morenci MOA Aug 1, 2019-July 31, 2024			
Common Name	**Scientific Name**	**Special Status**	**# of Observations**
brown pelican	Pelecanus occidentalis	Endangered	0
aplomado falcon	Falco femoralis	Endangered	0
white-tailed ptarmigan	Lagopus leucura	Endangered	0
whooping crane	Grus americana	Endangered	0
Least tern	Sterna antillarum	Endangered	0
common ground-dove	Columbina passerina	Endangered	0
buff-collared nightjar	Caprimulgus ridgway	Endangered	0
elegant trogon,	Trogon elegans	Endangered	0
northern beardless-tyrannulet	Camptostoma imberbe	Endangered	0
(southwestern) willow flycatcher,	Empidonax traillii extimus	Endangered	0
thick-billed kingbird	Tyrannus crassirostris	Endangered	0
(Arizona) grasshopper sparrow	Ammodramus savannarum ammolegus	Endangered	0
neotropic cormorant	Nannopterum brasilianum	Threatened	0
bald eagle	Haliaeetus leucocephalus	Threatened	0
common black-hawk	Buteogallus anthracinus	Threatened	0
peregrine falcon	Falco peregrinus	Threatened	0
(Gould's) wild turkey	Meleagris gallopavo mexicana	Threatened	0
piping plover,	Charadrius melodus	Threatened	0
whiskered screech-owl	Megascops trichopsis	Threatened	0
boreal owl,	Aegolius funereus	Threatened	0
broad-billed hummingbird	Cynanthus latirostris	Threatened	0
white-eared hummingbird	Basilinna leucotis	Threatened	0
violet-crowned hummingbird	Ramosomyia violiceps	Threatened	0
lucifer hummingbird	Calothorax lucifer	Threatened	0
Costa's hummingbird	Calypte costae	Threatened	0
Gila woodpecker	Melanerpes uropygialis	Threatened	0
Bell's vireo	Vireo bellii	Threatened	0
gray vireo	vireo vicinior	Threatened	0
Abert's towhee	Melozone aberti	Threatened	0
Baird's sparrow	Centronyx bairdii	Threatened	0
yellow-eyed junco	Junco phaeonotus	Threatened	0
varied bunting	Passerina versicolor	Threatened	0

Source: New Mexico Department of Game and Fish, Wildlife Management and Fisheries Management Division, 2024 Biennial Review and Recommendations
Authority: Wildlife Conservation Act (17-2-37 through 17-2-46 NMSA 1978)

Results from Grant County 5-Year Dataset – Localities in Morenci MOA 9/11/2024

August 1, 2019 to July 31, 2024

- Total Rows: Observations captured within boundaries of Morenci MOA – **2202**
- C = Taxonomic Order: Number of unique species observed **– 207**
- K = Observation Count: Number of birds documented – **6779**
- AA = Locality: Number of unique localities where observations were made – **170**
- AB = Locality ID: Number of unique location IDs where observations were made – **175**
- AF = Observation Date: Number of calendar days on which observations were made – **157**
- AH = Observer ID: Number of different persons making and documenting observations – **121**
- AI = Sampling Event Identifier: Unique combination of location, date, observer & start time - **327**

Source: eBird Basic Dataset. Version: EBD _relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Federally Listed Species 5-Year Grant County Observations w/in Morenci MOA Aug 1, 2019-July 31, 2024				
Common Name	**Scientific Name**	**Status**	**Total Number Observations**	**Total Number Sighted**
Yellow-billed Cuckoo	Coccyzus americanus	T	0	0
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	0	0
Mexican Spotted Owl	Strix occidentalis lucida	T	XX	XX
Northern Aplomado Falcon	Falco femoralis septentrionalis	E*	0	0

T = Threatened E = Endangered

*Experimental Population

XX eBird obscures locations and data for Mexican Spotted Owls from public data sets as a "Sensitive Species" at risk from humans for capture or targeted killing (https://support.ebird.org/en/support/solutions/articles/48000803210-sensitive-species-in-ebird#anchorSSList).

Results from Grant County 5-Year Dataset – Localities in Morenci MOA 9/11/2024

August 1, 2019 to July 31, 2024

New Mexico Special Status Species 5 Year Grant County Observations w/in Morenci MOA Aug 1, 2019-July 31, 2024			
Common Name	**Scientific Name**	**Special Status**	**# of Observations**
Brown Pelican	Pelecanus occidentalis	Endangered	0
Aplomado Falcon	Falco femoralis	Endangered	0
White-Tailed Ptarmigan	Lagopus leucura	Endangered	0
Whooping Crane	Grus americana	Endangered	0
Least Tern	Sterna antillarum	Endangered	0
Common Ground-Dove	Columbina passerina	Endangered	0
Buff-Collared Nightjar	Caprimulgus ridgway	Endangered	0
Elegant Trogon	Trogon elegans	Endangered	0
Northern Beardless-Tyrannulet	Camptostoma imberbe	Endangered	0
(Southwestern) Willow Flycatcher	Empidonax traillii extimus	Endangered	0
Thick-Billed Kingbird	Tyrannus crassirostris	Endangered	0
(Arizona) Grasshopper Sparrow	Ammodramus savannarum ammolegus	Endangered	0
Neotropic Cormorant	Nannopterum brasilianum	Threatened	1
Bald Eagle	Haliaeetus leucocephalus	Threatened	3
Common Black-Hawk	Buteogallus anthracinus	Threatened	9
Peregrine Falcon	Falco peregrinus	Threatened	2
(Gould's) Wild Turkey	Meleagris gallopavo mexicana	Threatened	7*
Piping Plover	Charadrius melodus	Threatened	0
Whiskered Screech-Owl	Megascops trichopsis	Threatened	0
Boreal Owl	Aegolius funereus	Threatened	0
Broad-Billed Hummingbird	Cynanthus latirostris	Threatened	0
White-Eared Hummingbird	Basilinna leucotis	Threatened	0
Violet-Crowned Hummingbird	Ramosomyia violiceps	Threatened	0
Lucifer Hummingbird	Calothorax lucifer	Threatened	0
Costa's Hummingbird	Calypte costae	Threatened	1
Gila Woodpecker	Melanerpes uropygialis	Threatened	0
Bell's Vireo	Vireo bellii	Threatened	5
Gray Vireo	vireo vicinior	Threatened	1
Abert's Towhee	Melozone aberti	Threatened	0
Baird's Sparrow	Centronyx bairdii	Threatened	0
Yellow-Eyed Junco	Junco phaeonotus	Threatened	0
Varied Bunting	Passerina versicolor	Threatened	0

*subspecies unknown

Source: New Mexico Department of Game and Fish, Wildlife Management and Fisheries Management Division, 2024 Biennial Review and Recommendations Authority: Wildlife Conservation Act (17-2-37 through 17-2-46 NMSA 1978)

Results from Grant County 5-Year Dataset – Localities in Tombstone MOA 9/11/2024

August 1, 2019 to July 31, 2024

- Total Rows: Observations captured within boundaries of Tombstone MOA – **1804**
- C = Taxonomic Order: Number of unique species observed **– 150**
- K = Observation Count: Number of birds documented – **6796**
- AA = Locality: Number of unique localities where observations were made – **188**
- AB = Locality ID: Number of unique location IDs where observations were made – **192**
- AF = Observation Date: Number of calendar days on which observations were made – **177**
- AH = Observer ID: Number of different persons making and documenting observations – **167**
- AI = Sampling Event Identifier: Unique combination of location, date, observer & start time - **392**

Federally Listed Species 5-Year Grant County Observations w/in Tombstone MOA Aug 1, 2019-July 31, 2024				
Common Name	**Scientific Name**	**Status**	**Total Number Observations**	**Total Number Sighted**
Yellow-billed Cuckoo	Coccyzus americanus	T	1	1
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	1	1
Mexican Spotted Owl	Strix occidentalis lucida	T	XX	XX
Northern Aplomado Falcon	Falco femoralis septentrionalis	E*	0	0

T = Threatened E = Endangered

*Experimental Population

XX eBird obscures locations and data for Mexican Spotted Owls from public data sets as a "Sensitive Species" at risk from humans for capture or targeted killing (https://support.ebird.org/en/support/solutions/articles/48000803210-sensitive-species-in-ebird#anchorSSList).

Results from Grant County 5-Year Dataset – Localities in Tombstone MOA 9/11/2024

August 1, 2019 to July 31, 2024

New Mexico Special Status Species 5 Year Grant County Observations w/in Tombstone MOA Aug 1, 2019-July 31, 2024			
Common Name	**Scientific Name**	**Special Status**	**# of Observations**
Brown Pelican	Pelecanus occidentalis	Endangered	0
Aplomado Falcon	Falco femoralis	Endangered	0
White-Tailed Ptarmigan	Lagopus leucura	Endangered	0
Whooping Crane	Grus americana	Endangered	0
Least Tern	Sterna antillarum	Endangered	0
Common Ground-Dove	Columbina passerina	Endangered	0
Buff-Collared Nightjar	Caprimulgus ridgway	Endangered	0
Elegant Trogon	Trogon elegans	Endangered	0
Northern Beardless-Tyrannulet	Camptostoma imberbe	Endangered	0
(Southwestern) Willow Flycatcher	Empidonax traillii extimus	Endangered	1
Thick-Billed Kingbird	Tyrannus crassirostris	Endangered	0
(Arizona) Grasshopper Sparrow	Ammodramus savannarum ammolegus	Endangered	1*
Neotropic Cormorant	Nannopterum brasilianum	Threatened	0
Bald Eagle	Haliaeetus leucocephalus	Threatened	0
Common Black-Hawk	Buteogallus anthracinus	Threatened	0
Peregrine Falcon	Falco peregrinus	Threatened	0
(Gould's) Wild Turkey	Meleagris gallopavo mexicana	Threatened	0
Piping Plover	Charadrius melodus	Threatened	0
Whiskered Screech-Owl	Megascops trichopsis	Threatened	0
Boreal Owl	Aegolius funereus	Threatened	0
Broad-Billed Hummingbird	Cynanthus latirostris	Threatened	0
White-Eared Hummingbird	Basilinna leucotis	Threatened	0
Violet-Crowned Hummingbird	Ramosomyia violiceps	Threatened	0
Lucifer Hummingbird	Calothorax lucifer	Threatened	0
Costa's Hummingbird	Calypte costae	Threatened	0
Gila Woodpecker	Melanerpes uropygialis	Threatened	1
Bell's Vireo	Vireo bellii	Threatened	3
Gray Vireo	vireo vicinior	Threatened	0
Abert's Towhee	Melozone aberti	Threatened	0
Baird's Sparrow	Centronyx bairdii	Threatened	0
Yellow-Eyed Junco	Junco phaeonotus	Threatened	0
Varied Bunting	Passerina versicolor	Threatened	0

*subspecies unknown

Source: New Mexico Department of Game and Fish, Wildlife Management and Fisheries Management Division, 2024 Biennial Review and Recommendations

Authority: Wildlife Conservation Act (17-2-37 through 17-2-46 NMSA 1978)

Results from Catron County 5-Year Dataset – Localities in Reserve MOA 9/9/2024

August 1, 2019 to July 31, 2024

- Total Rows: Observations captured within boundaries of Reserve MOA – **27,749**
- F/G = Common/Scientific Name: Number of unique species observed **—273**
- K = Observation Count: Number of birds documented – **97,644**
- AA = Locality: Number of unique localities where observations were made – **719**
- AB = Locality ID: Number of unique location IDs where observations were made – **750**
- AF = Observation Date: Number of calendar days on which observations were made – **781**
- AH = Observer ID: Number of different persons making and documenting observations – **411**
- AI = Sampling Event Identifier: Unique combination of location, date, observer & start time - **2,363**

Source: eBird Basic Dataset. Version: EBD _relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Federally Listed Species 5-Year Catron County Observations w/in Reserve MOA Aug 1, 2019-July 31, 2024				
Common Name	**Scientific Name**	**Status**	**Total Number Observations**	**Total Number Sighted**
Yellow-Billed Cuckoo	Coccyzus americanus	T	10	11
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	0	0
Mexican Spotted Owl	Strix occidentalis lucida	T	XX	XX
Northern Aplomado Falcon	Falco femoralis septentrionalis	E*	0	0

T = Threatened E = Endangered

*Experimental Population

XX eBird obscures locations and data for Mexican Spotted Owls from public data sets as a "Sensitive Species" at risk from humans for capture or targeted killing (https://support.ebird.org/en/support/solutions/articles/48000803210-sensitive-species-in-ebird#anchorSSList).

Results from Catron County 5-Year Dataset – Localities in Reserve MOA 9/9/2024

August 1, 2019 to July 31, 2024

New Mexico Special Status Species 5 Year Catron County Observations w/in Reserve MOA Aug 1, 2019-July 31, 2024			
Common Name	**Scientific Name**	**Special Status**	**# of Observations**
Brown Pelican	Pelecanus occidentalis	Endangered	0
Aplomado Falcon	Falco femoralis	Endangered	0
White-Tailed Ptarmigan	Lagopus leucura	Endangered	0
Whooping Crane	Grus americana	Endangered	0
Least Tern	Sterna antillarum	Endangered	0
Common Ground-Dove	Columbina passerina	Endangered	0
Buff-Collared Nightjar	Caprimulgus ridgway	Endangered	0
Elegant Trogon,	Trogon elegans	Endangered	0
Northern Beardless-Tyrannulet	Camptostoma imberbe	Endangered	0
(Southwestern) Willow Flycatcher	Empidonax traillii extimus	Endangered	0
Thick-Billed Kingbird	Tyrannus crassirostris	Endangered	0
(Arizona) Grasshopper Sparrow	Ammodramus savannarum ammolegus	Endangered	0
Neotropic Cormorant	Nannopterum brasilianum	Threatened	0
Bald Eagle	Haliaeetus leucocephalus	Threatened	60
Common Black-Hawk	Buteogallus anthracinus	Threatened	0
Peregrine Falcon	Falco peregrinus	Threatened	17
(Gould's) Wild Turkey	Meleagris gallopavo mexicana	Threatened	0
Piping Plover	Charadrius melodus	Threatened	0
Whiskered Screech-Owl	Megascops trichopsis	Threatened	0
Boreal Owl	Aegolius funereus	Threatened	0
Broad-Billed Hummingbird	Cynanthus latirostris	Threatened	0
White-Eared Hummingbird	Basilinna leucotis	Threatened	0
Violet-Crowned Hummingbird	Ramosomyia violiceps	Threatened	0
Lucifer Hummingbird	Calothorax lucifer	Threatened	0
Costa's Hummingbird	Calypte costae	Threatened	0
Gila Woodpecker	Melanerpes uropygialis	Threatened	0
Bell's Vireo	Vireo bellii	Threatened	0
Gray Vireo	vireo vicinior	Threatened	13
Abert's Towhee	Melozone aberti	Threatened	0
Baird's Sparrow	Centronyx bairdii	Threatened	0
Yellow-Eyed Junco	Junco phaeonotus	Threatened	2
Varied Bunting	Passerina versicolor	Threatened	0

Source: New Mexico Department of Game and Fish, Wildlife Management and Fisheries Management Division, 2024 Biennial Review and Recommendations

Authority: Wildlife Conservation Act (17-2-37 through 17-2-46 NMSA 1978)

Results from Catron County 5-Year Dataset – Localities in Morenci MOA 9/9/2024

August 1, 2019 to July 31, 2024

- Total Rows: Observations captured within boundaries of Morenci MOA – **2080**
- F/G = Common/Scientific Name: Number of unique species observed **—180**
- K = Observation Count: Number of birds documented – **7,776**
- AA = Locality: Number of unique localities where observations were made **– 45**
- AB = Locality ID: Number of unique location IDs where observations were made – **45**
- AF = Observation Date: Number of calendar days on which observations were made – **82**
- AH = Observer ID: Number of different persons making and documenting observations – **74**
- AI = Sampling Event Identifier: Unique combination of location, date, observer & start time - **157**

Source: eBird Basic Dataset. Version: EBD _relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Federally Listed Species 5-Year Catron County Observations w/in Morenci MOA Aug 1, 2019-July 31, 2024				
Common Name	**Scientific Name**	**Status**	**Total Number Observations**	**Total Number Sighted**
Yellow-billed Cuckoo	Coccyzus americanus	T	9	9
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	0	0
Mexican Spotted Owl	Strix occidentalis lucida	T	XX	XX
Northern Aplomado Falcon	Falco femoralis septentrionalis	E*	0	0

T = Threatened E = Endangered

*Experimental Population

XX eBird obscures locations and data for Mexican Spotted Owls from public data sets as a "Sensitive Species" at risk from humans for capture or targeted killing (https://support.ebird.org/en/support/solutions/articles/48000803210-sensitive-species-in-ebird#anchorSSList).

Results from Catron County 5-Year Dataset – Localities in Morenci MOA 9/9/2024

August 1, 2019 to July 31, 2024

New Mexico Special Status Species 5 Year Catron County Observations w/in Morenci MOA Aug 1, 2019-July 31, 2024			
Common Name	**Scientific Name**	**Special Status**	**# of Observations**
Brown Pelican	Pelecanus occidentalis	Endangered	0
Aplomado Falcon	Falco femoralis	Endangered	0
White-Tailed Ptarmigan	Lagopus leucura	Endangered	0
Whooping Crane	Grus americana	Endangered	0
Least Tern	Sterna antillarum	Endangered	0
Common Ground-Dove	Columbina passerina	Endangered	0
Buff-Collared Nightjar	Caprimulgus ridgway	Endangered	0
Elegant Trogon,	Trogon elegans	Endangered	0
Northern Beardless-Tyrannulet	Camptostoma imberbe	Endangered	0
(Southwestern) Willow Flycatcher	Empidonax traillii extimus	Endangered	0
Thick-Billed Kingbird	Tyrannus crassirostris	Endangered	0
(Arizona) Grasshopper Sparrow	Ammodramus savannarum ammolegus	Endangered	0
Neotropic Cormorant	Nannopterum brasilianum	Threatened	0
Bald Eagle	Haliaeetus leucocephalus	Threatened	1
Common Black-Hawk	Buteogallus anthracinus	Threatened	19
Peregrine Falcon	Falco peregrinus	Threatened	2
(Gould's) Wild Turkey	Meleagris gallopavo mexicana	Threatened	0
Piping Plover	Charadrius melodus	Threatened	0
Whiskered Screech-Owl	Megascops trichopsis	Threatened	0
Boreal Owl	Aegolius funereus	Threatened	0
Broad-Billed Hummingbird	Cynanthus latirostris	Threatened	0
White-Eared Hummingbird	Basilinna leucotis	Threatened	0
Violet-Crowned Hummingbird	Ramosomyia violiceps	Threatened	0
Lucifer Hummingbird	Calothorax lucifer	Threatened	0
Costa's Hummingbird	Calypte costae	Threatened	0
Gila Woodpecker	Melanerpes uropygialis	Threatened	6
Bell's Vireo	Vireo bellii	Threatened	18
Gray Vireo	vireo vicinior	Threatened	19
Abert's Towhee	Melozone aberti	Threatened	0
Baird's Sparrow	Centronyx bairdii	Threatened	0
Yellow-Eyed Junco	Junco phaeonotus	Threatened	0
Varied Bunting	Passerina versicolor	Threatened	2

Source: New Mexico Department of Game and Fish, Wildlife Management and Fisheries Management Division, 2024 Biennial Review and Recommendations
Authority: Wildlife Conservation Act (17-2-37 through 17-2-46 NMSA 1978)

Results from Greenlee County 5-Year Dataset – Localities in Reserve MOA 9/11/2024
August 1, 2019 to July 31, 2024

- Total Rows: Observations captured within boundaries of Reserve MOA – **11,905**
- C = Taxonomic Order: Number of unique species observed – **225**
- K = Observation Count: Number of birds documented – **32,634**
- AA = Locality: Number of unique localities where observations were made – **496**
- AB = Locality ID: Number of unique location IDs where observations were made – **505**
- AF = Observation Date: Number of calendar days on which observations were made – **266**
- AH = Observer ID: Number of different persons making and documenting observations – **158**
- AI = Sampling Event Identifier: Unique combination of location, date, observer & start time - **1,292**

Source: eBird Basic Dataset. Version: EBD _relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Federally Listed Species 5-Year Greenlee County Observations w/in Reserve MOA Aug 1, 2019-July 31, 2024				
Common Name	**Scientific Name**	**Status**	**Total Number Observations**	**Total Number Sighted**
Yellow-billed Cuckoo	Coccyzus americanus	T	3	3
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	0	0
Mexican Spotted Owl	Strix occidentalis lucida	T	XX	XX
Northern Aplomado Falcon	Falco femoralis septentrionalis	E*	0	0

T = Threatened E = Endangered

*Experimental Population

XX eBird obscures locations and data for Mexican Spotted Owls from public data sets as a "Sensitive Species" at risk from humans for capture or targeted killing (https://support.ebird.org/en/support/solutions/articles/48000803210-sensitive-species-in-ebird#anchorSSList).

Results from Greenlee County 5-Year Dataset – Localities in Reserve MOA 9/11/2024
August 1, 2019 to July 31, 2024

Arizona Species of Greater Conservation Need 5-Year Greenlee County Observations w/in Reserve MOA Aug 1, 2019-July 31, 2024			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Goshawk	Accipiter gentilis	2	0
Apache Northern Goshawk	Accipiter gentilis apache		0
Northern Goshawk	Accipiter gentilis atricapillus		0
Wood Duck	Aix sponsa		0
Arizona grasshopper sparrow	Ammodramus savannarum ammolegus	2	0
Western Grasshopper Sparrow	Ammodramus savannarum perpallidus	2	0
Five-striped Sparrow	Amphispiza quinquestriata	2	0
Sprague's Pipit	Anthus spragueii	2	4
Buff-collared Nightjar	Antrostomus ridgwayi	2	0
Golden Eagle	Aquila chrysaetos	2	13
Western Burrowing Owl	Athene cunicularia hypugaea	2	0
White-eared Hummingbird	Basilinna leucotis		0
American Bittern	Botaurus lentiginosus	2	0
Gray Hawk	Buteo plagiatus		0
Ferruginous Hawk	Buteo regalis	2	2
Lucifer Hummingbird	Calothorax lucifer	3	0
Northern Beardless-Tyrannulet	Camptostoma imberbe	2	0
Swainson's Thrush	Catharus ustulatus	2	0
Baird's Sparrow	Centronyx bairdii	2	4
Mountain Plover	Charadrius montanus	2	0
Western Snowy Plover	Charadrius nivosus nivosus	2	0
Common Nighthawk	Chordeiles minor	2	37
American Dipper	Cinclus mexicanus	2	9
Evening Grosbeak	Coccothraustes vespertinus	2	2
Yellow-billed Cuckoo (Western DPS)	Coccyzus americanus	1	3
Gilded Flicker	Colaptes chrysoides	2	0
Masked Bobwhite	Colinus virginianus ridgwayi	1	0
Olive-sided Flycatcher	Contopus cooperi	2	89
Broad-billed Hummingbird	Cynanthus latirostris	2	0
Dusky Grouse	Dendragapus obscurus	2	0
Fulvous Whistling-Duck	Dendrocygna bicolor		0
Arizona Woodpecker	Dryobates arizonae	2	0
Gray Catbird	Dumetella carolinensis	3	3
Reddish Egret	Egretta rufescens		0
Buff-breasted Flycatcher	Empidonax fulvifrons		0
Northern Buff-breasted Flycatcher	Empidonax fulvifrons pygmaeus	2	0
Southwestern Willow Flycatcher	Empidonax traillii extimus	1	0
Rivoli's Hummingbird	Eugenes fulgens	2	1
Eared Quetzal	Euptilotis neoxenus		0

Results from Greenlee County 5-Year Dataset – Localities in Reserve MOA 9/11/2024
August 1, 2019 to July 31, 2024

Arizona Species of Greater Conservation Need 5-Year Greenlee County Observations w/in Reserve MOA Aug 1, 2019-July 31, 2024			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Aplomado Falcon	Falco femoralis septentrionalis	1	0
Peregrine Falcon	Falco peregrinus		2
American Peregrine Falcon	Falco peregrinus anatum	1	0
MacGillivray's Warbler	Geothlypis tolmiei	2	64
Cactus Ferruginous Pygmy-owl	Glaucidium brasilianum cactorum	1	0
Mountain Pygmy-owl	Glaucidium gnoma gnoma	2	0
California Condor	Gymnogyps californianus	1	0
Pinyon Jay	Gymnorhinus cyanocephalus	2	15
Bald Eagle	Haliaeetus leucocephalus	1	1
Bald Eagle - Winter Population	Haliaeetus leucocephalus (wintering pop.)		1*
Bald Eagle - Sonoran Desert Population	Haliaeetus leucocephalus pop. 3		1*
Harlequin Duck	Histrionicus histrionicus		0
Mississippi Kite	Ictinia mississippiensis	2	0
Yellow-eyed Junco	Junco phaeonotus	2	0
Blue-throated Mountain-gem	Lampornis clemenciae	2	0
Loggerhead Shrike	Lanius ludovicianus	2	5
Black Rail	Laterallus jamaicensis		0
California Black Rail	Laterallus jamaicensis coturniculus	3	0
Whiskered Screech-owl	Megascops trichopsis	2	0
Gila Woodpecker	Melanerpes uropygialis	2	0
Gould's Turkey	Meleagris gallopavo mexicana		87*
Lincoln's Sparrow	Melospiza lincolnii	2	22
Abert's Towhee	Melozone aberti	2	1
Dusky-capped Flycatcher	Myiarchus tuberculifer	2	33
Sulphur-bellied Flycatcher	Myiodynastes luteiventris	2	0
Rose-throated Becard	Pachyramphus aglaiae	2	0
Large-billed Savannah Sparrow	Passerculus sandwichensis rostratus	2	6*
Chihuahua Savannah Sparrow	Passerculus sandwichensis rufofuscus	2	6*
Varied Bunting	Passerina versicolor		0
Brown Pelican	Pelecanus occidentalis		0
Canada Jay	Perisoreus canadensis	2	0
Arizona Botteri's Sparrow	Peucaea botterii arizonae	2	0
Rufous-winged Sparrow	Peucaea carpalis	2	0
Black-billed Magpie	Pica hudsonia	2	0
Pine Grosbeak	Pinicola enucleator	2	0
White-faced Ibis	Plegadis chihi		0
Mexican Chickadee	Poecile sclateri	2	0
Black-capped Gnatcatcher	Polioptila nigriceps	2	0
Vesper Sparrow	Pooecetes gramineus	2	9
Desert Purple Martin	Progne subis hesperia	2	156*

Results from Greenlee County 5-Year Dataset – Localities in Reserve MOA 9/11/2024
August 1, 2019 to July 31, 2024

Arizona Species of Greater Conservation Need 5-Year Greenlee County Observations w/in Reserve MOA Aug 1, 2019-July 31, 2024			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Yuma Ridgway's Rail	Rallus obsoletus yumanensis	1	0
Violet-crowned Hummingbird	Ramosomyia violiceps	2	0
Thick-billed Parrot	Rhynchopsitta pachyrhyncha	1	0
Yellow Warbler	Setophaga petechia		101
Azure Bluebird	Sialia sialis fulva	2	0
California Least Tern	Sternula antillarum browni		0
Mexican Spotted Owl	Strix occidentalis lucida	1	xxx
LeConte's Thrasher	Toxostoma lecontei	2	0
Pacific Wren	Troglodytes pacificus	2	0
Elegant Trogon	Trogon elegans	2	0
Thick-billed Kingbird	Tyrannus crassirostris	2	0
Arizona Bell's Vireo	Vireo bellii arizonae		2*
Gray Vireo	Vireo vicinior	2	3*

*subspecies unknown

SGCN = Species of Greater Conservation Need

Tiers

The list of SGCN was further categorized into three tiers reflecting the Department's management commitments and priorities; tiers were ranked as follows:

Tier 1: Deemed vulnerable (scored a "1") in at least one of the seven categories AND matches at least one of the following::

– Federally listed as endangered or threatened under the Endangered Species Act (ESA).

– Recently removed from ESA and currently requires post-delisting monitoring.

– Is specifically covered under a signed conservation agreement (CCA) or a signed conservation agreement with assurances (CCAA) or a Conservation Strategy and Assessment or Strategic Conservation Plan. Closed season species (i.e., no take permitted) as identified in Arizona Game and Fish Commission Orders 40, 41, 42 or 43.

Tier 2: Deemed vulnerable (scored a "1") in at least one of the seven categories described, but matched none of the additional criteria for Tier 1.

Tier 3: Species with "unknown status" in at least one of the seven categories but don't rise to a Tier 2. These species are those for which we are unable to assess status, and thus represent priority research and information needs. As more information becomes available, their tier status will be re-evaluated.

Source: Special Status Species by Taxonomic Group, Arizona Game and Fish Department, Heritage Data Management System, 4/12/2023

Results from Greenlee County 5-Year Dataset – Localities in Morenci MOA 9/11/2024
August 1, 2019 to July 31, 2024

- Total Rows: Observations captured within boundaries of Reserve MOA – **28,738**
- C = Taxonomic Order: Number of unique species observed – **297**
- K = Observation Count: Number of birds documented – **199,174**
- AA = Locality: Number of unique localities where observations were made – **512**
- AB = Locality ID: Number of unique location IDs where observations were made – **526**
- AF = Observation Date: Number of calendar days on which observations were made –**580**
- AH = Observer ID: Number of different persons making and documenting observations –**288**
- AI = Sampling Event Identifier: Unique combination of location, date, observer & start time - **2,201**

Federally Listed Species 5-Year Greenlee County Observations w/in Morenci MOA Aug 1, 2019-July 31, 2024				
Common Name	**Scientific Name**	**Status**	**Total Number Observations**	**Total Number Sighted**
Yellow-billed Cuckoo	Coccyzus americanus	T	10	11
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	59	102
Mexican Spotted Owl	Strix occidentalis lucida	T	XX	XX
Northern Aplomado Falcon	Falco femoralis septentrionalis	E*	0	0

T = Threatened E = Endangered

*Experimental Population

XX eBird obscures locations and data for Mexican Spotted Owls from public data sets as a "Sensitive Species" at risk from humans for capture or targeted killing (https://support.ebird.org/en/support/solutions/articles/48000803210-sensitive-species-in-ebird#anchorSSList).

Results from Greenlee County 5-Year Dataset – Localities in Morenci MOA 9/11/2024
August 1, 2019 to July 31, 2024

Arizona Species of Greater Conservation Need 5-Year Greenlee County Observations w/in Morenci MOA Aug 1, 2019-July 31, 2024			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Goshawk	Accipiter gentilis	2	0
Apache Northern Goshawk	Accipiter gentilis apache		0
Northern Goshawk	Accipiter gentilis atricapillus		0
Wood Duck	Aix sponsa		6
Arizona grasshopper sparrow	Ammodramus savannarum ammolegus	2	11*
Western Grasshopper Sparrow	Ammodramus savannarum perpallidus	2	11*
Five-striped Sparrow	Amphispiza quinquestriata	2	0
Sprague's Pipit	Anthus spragueii	2	3
Buff-collared Nightjar	Antrostomus ridgwayi	2	0
Golden Eagle	Aquila chrysaetos	2	5
Western Burrowing Owl	Athene cunicularia hypugaea	2	0
White-eared Hummingbird	Basilinna leucotis		0
American Bittern	Botaurus lentiginosus	2	0
Gray Hawk	Buteo plagiatus		187
Ferruginous Hawk	Buteo regalis	2	29
Lucifer Hummingbird	Calothorax lucifer	3	0
Northern Beardless-Tyrannulet	Camptostoma imberbe	2	1
Swainson's Thrush	Catharus ustulatus	2	2
Baird's Sparrow	Centronyx bairdii	2	0
Mountain Plover	Charadrius montanus	2	0
Western Snowy Plover	Charadrius nivosus nivosus	2	0
Common Nighthawk	Chordeiles minor	2	6
American Dipper	Cinclus mexicanus	2	0
Evening Grosbeak	Coccothraustes vespertinus	2	3
Yellow-billed Cuckoo (Western DPS)	Coccyzus americanus	1	10
Gilded Flicker	Colaptes chrysoides	2	0
Masked Bobwhite	Colinus virginianus ridgwayi	1	0
Olive-sided Flycatcher	Contopus cooperi	2	29
Broad-billed Hummingbird	Cynanthus latirostris	2	2
Dusky Grouse	Dendragapus obscurus	2	
Fulvous Whistling-Duck	Dendrocygna bicolor		
Arizona Woodpecker	Dryobates arizonae	2	
Gray Catbird	Dumetella carolinensis	3	
Reddish Egret	Egretta rufescens		
Buff-breasted Flycatcher	Empidonax fulvifrons		
Northern Buff-breasted Flycatcher	Empidonax fulvifrons pygmaeus	2	
Southwestern Willow Flycatcher	Empidonax traillii extimus	1	59
Rivoli's Hummingbird	Eugenes fulgens	2	0
Eared Quetzal	Euptilotis neoxenus		0

Results from Greenlee County 5-Year Dataset – Localities in Morenci MOA 9/11/2024
August 1, 2019 to July 31, 2024

Arizona Species of Greater Conservation Need 5-Year Greenlee County Observations w/in Morenci MOA Aug 1, 2019-July 31, 2024			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Aplomado Falcon	Falco femoralis septentrionalis	1	0
Peregrine Falcon	Falco peregrinus		27
American Peregrine Falcon	Falco peregrinus anatum	1	27*
MacGillivray's Warbler	Geothlypis tolmiei	2	101
Cactus Ferruginous Pygmy-owl	Glaucidium brasilianum cactorum	1	0
Mountain Pygmy-owl	Glaucidium gnoma gnoma	2	0
California Condor	Gymnogyps californianus	1	0
Pinyon Jay	Gymnorhinus cyanocephalus	2	10
Bald Eagle	Haliaeetus leucocephalus	1	2
Bald Eagle - Winter Population	Haliaeetus leucocephalus (wintering pop.)		2*
Bald Eagle - Sonoran Desert Population	Haliaeetus leucocephalus pop. 3		2*
Harlequin Duck	Histrionicus histrionicus		0
Mississippi Kite	Ictinia mississippiensis	2	31
Yellow-eyed Junco	Junco phaeonotus	2	4
Blue-throated Mountain-gem	Lampornis clemenciae	2	0
Loggerhead Shrike	Lanius ludovicianus	2	193
Black Rail	Laterallus jamaicensis		0
California Black Rail	Laterallus jamaicensis coturniculus	3	0
Whiskered Screech-owl	Megascops trichopsis	2	0
Gila Woodpecker	Melanerpes uropygialis	2	391
Gould's Turkey	Meleagris gallopavo mexicana		44*
Lincoln's Sparrow	Melospiza lincolnii	2	170
Abert's Towhee	Melozone aberti	2	398
Dusky-capped Flycatcher	Myiarchus tuberculifer	2	18
Sulphur-bellied Flycatcher	Myiodynastes luteiventris	2	0
Rose-throated Becard	Pachyramphus aglaiae	2	0
Large-billed Savannah Sparrow	Passerculus sandwichensis rostratus	2	151*
Chihuahua Savannah Sparrow	Passerculus sandwichensis rufofuscus	2	151*
Varied Bunting	Passerina versicolor		0
Brown Pelican	Pelecanus occidentalis		0
Canada Jay	Perisoreus canadensis	2	0
Arizona Botteri's Sparrow	Peucaea botterii arizonae	2	0
Rufous-winged Sparrow	Peucaea carpalis	2	0
Black-billed Magpie	Pica hudsonia	2	0
Pine Grosbeak	Pinicola enucleator	2	0
White-faced Ibis	Plegadis chihi		51
Mexican Chickadee	Poecile sclateri	2	0
Black-capped Gnatcatcher	Polioptila nigriceps	2	0
Vesper Sparrow	Pooecetes gramineus	2	77
Desert Purple Martin	Progne subis hesperia	2	11*

Results from Greenlee County 5-Year Dataset – Localities in Morenci MOA 9/11/2024
August 1, 2019 to July 31, 2024

Arizona Species of Greater Conservation Need 5-Year Greenlee County Observations w/in Morenci MOA Aug 1, 2019-July 31, 2024			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Yuma Ridgway's Rail	Rallus obsoletus yumanensis	1	0
Violet-crowned Hummingbird	Ramosomyia violiceps	2	0
Thick-billed Parrot	Rhynchopsitta pachyrhyncha	1	0
Yellow Warbler	Setophaga petechia		296
Azure Bluebird	Sialia sialis fulva	2	0
California Least Tern	Sternula antillarum browni		0
Mexican Spotted Owl	Strix occidentalis lucida	1	0
LeConte's Thrasher	Toxostoma lecontei	2	0
Pacific Wren	Troglodytes pacificus	2	0
Elegant Trogon	Trogon elegans	2	0
Thick-billed Kingbird	Tyrannus crassirostris	2	0
Arizona Bell's Vireo	Vireo bellii arizonae		208*
Gray Vireo	Vireo vicinior	2	11

*subspecies unknown

SGCN = Species of Greater Conservation Need

Tiers

The list of SGCN was further categorized into three tiers reflecting the Department's management commitments and priorities; tiers were ranked as follows:

Tier 1: Deemed vulnerable (scored a "1") in at least one of the seven categories AND matches at least one of the following:

– Federally listed as endangered or threatened under the Endangered Species Act (ESA).
– Recently removed from ESA and currently requires post-delisting monitoring.
– Is specifically covered under a signed conservation agreement (CCA) or a signed conservation agreement with assurances (CCAA) or a Conservation Strategy and Assessment or Strategic Conservation Plan. Closed season species (i.e., no take permitted) as identified in Arizona Game and Fish Commission Orders 40, 41, 42 or 43.

Tier 2: Deemed vulnerable (scored a "1") in at least one of the seven categories described, but matched none of the additional criteria for Tier 1.

Tier 3: Species with "unknown status" in at least one of the seven categories but don't rise to a Tier 2. These species are those for which we are unable to assess status, and thus represent priority research and information needs. As more information becomes available, their tier status will be re-evaluated.

Source: Special Status Species by Taxonomic Group, Arizona Game and Fish Department, Heritage Data Management System, 4/12/20

Results from Graham County 5-Year Dataset – Localities in Morenci MOA 9/11/2024
August 1, 2019 to July 31, 2024

- Total Rows: Observations captured within boundaries of Morenci MOA – **6,480**
- C = Taxonomic Order: Number of unique species observed – **210**
- K = Observation Count: Number of birds documented – **21,543**
- AA = Locality: Number of unique localities where observations were made – **280**
- AB = Locality ID: Number of unique location IDs where observations were made – **287**
- AF = Observation Date: Number of calendar days on which observations were made – **251**
- AH = Observer ID: Number of different persons making and documenting observations – **192**
- AI = Sampling Event Identifier: Unique combination of location, date, observer & start time - **727**

Source: eBird Basic Dataset. Version: EBD _relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Federally Listed Species 5-Year Graham County Observations w/in Morenci MOA Aug 1, 2019-July 31, 2024				
Common Name	**Scientific Name**	**Status**	**Total Number Observations**	**Total Number Sighted**
Yellow-billed Cuckoo	Coccyzus americanus	T	9	9
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	5	5
Mexican Spotted Owl	Strix occidentalis lucida	T	XX	XX
Northern Aplomado Falcon	Falco femoralis septentrionalis	E*	0	0

T = Threatened E = Endangered

*Experimental Population

XX eBird obscures locations and data for Mexican Spotted Owls from public data sets as a "Sensitive Species" at risk from humans for capture or targeted killing (https://support.ebird.org/en/support/solutions/articles/48000803210-sensitive-species-in-ebird#anchorSSList).

Results from Graham County 5-Year Dataset – Localities in Morenci MOA 9/11/2024
August 1, 2019 to July 31, 2024

Arizona Species of Greater Conservation Need 5-Year Graham County Observations w/in Morenci MOA Aug 1, 2019-July 31, 2024			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Goshawk	Accipiter gentilis	2	0
Apache Northern Goshawk	Accipiter gentilis apache		0
Northern Goshawk	Accipiter gentilis atricapillus		0
Wood Duck	Aix sponsa		0
Arizona grasshopper sparrow	Ammodramus savannarum ammolegus	2	0
Western Grasshopper Sparrow	Ammodramus savannarum perpallidus	2	0
Five-striped Sparrow	Amphispiza quinquestriata	2	0
Sprague's Pipit	Anthus spragueii	2	0
Buff-collared Nightjar	Antrostomus ridgwayi	2	0
Golden Eagle	Aquila chrysaetos	2	2
Western Burrowing Owl	Athene cunicularia hypugaea	2	3*
White-eared Hummingbird	Basilinna leucotis		0
American Bittern	Botaurus lentiginosus	2	0
Gray Hawk	Buteo plagiatus		20
Ferruginous Hawk	Buteo regalis	2	0
Lucifer Hummingbird	Calothorax lucifer	3	0
Northern Beardless-Tyrannulet	Camptostoma imberbe	2	4
Swainson's Thrush	Catharus ustulatus	2	0
Baird's Sparrow	Centronyx bairdii	2	0
Mountain Plover	Charadrius montanus	2	0
Western Snowy Plover	Charadrius nivosus nivosus	2	0
Common Nighthawk	Chordeiles minor	2	1
American Dipper	Cinclus mexicanus	2	0
Evening Grosbeak	Coccothraustes vespertinus	2	0
Yellow-billed Cuckoo (Western DPS)	Coccyzus americanus	1	9
Gilded Flicker	Colaptes chrysoides	2	0
Masked Bobwhite	Colinus virginianus ridgwayi	1	0
Olive-sided Flycatcher	Contopus cooperi	2	4
Broad-billed Hummingbird	Cynanthus latirostris	2	13
Dusky Grouse	Dendragapus obscurus	2	0
Fulvous Whistling-Duck	Dendrocygna bicolor		0
Arizona Woodpecker	Dryobates arizonae	2	0
Gray Catbird	Dumetella carolinensis	3	2
Reddish Egret	Egretta rufescens		0
Buff-breasted Flycatcher	Empidonax fulvifrons		0
Northern Buff-breasted Flycatcher	Empidonax fulvifrons pygmaeus	2	0
Southwestern Willow Flycatcher	Empidonax traillii extimus	1	5
Rivoli's Hummingbird	Eugenes fulgens	2	0
Eared Quetzal	Euptilotis neoxenus		0

Results from Graham County 5-Year Dataset – Localities in Morenci MOA 9/11/2024
August 1, 2019 to July 31, 2024

Arizona Species of Greater Conservation Need 5-Year Graham County Observations w/in Morenci MOA Aug 1, 2019-July 31, 2024			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Aplomado Falcon	Falco femoralis septentrionalis	1	0
Peregrine Falcon	Falco peregrinus		4
American Peregrine Falcon	Falco peregrinus anatum	1	4*
MacGillivray's Warbler	Geothlypis tolmiei	2	15
Cactus Ferruginous Pygmy-owl	Glaucidium brasilianum cactorum	1	0
Mountain Pygmy-owl	Glaucidium gnoma gnoma	2	0
California Condor	Gymnogyps californianus	1	0
Pinyon Jay	Gymnorhinus cyanocephalus	2	0
Bald Eagle	Haliaeetus leucocephalus	1	0
Bald Eagle - Winter Population	Haliaeetus leucocephalus (wintering pop.)		0
Bald Eagle - Sonoran Desert Population	Haliaeetus leucocephalus pop. 3		0
Harlequin Duck	Histrionicus histrionicus		0
Mississippi Kite	Ictinia mississippiensis	2	0
Yellow-eyed Junco	Junco phaeonotus	2	0
Blue-throated Mountain-gem	Lampornis clemenciae	2	0
Loggerhead Shrike	Lanius ludovicianus	2	84
Black Rail	Laterallus jamaicensis		0
California Black Rail	Laterallus jamaicensis coturniculus	3	0
Whiskered Screech-owl	Megascops trichopsis	2	0
Gila Woodpecker	Melanerpes uropygialis	2	147
Gould's Turkey	Meleagris gallopavo mexicana		7*
Lincoln's Sparrow	Melospiza lincolnii	2	24
Abert's Towhee	Melozone aberti	2	102
Dusky-capped Flycatcher	Myiarchus tuberculifer	2	5
Sulphur-bellied Flycatcher	Myiodynastes luteiventris	2	0
Rose-throated Becard	Pachyramphus aglaiae	2	0
Large-billed Savannah Sparrow	Passerculus sandwichensis rostratus	2	29*
Chihuahua Savannah Sparrow	Passerculus sandwichensis rufofuscus	2	29*
Varied Bunting	Passerina versicolor		0
Brown Pelican	Pelecanus occidentalis		0
Canada Jay	Perisoreus canadensis	2	0
Arizona Botteri's Sparrow	Peucaea botterii arizonae	2	0
Rufous-winged Sparrow	Peucaea carpalis	2	0
Black-billed Magpie	Pica hudsonia	2	0
Pine Grosbeak	Pinicola enucleator	2	0
White-faced Ibis	Plegadis chihi		6
Mexican Chickadee	Poecile sclateri	2	0
Black-capped Gnatcatcher	Polioptila nigriceps	2	0
Vesper Sparrow	Pooecetes gramineus	2	49
Desert Purple Martin	Progne subis hesperia	2	0

Results from Graham County 5-Year Dataset – Localities in Morenci MOA 9/11/2024
August 1, 2019 to July 31, 2024

Arizona Species of Greater Conservation Need 5-Year Graham County Observations w/in Morenci MOA Aug 1, 2019-July 31, 2024			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Yuma Ridgway's Rail	Rallus obsoletus yumanensis	1	0
Violet-crowned Hummingbird	Ramosomyia violiceps	2	0
Thick-billed Parrot	Rhynchopsitta pachyrhyncha	1	0
Yellow Warbler	Setophaga petechia		130
Azure Bluebird	Sialia sialis fulva	2	0
California Least Tern	Sternula antillarum browni		0
Mexican Spotted Owl	Strix occidentalis lucida	1	XX
LeConte's Thrasher	Toxostoma lecontei	2	0
Pacific Wren	Troglodytes pacificus	2	0
Elegant Trogon	Trogon elegans	2	0
Thick-billed Kingbird	Tyrannus crassirostris	2	0
Arizona Bell's Vireo	Vireo bellii arizonae		173*
Gray Vireo	Vireo vicinior	2	1

*subspecies unknown

SGCN = Species of Greater Conservation Need

Tiers

The list of SGCN was further categorized into three tiers reflecting the Department's management commitments and priorities; tiers were ranked as follows:

Tier 1: Deemed vulnerable (scored a "1") in at least one of the seven categories AND matches at least one of the following:

– Federally listed as endangered or threatened under the Endangered Species Act (ESA).
– Recently removed from ESA and currently requires post-delisting monitoring.
– Is specifically covered under a signed conservation agreement (CCA) or a signed conservation agreement with assurances (CCAA) or a Conservation Strategy and Assessment or Strategic Conservation Plan. Closed season species (i.e., no take permitted) as identified in Arizona Game and Fish Commission Orders 40, 41, 42 or 43.

Tier 2: Deemed vulnerable (scored a "1") in at least one of the seven categories described, but matched none of the additional criteria for Tier 1.

Tier 3: Species with "unknown status" in at least one of the seven categories but don't rise to a Tier 2. These species are those for which we are unable to assess status, and thus represent priority research and information needs. As more information becomes available, their tier status will be re-evaluated.

Source: Special Status Species by Taxonomic Group, Arizona Game and Fish Department, Heritage Data Management System, 4/12/2023

Results from Graham County 5-Year Dataset – Localities in Reserve MOA 9/11/2024
August 1, 2019 to July 31, 2024

- Total Rows: Observations captured within boundaries of Reserve MOA – **33**
- C = Taxonomic Order: Number of unique species observed – **29**
- K = Observation Count: Number of birds documented – **89**
- AA = Locality: Number of unique localities where observations were made – **3**
- AB = Locality ID: Number of unique location IDs where observations were made – **3**
- AF = Observation Date: Number of calendar days on which observations were made –**3**
- AH = Observer ID: Number of different persons making and documenting observations – **3**
- AI = Sampling Event Identifier: Unique combination of location, date, observer & start time - **3**

Federally Listed Species 5-Year Graham County Observations w/in Reserve MOA Aug 1, 2019-July 31, 2024				
Common Name	**Scientific Name**	**Status**	**Total Number Observations**	**Total Number Sighted**
Yellow-billed Cuckoo	Coccyzus americanus	T	0	0
Southwestern willow flycatcher	Empidonax traillii extimus	E	0	0
Mexican spotted owl	Strix occidentalis lucida	T	XX	XX
Northern Aplomado Falcon	Falco femoralis septentrionalis	E*	0	0

T = Threatened E = Endangered

*Experimental Population

XX eBird obscures locations and data for Mexican Spotted Owls from public data sets as a "Sensitive Species" at risk from humans for capture or targeted killing (https://support.ebird.org/en/support/solutions/articles/48000803210-sensitive-species-in-ebird#anchorSSList).

Results from Graham County 5-Year Dataset – Localities in Reserve MOA 9/11/2024
August 1, 2019 to July 31, 2024

Arizona Species of Greater Conservation Need 5-Year Graham County Observations w/in Reserve MOA Aug 1, 2019-July 31, 2024			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Goshawk	Accipiter gentilis	2	0
Apache Northern Goshawk	Accipiter gentilis apache		0
Northern Goshawk	Accipiter gentilis atricapillus		0
Wood Duck	Aix sponsa		0
Arizona grasshopper sparrow	Ammodramus savannarum ammolegus	2	0
Western Grasshopper Sparrow	Ammodramus savannarum perpallidus	2	0
Five-striped Sparrow	Amphispiza quinquestriata	2	0
Sprague's Pipit	Anthus spragueii	2	0
Buff-collared Nightjar	Antrostomus ridgwayi	2	0
Golden Eagle	Aquila chrysaetos	2	0
Western Burrowing Owl	Athene cunicularia hypugaea	2	0
White-eared Hummingbird	Basilinna leucotis		0
American Bittern	Botaurus lentiginosus	2	0
Gray Hawk	Buteo plagiatus		0
Ferruginous Hawk	Buteo regalis	2	0
Lucifer Hummingbird	Calothorax lucifer	3	0
Northern Beardless-Tyrannulet	Camptostoma imberbe	2	0
Swainson's Thrush	Catharus ustulatus	2	0
Baird's Sparrow	Centronyx bairdii	2	0
Mountain Plover	Charadrius montanus	2	0
Western Snowy Plover	Charadrius nivosus nivosus	2	0
Common Nighthawk	Chordeiles minor	2	0
American Dipper	Cinclus mexicanus	2	0
Evening Grosbeak	Coccothraustes vespertinus	2	0
Yellow-billed Cuckoo (Western DPS)	Coccyzus americanus	1	0
Gilded Flicker	Colaptes chrysoides	2	0
Masked Bobwhite	Colinus virginianus ridgwayi	1	0
Olive-sided Flycatcher	Contopus cooperi	2	0
Broad-billed Hummingbird	Cynanthus latirostris	2	0
Dusky Grouse	Dendragapus obscurus	2	0
Fulvous Whistling-Duck	Dendrocygna bicolor		0
Arizona Woodpecker	Dryobates arizonae	2	0
Gray Catbird	Dumetella carolinensis	3	0
Reddish Egret	Egretta rufescens		0
Buff-breasted Flycatcher	Empidonax fulvifrons		0
Northern Buff-breasted Flycatcher	Empidonax fulvifrons pygmaeus	2	0
Southwestern Willow Flycatcher	Empidonax traillii extimus	1	0
Rivoli's Hummingbird	Eugenes fulgens	2	0
Eared Quetzal	Euptilotis neoxenus		0

Results from Graham County 5-Year Dataset – Localities in Reserve MOA 9/11/2024
August 1, 2019 to July 31, 2024

Arizona Species of Greater Conservation Need 5-Year Graham County Observations w/in Reserve MOA Aug 1, 2019-July 31, 2024			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Aplomado Falcon	Falco femoralis septentrionalis	1	0
Peregrine Falcon	Falco peregrinus		0
American Peregrine Falcon	Falco peregrinus anatum	1	0
MacGillivray's Warbler	Geothlypis tolmiei	2	0
Cactus Ferruginous Pygmy-owl	Glaucidium brasilianum cactorum	1	0
Mountain Pygmy-owl	Glaucidium gnoma gnoma	2	0
California Condor	Gymnogyps californianus	1	0
Pinyon Jay	Gymnorhinus cyanocephalus	2	1
Bald Eagle	Haliaeetus leucocephalus	1	0
Bald Eagle - Winter Population	Haliaeetus leucocephalus (wintering pop.)		0
Bald Eagle - Sonoran Desert Population	Haliaeetus leucocephalus pop. 3		0
Harlequin Duck	Histrionicus histrionicus		0
Mississippi Kite	Ictinia mississippiensis	2	0
Yellow-eyed Junco	Junco phaeonotus	2	0
Blue-throated Mountain-gem	Lampornis clemenciae	2	0
Loggerhead Shrike	Lanius ludovicianus	2	0
Black Rail	Laterallus jamaicensis		0
California Black Rail	Laterallus jamaicensis coturniculus	3	0
Whiskered Screech-owl	Megascops trichopsis	2	0
Gila Woodpecker	Melanerpes uropygialis	2	0
Gould's Turkey	Meleagris gallopavo mexicana		1*
Lincoln's Sparrow	Melospiza lincolnii	2	0
Abert's Towhee	Melozone aberti	2	0
Dusky-capped Flycatcher	Myiarchus tuberculifer	2	0
Sulphur-bellied Flycatcher	Myiodynastes luteiventris	2	0
Rose-throated Becard	Pachyramphus aglaiae	2	0
Large-billed Savannah Sparrow	Passerculus sandwichensis rostratus	2	0
Chihuahua Savannah Sparrow	Passerculus sandwichensis rufofuscus	2	0
Varied Bunting	Passerina versicolor		0
Brown Pelican	Pelecanus occidentalis		0
Canada Jay	Perisoreus canadensis	2	0
Arizona Botteri's Sparrow	Peucaea botterii arizonae	2	0
Rufous-winged Sparrow	Peucaea carpalis	2	0
Black-billed Magpie	Pica hudsonia	2	0
Pine Grosbeak	Pinicola enucleator	2	0
White-faced Ibis	Plegadis chihi		0
Mexican Chickadee	Poecile sclateri	2	0
Black-capped Gnatcatcher	Polioptila nigriceps	2	0
Vesper Sparrow	Pooecetes gramineus	2	0
Desert Purple Martin	Progne subis hesperia	2	0
Yuma Ridgway's Rail	Rallus obsoletus yumanensis	1	0

Results from Graham County 5-Year Dataset – Localities in Reserve MOA 9/11/2024
August 1, 2019 to July 31, 2024

Arizona Species of Greater Conservation Need 5-Year Graham County Observations w/in Reserve MOA Aug 1, 2019-July 31, 2024			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Violet-crowned Hummingbird	Ramosomyia violiceps	2	0
Thick-billed Parrot	Rhynchopsitta pachyrhyncha	1	0
Yellow Warbler	Setophaga petechia		0
Azure Bluebird	Sialia sialis fulva	2	0
California Least Tern	Sternula antillarum browni		0
Mexican Spotted Owl	Strix occidentalis lucida	1	XX
LeConte's Thrasher	Toxostoma lecontei	2	0
Pacific Wren	Troglodytes pacificus	2	0
Elegant Trogon	Trogon elegans	2	0
Thick-billed Kingbird	Tyrannus crassirostris	2	0
Arizona Bell's Vireo	Vireo bellii arizonae		0
Gray Vireo	Vireo vicinior	2	0

*subspecies unknown

SGCN = Species of Greater Conservation Need

Tiers

The list of SGCN was further categorized into three tiers reflecting the Department's management commitments and priorities; tiers were ranked as follows:

Tier 1: Deemed vulnerable (scored a "1") in at least one of the seven categories AND matches at least one of the following:

– Federally listed as endangered or threatened under the Endangered Species Act (ESA).
– Recently removed from ESA and currently requires post-delisting monitoring.
– Is specifically covered under a signed conservation agreement (CCA) or a signed conservation agreement with assurances (CCAA) or a Conservation Strategy and Assessment or Strategic Conservation Plan. Closed season species (i.e., no take permitted) as identified in Arizona Game and Fish Commission Orders 40, 41, 42 or 43.

Tier 2: Deemed vulnerable (scored a "1") in at least one of the seven categories described, but matched none of the additional criteria for Tier 1.

Tier 3: Species with "unknown status" in at least one of the seven categories but don't rise to a Tier 2. These species are those for which we are unable to assess status, and thus represent priority research and information needs. As more information becomes available, their tier status will be re-evaluated.

Source: Special Status Species by Taxonomic Group, Arizona Game and Fish Department, Heritage Data Management System, 4/12/2023

Results from Apache County 5-Year Dataset – Localities in Reserve MOA 9/9/2024
August 1, 2019 to July 31, 2024

- Total Rows: Observations captured within boundaries of Reserve MOA – **32,986**
- F/G = Common/Scientific Name: Number of unique species observed **–289**
- K = Observation Count: Number of birds documented – **171,417**
- AA = Locality: Number of unique localities where observations were made – **554**
- AB = Locality ID: Number of unique location IDs where observations were made – **572**
- AF = Observation Date: Number of calendar days on which observations were made – **673**
- AH = Observer ID: Number of different persons making and documenting observations – **540**
- AI = Sampling Event Identifier: Unique combination of location, date, observer & start time - **2,850**

Source: eBird Basic Dataset. Version: EBD _relJul-2024. Cornell Lab of Ornithology, Ithaca, New York. July 2024.

Federally Listed Species 5-Year Apache County Observations w/in Reserve MOA Aug 1, 2019-July 31, 2024				
Common Name	**Scientific Name**	**Status**	**Total Number Observations**	**Total Number Sighted**
Yellow-Billed Cuckoo	Coccyzus americanus	T	0	0
Southwestern Willow Flycatcher	Empidonax traillii extimus	E	0	0
Mexican Spotted Owl	Strix occidentalis lucida	T	XX	XX
Northern Aplomado Falcon	Falco femoralis septentrionalis	E*	0	0

T = Threatened E = Endangered

*Experimental Population

XX eBird obscures locations and data for Mexican Spotted Owls from public data sets as a "Sensitive Species" at risk from humans for capture or targeted killing (https://support.ebird.org/en/support/solutions/articles/48000803210-sensitive-species-in-ebird#anchorSSList).

Results from Apache County 5-Year Dataset – Localities in Reserve MOA 9/9/2024
August 1, 2019 to July 31, 2024

Arizona Species of Greater Conservation Need 5-Year Apache County Observations w/in Reserve MOA Aug 1, 2019-July 31, 2024			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Goshawk	Accipiter gentilis	2	0
Apache Northern Goshawk	Accipiter gentilis apache		0
Northern Goshawk	Accipiter gentilis atricapillus		0
Wood Duck	Aix sponsa		3
Arizona grasshopper sparrow	Ammodramus savannarum ammolegus	2	0
Western Grasshopper Sparrow	Ammodramus savannarum perpallidus	2	0
Five-striped Sparrow	Amphispiza quinquestriata	2	0
Sprague's Pipit	Anthus spragueii	2	0
Buff-collared Nightjar	Antrostomus ridgwayi	2	0
Golden Eagle	Aquila chrysaetos	2	12
Western Burrowing Owl	Athene cunicularia hypugaea	2	0
White-eared Hummingbird	Basilinna leucotis		0
American Bittern	Botaurus lentiginosus	2	0
Gray Hawk	Buteo plagiatus		0
Ferruginous Hawk	Buteo regalis	2	2
Lucifer Hummingbird	Calothorax lucifer	3	0
Northern Beardless-Tyrannulet	Camptostoma imberbe	2	0
Swainson's Thrush	Catharus ustulatus	2	22
Baird's Sparrow	Centronyx bairdii	2	0
Mountain Plover	Charadrius montanus	2	0
Western Snowy Plover	Charadrius nivosus nivosus	2	0
Common Nighthawk	Chordeiles minor	2	40
American Dipper	Cinclus mexicanus	2	337
Evening Grosbeak	Coccothraustes vespertinus	2	1
Yellow-billed Cuckoo (Western DPS)	Coccyzus americanus	1	0
Gilded Flicker	Colaptes chrysoides	2	0
Masked Bobwhite	Colinus virginianus ridgwayi	1	0
Olive-sided Flycatcher	Contopus cooperi	2	150
Broad-billed Hummingbird	Cynanthus latirostris	2	0
Dusky Grouse	Dendragapus obscurus	2	42
Fulvous Whistling-Duck	Dendrocygna bicolor		0
Arizona Woodpecker	Dryobates arizonae	2	0
Gray Catbird	Dumetella carolinensis	3	14
Reddish Egret	Egretta rufescens		0
Buff-breasted Flycatcher	Empidonax fulvifrons		0
Northern Buff-breasted Flycatcher	Empidonax fulvifrons pygmaeus	2	0
Southwestern Willow Flycatcher	Empidonax traillii extimus	1	0
Rivoli's Hummingbird	Eugenes fulgens	2	4
Eared Quetzal	Euptilotis neoxenus		0

Results from Apache County 5-Year Dataset – Localities in Reserve MOA 9/9/2024
August 1, 2019 to July 31, 2024

Arizona Species of Greater Conservation Need 5-Year Apache County Observations w/in Reserve MOA Aug 1, 2019-July 31, 2024			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Northern Aplomado Falcon	Falco femoralis septentrionalis	1	0
Peregrine Falcon	Falco peregrinus		63
American Peregrine Falcon	Falco peregrinus anatum	1	0
MacGillivray's Warbler	Geothlypis tolmiei	2	318
Cactus Ferruginous Pygmy-owl	Glaucidium brasilianum cactorum	1	0
Mountain Pygmy-owl	Glaucidium gnoma gnoma	2	0
California Condor	Gymnogyps californianus	1	0
Pinyon Jay	Gymnorhinus cyanocephalus	2	16
Bald Eagle	Haliaeetus leucocephalus	1	140
Bald Eagle - Winter Population	Haliaeetus leucocephalus (wintering pop.)		unknown
Bald Eagle - Sonoran Desert Population	Haliaeetus leucocephalus pop. 3		unknown
Harlequin Duck	Histrionicus histrionicus		0
Mississippi Kite	Ictinia mississippiensis	2	0
Yellow-eyed Junco	Junco phaeonotus	2	0
Blue-throated Mountain-gem	Lampornis clemenciae	2	0
Loggerhead Shrike	Lanius ludovicianus	2	16
Black Rail	Laterallus jamaicensis		0
California Black Rail	Laterallus jamaicensis coturniculus	3	0
Whiskered Screech-owl	Megascops trichopsis	2	0
Gila Woodpecker	Melanerpes uropygialis	2	0
Gould's Turkey	Meleagris gallopavo mexicana		0
Lincoln's Sparrow	Melospiza lincolnii	2	214
Abert's Towhee	Melozone aberti	2	0
Dusky-capped Flycatcher	Myiarchus tuberculifer	2	0
Sulphur-bellied Flycatcher	Myiodynastes luteiventris	2	0
Rose-throated Becard	Pachyramphus aglaiae	2	0
Large-billed Savannah Sparrow	Passerculus sandwichensis rostratus	2	0
Chihuahua Savannah Sparrow	Passerculus sandwichensis rufofuscus	2	0
Varied Bunting	Passerina versicolor		0
Brown Pelican	Pelecanus occidentalis		0
Canada Jay	Perisoreus canadensis	2	252
Arizona Botteri's Sparrow	Peucaea botterii arizonae	2	0
Rufous-winged Sparrow	Peucaea carpalis	2	0
Black-billed Magpie	Pica hudsonia	2	0
Pine Grosbeak	Pinicola enucleator	2	2
White-faced Ibis	Plegadis chihi		35
Mexican Chickadee	Poecile sclateri	2	0
Black-capped Gnatcatcher	Polioptila nigriceps	2	0
Vesper Sparrow	Pooecetes gramineus	2	212
Desert Purple Martin	Progne subis hesperia	2	0

Results from Apache County 5-Year Dataset – Localities in Reserve MOA 9/9/2024
August 1, 2019 to July 31, 2024

Arizona Species of Greater Conservation Need 5-Year Apache County Observations w/in Reserve MOA Aug 1, 2019-July 31, 2024			
COMMON NAME	**Scientific Name**	**SGCN**	**# of Observations**
Yuma Ridgway's Rail	Rallus obsoletus yumanensis	1	0
Violet-crowned Hummingbird	Ramosomyia violiceps	2	0
Thick-billed Parrot	Rhynchopsitta pachyrhyncha	1	0
Yellow Warbler	Setophaga petechia		83
Azure Bluebird	Sialia sialis fulva	2	0
California Least Tern	Sternula antillarum browni		0
Mexican Spotted Owl	Strix occidentalis lucida	1	0
LeConte's Thrasher	Toxostoma lecontei	2	0
Pacific Wren	Troglodytes pacificus	2	1
Elegant Trogon	Trogon elegans	2	0
Thick-billed Kingbird	Tyrannus crassirostris	2	0
Arizona Bell's Vireo	Vireo bellii arizonae		0
Gray Vireo	Vireo vicinior	2	1

SGCN = Species of Greater Conservation Need

Tiers

The list of SGCN was further categorized into three tiers reflecting the Department's management commitments and priorities; tiers were ranked as follows:

Tier 1: Deemed vulnerable (scored a "1") in at least one of the seven categories AND matches at least one of the following:

– Federally listed as endangered or threatened under the Endangered Species Act (ESA).
– Recently removed from ESA and currently requires post-delisting monitoring.
– Is specifically covered under a signed conservation agreement (CCA) or a signed conservation agreement with assurances (CCAA) or a Conservation Strategy and Assessment or Strategic Conservation Plan. Closed season species (i.e., no take permitted) as identified in Arizona Game and Fish Commission Orders 40, 41, 42 or 43.

Tier 2: Deemed vulnerable (scored a "1") in at least one of the seven categories described, but matched none of the additional criteria for Tier 1.

Tier 3: Species with "unknown status" in at least one of the seven categories but don't rise to a Tier 2. These species are those for which we are unable to assess status, and thus represent priority research and information needs. As more information becomes available, their tier status will be re-evaluated.

Source: Special Status Species by Taxonomic Group, Arizona Game and Fish Department, Heritage Data Management System, 4/12/2023

APPENDIX C: NUISANCE FLIGHT REPORTS

These reports have been submitted to DAF by Gila Peaceful Skies and Chiricahua Peaceful skies on a rolling basis. Personal information of reportees has been removed from this appendix. Complete information has already been sent to DAF.

Nuisance Flight Reports from Peaceful Gila Skies:

Date	Time	# of craft	Description of Aircraft	Approx Altitude	Location of Incident	Description of Incident
2024-09-26	12:05 PM	1	C-130 likely	very low very loud	over our property in Lake Roberts	plane came through and felt like we could see the pilot
2024-09-27	11:43 AM	1	Military cargo plane.	500 feet	20 Rainbow Rd, San Lorenzo, NM	Was in my house and heard a very loud noise and knew it was an airplane and ran outside to see the back end of the plane flying very low above my house. It was so loud my dog inside woke up and kind of freaked out due to the vibration and noise.
2024-07-25	12:30 PM	3	unknown	I couldn't tell	Gila Hot Springs	We were terrified when we heard these jets flyover! It was so loud! It was the sound of destruction.
2024-07-25	12:26 PM	3	F16	low, 100-200 ft	Gila Hot Springs, 143 w Fork Rd	low flying, two aircraft flying close together, with another roughly a minute behind. loud noice, startling to people and livestock.
2024-07-25	12:27 PM	3	3 fast, loud and low aircraft flew directly over the community of Gila Hot Springs	very low	Gila Hot Springs, HWY 35	3 loud, low and fast-moving aircraft flew over Gila Hot Springs, alarming my animals, disrupting my work, and disturbing the normal quiet of the area and surrounding wilderness.
2024-05-08	11:10 AM	1	F-16	within 150'	Within Gila Wilderness Boundary, East side of Seventy-Four Mountain in Mogollon Range, approximately 1.5 miles from trailhead.	none
2024-03-03	2:13 PM	1	jet	10,000 ft estimate. low enough to hear sonic boom.	Above Rough Canyon in the Gila Wilderness. Seen from 33.10385, -108.56757	Heard a sonic boom during an off trail wilderness hike. Looked up and saw a plane heading west. It was high, but I still heard the boom and was immediately able to connect it to the plane above.

2024-02-29	12:15 PM	2	A-10 wart hogs	300 feet	777 w McReynolds	Low pass near our house. We've had several in the last week. They came out of the south. Went around sanford hill, past our place and then looked to be heading towards Portal.
2024-01-30	9:40 AM	2	F-16s	1000 feet	CDT trailhead on Walking X Ranch Road, 300 feet south of NM 90	Two planes came over at low altitude, startling our group of nine hikers as we were getting ready to hike.
2024-02-17	1:45 PM	1	unknown	couple of hundred feet	5 miles south of the Gila Cliff Dwellings National Monument33.197695770445804, -108.20999755047171	almost an explosion sound, shaking the house and roaring past. never heard anything like that previous. Made children scream and animals hide
2024-02-16	1:45 PM	one	Jet	very low	5 miles south of the Gila Cliff Dwellings National Monument33.197695770445804, -108.20999755047171	I was inside but startled at the sudden deafening sound of a very low flying high speed jet
2024-02-16	1:45 PM	1	F-16	500 ft.	Gila Hot Springs,NM	It came out of nowhere, flying way too low. Just one plane. Scary.
2024-02-09	12:28 PM	One	F-16	under 100 ft	Continental Divide Trail, NM; I believe I was between mile marker 109.5 and mile marker 110 at the time (about 30 minutes walking distance from NM 90 at C-Bar Ranch Rd).	I was hiking with my two dogs on the Continental Divide Trail on Friday, February 9, 2024. I started at the gate on the NW side of NM 90 opposite C-Bar Ranch Road, and walked north. The section of the trail I was on at the time is in the series of low hills and gullies, I believe between CDT mile marker 109.5 and CDT mile marker 110. The trail was curving around the side of a hill. Without any warning the jet came into view around the curve of the hill. It was coming straight at me. It was so low I did not have to tilt my head back to see the jet under the brim of my ball cap. The wings were in a vertical position as the jet hugged the hill and the jet engine was making a high-pitched screaming noise. My dogs tried to bolt but I was able to hold onto their leashes. The jet rapidly disappeared around the curve of the hill behind me. My ears were ringing for about 10 minutes, and I had low-level ear pain in one ear for about 2 minutes. When I looked at my phone shortly after the incident the time was 12:30 PM. I was terrified, looking right into an oncoming jet. I didn't know if it was going to crash, being so close to the ground and the hill. I didn't know if I would be injured by the noise or jet fuel. I could not believe it was happening -- how could that be lawful or allowable? How could I be subjected to that when peacefully and legally using a recreational trail on public lands? The jet was so low and the trail there is so well trodden that the pilot would have had no doubt that he/she was buzzing a hiking trail, and as he/she was hugging a hillside he/she

						would have had no idea what or who was on the trail as he/she rounded the curves. The area also showed recent heavy use by livestock. For quite awhile after the incident every time I heard an aircraft I was afraid the jet was coming back. I am still outraged as I write this.
2024-01-22	7:30 PM	2	Two F-16's	200	Horseshoe canyon area near Zent Rd and Owls Butte Trail	Two F-16's flying low altitude around 200ft and have been circling back and forth near entrance of Horseshoe Canyon for over one hour and still circling back and forth.
2023-11-20	12:50 PM	2	F-16,	Low! less than 1500 feet	33.1987437,-108.2106267	Two F-16's, one minute after another, flying over the village of Gila Hot Springs. We were told this is an AVOIDANCE ZONE, but the planes were low enough to scare the livestock, and then, barely cleared the mountain ridge east of the village. PLEASE WARN THE PILOTS THAT THIS VILLAGE IS WITHIN AN AVOIDANCE AREA of the VR 176 along with the Gila Cliff Dwellings and should not be used for low altitude training or flying through. We are not in an MOA
2023-06-13	1:10 PM	One	EC-130 four engine turboprop	22,000	Over Silver City	For the past couple of years, there have been constant, regular stream of EC-130 aircraft from Davis-Mothan AFB flying over the Gila region. These flight usually follow Interstate10 from Tucson to a point between Lordsburg and Deming and then head northeast to fly loops up and down the Black Range. These flights often have a call sign Zaper.
2023-05-03	9:45 PM	2	Could not see.	Low	30 Yucca Circle, Datil, NM	none
2023-04-20	11:50 AM	1	Grey, 4 engine prop. Most likely a C-130 variant.	200ft or less	Sherman,NM. Over Mimbres River near Royal John Mine Rd.	Plane was spotted flying very low over HWY 61 along the Mimbres River. We were unable to make a positive identification of the plane due to it passing very quickly. We also could not find it on the Flight Radar website which is concerning.
2023-03-29	8:40 AM	2	f-16 Fighting Falcon	500 ft?	1304 West Creek Rd	Two very low, below canyon walls, very loud f-16 buzzing down the canyon, at the end veering off to the east. I could only choose one complaint, but it was very low as well as very loud.
2023-03-20	8:15 PM	1	Lockheed EC-130H Hercules registration: 73-1594	21,000ft	Over Faywood and up populated areas along HWY 61	Prolonged flyover noise due to altitude. Very common occurrence, but only started tracking recently so not sure if it is the same plane from the same origin. See attached for details.
2023-03-16	11:53 AM	1	Brady 11, Boeing C-	500ft	Hot Springs Canyon rd in lower Mimbres	Low flying aircraft over rural residential area. Flight path was along HWY 61 headed north

			17A Globemaster III. registration 99-0058, color green			towards HWY 152 & HWY 35 (as seen on the attached screenshot I obtained from Flightradar24).

Nuisance Flight Reports from Peaceful Chiricahua Skies:

**Please see NEPA comments submitted by Peaceful Chiricahua Skies for more detailed reporting on these nuisance flight reports.*

Date and time	# of craft	Description of Aircraft	Approx Altitude	Location of Incident	Description of Incident
2023-03-27 09:00:00		Don't know	Don't know	Countryside of Douglas, AZ near hwy 80 and N. Perilla Road.	9am-12pm continuous buzzing 655pm to around 830pm continuous buzzing 1055pm to 1105pm continuous buzzing
2023-03-29 08:25:00	3	F-16s	700	31.774904, -109.121144	Very loud F-16s flying low and fast out of Horseshoe Canyon headed east then looping back to the south around the west side of the Chiricahuas.
2023-03-30 07:13:00	Multiple types throughout the day	Multiple types throughout the day	Unknown	Countryside of Douglas, AZ around hwy 80 and N. Perilla Road. I am located outside of the MTR.	713am loud passover (likely fighter jet) 1001am loud passover maybe 3000'-5000' AGL (likely fighter jet) 1004am loud passover (likely fighter jet) 829pm to 831pm buzzing (likely C 130) 1001pm to 1003pm buzzing (likely C 130)
2023-03-31 04:00:00		Multiple	Varied	Countryside of Douglas, AZ near hwy 80 and N. Perilla Road. I'm located outside of the MTR.	405am to 410 am buzzing Somewhere around 815am very loud passover 11am to 1150am very loud rumbling/buzzing 1121am extremely loud sudden multi-second rumble/vibration 1154am impulsive low-frequency rumble 1155am loud passover 1201pm loud passover 119pm to 123pm loud passovers 226pm to 230pm buzzing/rumbling 650pm to 7pm buzzing 752pm to 8pm buzzing 818pm buzzing
2023-04-11 01:52:00		Multiple	Unknown	Location: Countryside of Douglas, AZ near hwy 80 and N. Perilla Road. I'm located outside the MTR.	152am to 230am buzzing 554am to 557am buzzing 1057am strong impulse vibration

2023-04-10 07:09:00		Multiple	Unknown	Location: Countryside of Douglas, AZ near hwy 80 and N. Perilla Road. I'm located outside the MTR.	709am to 712am very loud buzzing style passover 725am to 729am buzzing 1253pm to 1 pm very loud buzzing Late afternoon, 10 min of continuous buzzing 1046pm to 1055pm buzzing
2023-04-06 11:13:00		Multiple, probably fighter jet in morning and C130 in evening	Varied, including very low well under 1000 AGL	Location: Countryside of Douglas, AZ near hwy 80 and N. Perilla Road. I'm located outside of the MTR	1113 to 1116 am loud passover 1143 am to 1146 am loud passover 614pm extremely low flyover 622pm extremely low flyover 638pm extremely low flyover 612pm to around 8 pm frequent buzzing combined with multiple very low flyover...looking just a few hundred feet above ground. (C130)
2023-04-06 05:20:00		Muleiple	Unknown	Location: Countryside of Douglas, AZ near hwy 80 and N. Perilla Road. I'm located outside the MTR.	520am to 540 am buzzing 203 to 207 Buzzing 1230 to 130 pm frequent loud passovers Around 822pm buzzing for a few min 910 to 913pm buzzing
2023-04-07 05:20:00		Muleiple	Unknown	Location: Countryside of Douglas, AZ near hwy 80 and N. Perilla Road. I'm located outside the MTR.	520am to 540 am buzzing 203 to 207 Buzzing 1230 to 130 pm frequent loud passovers Around 822pm buzzing for a few min 910 to 913pm buzzing
2023-04-05 02:00:00		Unkonwn	Unknown	Location: Countryside of Douglas, AZ near hwy 80 and N. Perilla Road. I'm located outside the MTR.	Around 2 am, 30 minutes of continuous buzzing 655pm to 705pm buzzing
2023-04-04 04:03:00		Unkonwn	Unknown	Location: Countryside of Douglas, AZ near hwy 80 and N. Perilla Road. I'm located outside the MTR.	403am buzzing 735pm to 917pm buzzing
2023-04-03 05:52:00		Unkonwn	Unknown	Location: Countryside of Douglas, AZ near hwy 80 and N. Perilla Road. I'm located outside the MTR.	552am buzzing 713am buzzing/rumbling 755 buzzing
2023-04-21 02:00:00	Many	Multiple types	Varied, as around 1000 ft. AGL and upwards	Countryside of Douglas, AZ near hwy 80 and N. Perilla Road (Tombstone C MOA). I'm located outside the MTR.	Thursday April 13th 2023: 1004pm to 1005pm buzzing 1048pm to 1050pm buzzing. Friday April 14th 2023: 147am to 149am buzzing. 204am to 207am buzzing. 227am to 229 am buzzing. 244am to 246am buzzing. 257am to 301am very loud buzzing. 301am to 306am buzzing. 309am to 313am very loud buzzing. 313am to 315am buzzing. 322am to 5am buzzing ... constant from low to moderate to very loud then cycling again. 645am buzzing. All of this was so loud you could hear it over the red

					flag warning winds. Saturday April 15th 2023: 906am 5000 ft AGL. Monday April 17th 2023: 212am to 215 am buzzing. 243am to 251am buzzing. 715am to 753am buzzing. 845pm to 847 pm buzzing. 1105 pm to 1108pm buzzing. 1150pm to 1158pm buzzing. Tue April 18th 5-630pm intermittent buzzing with loud pass at 630pm, C-17. Wednesday April 19th 2023: 7am to 900am almost constant buzzing. 938am to 948am almost constant buzzing. 1001am to 1019am constant buzzing. 1103 to 1105 am buzzing Thursday April 20th 2023: 1pm to 200pm very frequent loud buzzing. 230pm to 245pm loud buzzing. 650pm to 715pm buzzing. 835pm to 845pm buzzing. 940pm to 948pm buzzing Friday April 21 2023: 159am to 205am buzzing. 618am to 622am buzzing. 718am to 725am buzzing. 908am very loud pass. 1027am very loud pass around 500 to 1000 AGL 9 to 1030 intermittently buzzing. Around 1145am very loud passover. I think 3 planes. 1205pm to 1210pm buzzing Around 110pm loud pass. 133pm to 138pm loud buzzing 144pm to 147 pm very loud buzzing. 218pm to 225pm very loud buzzing. 253pm to 257 pm loud pass and very loud buzzing. 312pm to 322pm very loud buzzing. 345pm to 350pm very loud buzzing. 406 to 425pm very loud buzzing 435pm to 440 pm very loud buzzing. 455pm to 725pm Constant very loud to Extremely loud and even terrifyingly loud buzzing. 753pm 756pm buzzing. 8pm to 807pm buzzing About 10 or so low fighter jet passes in addition to all the buzzing.
2023-05-15 22:00:00	One	Military a-10	100	Zent Rd, Horseshoe Canyon, North Owls Butte Trail, Portal, Arizona	We were abruptly awakened from our sleep by loud military aircraft constantly flying back and forth at very low altitude shaking our home starting at 10pm on May 15th, 2023. We have two small children that are frightened by these loud noises from the military aircraft. This needs to stop! This is not fair and very dangerous for these loud military aircrafts flying so low late at night after 10pm. The military have millions of acres of airspace with no civilians living at that they can utilize for their night flights. Please help make a change and stop this immediately. We are very frustrated and upset about this. They continue to be flying back and forth over our home since 10pm and it's after 12am now and still flying back and forth.

2023-05-16 23:00:00	at least 2	Lockheed HC-130J Hercules & Boeing RC-135V Rivet Joint	22,000 & 30,000	Lat:31.683 Lon:-109.552	These planes have been circling nonstop in the middle of the night and making a lot of noise. Why? Please put an end to this.
2023-05-15 23:47:00	Many	Multiple, including helicopters, C130s, and likely others	Varied	Countryside of Douglas, AZ near hwy 80 and N. Perilla Road. I'm located outside the MTR.	April 25 2023: 910am to 913am very loud Passover. 1011pm to 1025pm buzzing. 1045pm to 1055 pm buzzing. April 26 (I think, forget to affix date to this one, but it was one day in the 3 weeks or so) 2023. 615am loud pass buzzing. 850am very low helicopter, seemed 50 -100ft AGL. 1115 am to 1122am loud buzzing. 1223pm to 1229pm buzzing. 440pm to 6 pm almost constant buzzing mixed with loud buzzing. 800pm to 800 pm. several loud passovers. April 27th 2023: 410am to 415am buzzing. 925am to 930am buzzing. 1025am to 1030am buzzing. 1043am to 1050am loud buzzing.10 minutes of buzzing some time around noon Around 840pm loud buzzing few minutes. 850pm to 9 pm very loud buzzing. 910 pm to 914pm very loud buzzing multiple blinking aircraft going southwest. 918pm to 923pm very loud buzzing. April 28th 2023: 442am to 447am buzzing. 502am to 505am buzzing. 510pm to 513pm buzzing. 643am to 648am loud buzzing. 723am to 727am buzzing. 950am to 10am very loud buzzing. 1008am to 1011am buzzing. 1221pm to 1225pm buzzing. 138 pm to 142pm buzzing.147pm to 150pm buzzing 157pm to 2pm buzzing. 207pm to 211pm buzzing. 216 pm to 219pm very loud buzzing. 223pm to 227pm loud buzzing. Between 230pm and 305pm , two 4 minute very loud buzzing episodes, and one 7-8 minute. 307pm to 313pm very loud buzzing. 330 pm to 415pm constant very loud buzzing 415 to 520pm constant buzzing. 540pm buzzing 924pm to 930pm buzzing. May 1 2023:1243am to 400am constant very loud buzzing.455am to 515am loud buzzing. 720am to 8am buzzing. 815am to 845am Rumble strong vibration and windbreaking noise from the sky slight buzz too. 9am to 930am buzzing953am to 10am buzzing. 11am very loud Passover.10am to 11 am intermittent buzzing433pm to 445pm loud buzzing. 445pm to 450pm buzzing 737pm to 748pm buzzing. May 2 2023: 645am to 730am buzzing. 935am loud buzzing Passover. 951am loud Passover. 1009am loud passover .1020am to 1022am loud Passover. Around 555pm to 6 pm Loud buzzing. Around 610pm very

					loud Passover. May 3 2023: 152am to 155am buzzing. 6am to 9am loud buzzing. 9am to 11am frequent buzzing .1028am to 1030am extremely loud Passover. 504pm around 200 ft AGL helicopter. 830 pm to 944 pm frequency buzzing. 935pm to 940pm loud passover. 945pm to 1230am almost constant loud buzzing. May 4 2023: 1230am to 330am intermittent loud buzzing. 330am am 430am constant very loud buzzing. 545am to 555am extremely loud buzzing and Passover. 555am to 608am loud buzzing. 608am extremely loud buzzing. 730am loud buzzing Passover. 845am to 850am loud buzzing over high winds. 950am to 954am Loud Passover. 10 am to 1045 am frequent loud buzzing. 4 pm loud Passover. 7pm (may 4) to 9am (may 5) constant buzzing and loud buzzing. May 5th 2023: 925am extraordinarily loud low helicopter pass , maybe 300 ft agl. 755pm to 8 pm buzzing. 833pm to 838pm buzzing. 1037pm to 1055pm buzzing. May 8 2023: 313am to 330 am intermittently buzzing. 126pm 2 super low helicopters going west.147pm to 152pm maybe 2000 AGL slow going west. 154 pm to 156 pm 2 aircraft maybe all along going east the turning south. May 11:155 am buzzing 602am to 607am buzzing. 647am to 652am buzzing.858am to 901am loud passover 926am to 930am buzzing. 928am to 930am very strong sudden rumbling vibration and then buzzing after. 610pm to 625pm loud buzzing mixed with extremely loud buzzing. 625pm to 720pm frequent buzzing. 854 to 858am buzzing 840pm to 850 buzzing. 850pm to 853pm loud passover 1001pm to 1005pm buzzing. May 12 2023: 950am to 955am loud buzzing. 1157am to 1203 am buzzing. 732pm to 736pm strong vibration and buzzing. Helicopter sounding. 740 pm. buzzing vibrations 740pm to 810pm frequent buzzing with strong vibration Sunday may 14 2023: 853am to 9am loud buzzing May 15 2023: 706am to 712am buzzing 945am to 1045am almost constant strong vibration and some buzzing.1107am to 1109am loud wind breaking noise and strong vibration. 645pm to 649pm loud helicopter sounding noise. 656pm helicopter sounding noise. 748pm low flyover 3000ft AGL 839 pm loud buzzing. 845pm to 855pm strong vibration coming from somewhere. Extremely low hum. Around 906pm for several minutes loud passover and strong vibrations. 931pm to 940pm,,1006pm to 1012pm,1029pm to 1031pm,1037 pm to 1043pm, 1045pm to 1052pm,1106pm to

					1114pm,1125pm to 1128pm,1138pm to 1143pm, 1149pm to 1152pm. ....two diff.135 planes...loud buzzing and strong vibrations. 1144pm to 1147pm multiple blinking lights in sky , diff. off-radar aircraft than the ones immediately above)
2023-05-16 21:30:00	One	Military a-10	100	Zent Rd, Horseshoe Canyon, North Owls Butte Trail,Portal, Arizona	We were abruptly awakened from our sleep by loud military aircraft constantly flying back and forth at very low altitude shaking our home starting at 9:30pm on May 16th, 2023. We have two small children that are frightened by these loud noises from the military aircraft. This needs to stop! This is not fair and very dangerous for these loud military aircrafts flying so low late at night after 10pm. The military have millions of acres of airspace with no civilians living at that they can utilize for their night flights. Please help make a change and stop this immediately. We are very frustrated and upset about this. They continue to be flying back and forth over our home since 10pm and it's after 12am now and still flying back and forth.
2023-05-16 22:30:00	1?	C-130	????---loud propeller-driven aircraft	Latitude = 31.8054 N, Longitude = -109.0946 W	Propeller-driven aircraft (likely C-130) Continual circling well after end of authorized operating hours. Continues throughout the night, with other flights heard at 2 a.m. This is second night in a row of this violation. Making it very hard to sleep. Why don't these pilots follow their own rules of operation?
2023-05-17 21:30:00	2+ ?	C130s	20,000 ?	31.771789, -109.085377 and surrounding area of Chiricahuas and Pelloncilloa Mountains	5/15/23 - Beginning around 9:30pm at night, there were very loud C-130s continuously circling throughout the light; extremely loud waking everyone up, until approximately 2am 5/16/23 - Beginning around 9:30pm at night, there were very loud C-130s continuously circling throughout the light; extremely loud waking everyone up, until approximately 2am
2023-05-25 08:56:00	2	F16 military jets	100 feet	Zent Rd and Owls Butte Trail	2 extremely loud F16's flying directly over our home, shaking the home and frightening our children. This needs to stop immediately! There is no reason for this when the military has over million acres of airspace to practice where there is no civilians living at.
2023-05-25 09:00:00	2	F-16	400	31.758937, -109.115572	Two very loud and low F-16s flying over populated areas and structures, flying south over Horseshoe Canyon then west behind mountains
2023-05-25 15:35:00	2	F-16	100 feet	Zent Road and North Owls Butte Trail	Two F-16's flying back and forth since 3:35pm and continuing every 20min creating supersonic loud booms over our home, shaking our home and frightening our children. This really needs to stop. There are civilians, families, children in this vicinity. This is not safe flying so low.

2023-06-08 13:39:00	3	F16	100 feet	North Owls Butte Trail, Zent Rd	Three very low flying military F-16's coming from east Horseshoe Canyon area descending into residential area where they are children living. The 3 F-16's flew less than 100 feet above our home which frightened our small children while shaking our home. The decibels that these war aircrafts are unsafe to small children. This is creating health hazard for our children. This is unsafe and should be illegal in what they are doing out here.
2023-06-30 13:25:00	2	Military, possible F-16	unknown but low	2365 Cave Creek Road	Two noisy low-flying jets
2023-06-30 13:24:00	2	A-10, F-16	100'	Owls Butte Trail and Zent Rd	Two military aircrafts flying low, shaking our home and frightening our children constantly for past two hours. This really needs to stop. The military has millions of acres of airspace where there's no civilians presently living that they can practice their war move. Please help stop them from this loud nuisance in Portal area.
2023-06-30 13:27:00	4	F-16?	400'	Mouth of Cave Creek Canyon	I was awakened while napping inside so may have a detail wrong. My dog raced around the house barking.
2023-06-30 13:20:00	2	F-16	heard from inside house, LOUD	2124 S Rock House Road	two presumed F16s in quick succession, heard loud from inside house, did not see but presumed flying to NW
2023-06-30 13:27:00	2 (possibly 3)	F-16	below Silver Peak altitude 8000 ft.	Portal, AZ	TOO LOW & TOO LOUD!
2023-07-06 14:02:00	1	F 16 (?)	?1000 ft	Portal Rd & H Bar M	
2023-07-07 07:49:00	Sounded like >1	Probably F16	Approx 1000'?	H Bar M rd & Portal Peak Rd	I was in garden with screen roof & sides so could not see but intermittent louder/less loud sounds lasted until 7:55 (for approximately 6 minutes)
2023-07-12 20:00:00	2	C130	100feet	Horseshoe Canyon entrance, Zent Rd and North Owls Butte Trail, Portal, Arizona 85632	Large Military craft has been flying very low around 100ft elevation, flying back and forth continuously since 8pm. Please stop this! You warcrafts are frightening our children when flying over which is shaking our home. Please fly somewhere else where there is no civilians living in the area especially children. This needs to change now…
2023-07-13 16:10:00	2	F16 military jets	100feet	Zent Rd and North Owls Butte Trail, Portal, Arizona	2 military F-16's jets flying directly over our home that frightened our children and shaking our home. This is very very unhealthy and traumatic. Please stop this nonsense. They do not need to do this in an area where there is small children living. The military has so many other places they can practice their war maneuvers. PLEASE STOP!!!
2023-07-17 14:33:00	1	huge fat propeller plane	very very low	1282 west creek road, portal AZ	right over portal

2023-07-17 14:30:00	1	C-130	250’	Foothills Rd and Portal Rd	This was one of the lowest altitude flyovers I’ve seen. There have been many. Multi engine jet prop. Highly disruptive. People live here. Please stop
2023-07-17 17:30:00	3	A-10	100 feet	Horseshoe Canyon entrance area on Zent Rd and North Owls Butte Trail, Portal, Arizona	3 super loud A-10 military jets flew 100feet above our home. They shook our home and frightened our small children. Please stop this nonsense. The military has millions of air space that has no civilians especially children to practice their war maneuvers. Please stop this immediately. It just doesn’t make sense they have to fly directly over our home with children.
2023-07-19 09:00:00	One	C-130	100 feet	Zent Rd, Owls Butte Trail, entrance of Horseshoe Canyon, Portal, Arizona	C-130 flying back and forth for over two hours. Low altitude and very loud, shaking our home. Please stop the military from flying over our home with children. This is not healthy. The military has millions of acres of airspace where there are no civilians living especially small children that they can practice their war maneuvers. This is getting out of hand having them constantly flying over our home everyday. Please stop them NOW!
2023-07-19 11:35:00	1	C-130	100 feet	8745 Zent Rd, Horseshoe Canyon, Portal, Arizona 85633	C-130 still flying relentlessly back and forth over our home since 9am. It is 11:30am and C-130 still continues to fly back and forth.
2023-08-04 12:30:00	Sounded like just one	Not seen	Could not see	2525 S H Bar M Rd, Portal, AZ 85632	Nuisance noise
2023-08-07 12:15:00	1	C-130	100’	North Owls Butte Trail and Zent Rd, Portal, Arizona	Military C-130 has been flying back and forth for the past hour. It’s flying way too low and and it’s very very loud above our home. We have children living here and these military airplanes are disruptive and disgusting flying back and forth. These military machines are frightening our children. There is no need for this when the military has other non civilian airspace to practice their war maneuvers. There are children living here for crying out loud. Does the military not care?
2023-08-08 11:15:00	1	MC-130J Commando 11	100’	North Owls Butte Trail, Zent Rd, Horseshoe Canyon area	Military Airforce MC-130J Commando 11 has been flying back and forth in circles for past hour. It is very loud and noisy. This is a complete nuisance. We just don’t understand why the military continues to fly in an area with civilians living here when they have millions of acres of airspace where there are no civilians living and they can play their war games at. Please stop this nonsense. It’s frightening our children!
2023-08-08 12:29:00	1	MC-130J Commando 2	100’	Zent Rd, Horseshoe Canyon area, Portal, Arizona	There is very loud obnoxious MC-130J Commando 2 USAF aircraft flying in circles back and forth for over two hours straight. This nonsense needs to stop immediately. There is no reason to be in this area where there are many people living here. It’s waisting fuel and taxpayers money for this nonsense.

					It is also not safe having these military aircrafts in this area. PLEASE STOP!
2023-08-09 08:54:00	2	F-16?	300’	USFS 42 rd through Cave Creek Canyon, then over my home	Two aircraft flew over me while I worked in garden. The noise was horrendous, and I almost jumped out of my skin. Wild turkeys flapped their wings, shrieked, and dived for cover. Please be aware: this is not an empty place. People live here. Wildlife is the center of our economy. I live adjacent to an ecolodge, and there is a designated “Special Bird Area” (for protected birds of prey) a mile up canyon. Go fly empty places in Nevada, where biodiversity is much lower.
2023-08-09 08:55:00	2	F-16	500 feet	2411 S. Rockhouse Rd.	Two F-16 fighter jets roared down the canyon at the level of Cathedral Rock and turned east as they passed False Portal Peak. The noise level was extreme. These flights are frightening to those of us who live in the canyon and to wildlife. Additionally these flights are extremely dangerous if vultures or other raptors are soaring in the canyon at the same elevation level, which is a normal occurrence. This canyon is populated by humans and wildlife and these activities are detrimental to all life in the canyon.
2023-08-09 08:54:00	2	? jet speed, no visual	? low, military	2410 S.Cathedral Rock Rd, Portal, AZ	Disruptive noise startling
2023-08-09 12:45:00	2	HH-60 PAVEHAWK	50’	North Owls Butte Trail, Zent Rd, Horseshoe Canyon area, Portal, Arizona	Two HH-60 PAVEHAWK helicopters circling 50ft around our home 4 times causing trauma to our two young children. I took photos for proof. This has to stop. The military obviously has no respect for civilians and children. This is so unacceptable for these military machines to invade our home. It’s intrusive and excessively loud. THIS NEEDS TO STOP NOW!
2023-08-09 13:20:00	1	C-130 Hercules	100’	North Owls Butte Trail, Zent Rd, Horseshoe Canyon area, Portal, Arizona	Military C-130 flying back and forth and circling nonstop for over 2 hours. This has to stop. It’s frightening our children. This is very traumatic and very loud. The aircrafts shake our home.
2023-08-10 08:37:00	2	A-10	100 feet	Horseshoe Canyon, North Owls Butte Trail, Zent Road, Portal, Arizona	Two A-10 jets flew over our home with children below 100feet, shaking our home and the excessive loud noise upset our children. Please stop this nonsense. For crying out loud the military has millions of acres of non civilian airspace to practice their silly war games that our tax money is supporting. It just doesn’t make sense. Please stop destroying our Portal, Arizona area.
2023-08-10 12:03:00	1	C-130 Hercules	100 feet	North Owls Butte Trail and Zent Road, Horseshoe Canyon area, Portal, Arizona	C-130 military aircraft flying back in forth in same loop every day starting at 12pm through 3pm. It is excessively loud and constantly shakes our home upsetting out children.

2023-08-10 15:25:00	2	HH-60 Pavehawk helicopters	50 feet	Zent Rd, Owls Butte Trail, Horseshoe Canyon, Portal, Arizona	Two HH-60 Pavehawk helicopters have been circling around our home less than 50 feet away. We have small children living here and these helicopters are frightening them as well as shaking our home. Why is the military harassing us? Do they not have anything else better to do using our tax dollars for? What is wrong with your military? Don't you have any respect for civilians?
2023-08-10 15:25:00	2	Chinook helicopters	500	31.769648, -109.092374 - Sunrise Road and Hwy 80, Portal, AZ	Very low flights that shook the glass in my house windows; flew within 500 feet of several houses in the area
2023-08-11 08:29:00	1	A-10	100feet	Zent Rd, Horseshoe Canyon area, Portal, Arizona	A-10 continues to fly back and forth directly over our living area since 6am. The noise is very intrusive and obnoxious especially this early in the morning for over two straight now. What is wrong with the Air Force? Are they that bored to harass civilians everyday? This has to stop! It is nonsense and waisting taxpayers dollars for this nonsense…
2023-08-10 21:27:00		Not seen	Unknown	2525 S H Bar M near Portal rd	
2023-08-09 08:55:00	2	F-16	Below peaks	Cave Creek Canyon Portal AZ	
2023-08-14 20:00:00	2	C-130	100 feet	Horseshoe Canyon, North Owls Butte Trail, Zent Rd	Will the military PLEASE give us a break from flying over our home with children. We moved to Portal get away from military noise. We have small children and your flights directly over our home is frightening our children. How come the military has no respect for civilians. It's after 10pm and the military is still flying over our home, keeping our children from sleeping. Will you please learn to have respect and stop flying over our home. DO YOU UNDERSTAND? What will it take for your military to realize how horrible your flights over our home is? TAKE A BREAK AND GIVE US A BREAK!
2023-08-14 23:01:00	2	C-130	100 feet	Zent Rd, North Owls Butte Trail, Horseshoe Canyon, Portal, Arizona	Why is the military flying over our home so late at night. It's after 11pm. What is wrong with the military? Do you know what respect is? Stop flying over our home especially late night. The nuisance and noise is keeping our family from getting to sleep. The aircraft is flying back and forth directly over our home non stop since 8pm.
2023-08-14 11:00:00	One but MANY flights	C130?	500'	1387 W Piedra Blanca Ln	Flights started before 10:30 pm and continued for hours. Call number HOOVR46. Also unidentified aircraft flying circles around Chiricahua Peak and somewhere NE OF animas, NM, MAYBE playas - back and forth th near my .chiricahua home for hours, starting maybe 9 pm, continuing past midnight. Other aircraft flying similar patter E of Animas, NM (call STATC11) and returning to Tucson. Also Blackhawk

					helicopter leaving northern Chiricahuas for Tucson at 12:50 am on 15th. Call JOLLY31. What's going on, and how can we sleep through it?
2023-08-15 10:00:00	At least one prop plane to be heard and several jet craft could be heard	Lockheed HC-130J Hercules and unidentified jet planes that could also be heard	?	1216 W Portal Rd, San Simon, AZ 85632, United States	What was apparently a Hercules aircraft and unidentified jet planes circled above the Portal, AZ community for hours. They could be continuously heard for approximately 3 hrs from 10am-1pm. They were loud enough to keep me awake in the middle of the night. I noticed that my pet was also disturbed by the ongoing noise. The peace in this community is regularly disrupted by military aircraft. This being only one of many examples.
2023-08-15 23:08:00	1 with multiple passes	Unsure nighttime and inside	Unknown	South of .Chiricahua Pk, both mountains and adjacent valley to east	Aircraft flew multiple times in elliptical pattern, keeping me awake late at night. Passes were documented multiple times: 23:08; 23:14, 23:26, 23:34; 23:47, 23:52. I moved here for peace and quiet, not to live with Tucson level frequency of flight noise, precluding open windows at night.
2023-08-17 20:30:00	5-10	Helicopter and jets	1000 feet	Portal Road and State Line Rd	One after another, seem to be circling. Noisy and disruptive.
2023-08-17 20:45:00	One	Multiengine fixed wing	15000	Portal and Foothills road	Repeated flyovers in a pattern for the past two hours. Extremely annoying.
2023-08-17 21:30:00	MULTIPLE	C-130, Helicopters,	200 feet	31º48'19.54"N 109º05'40.57"W	Helicopter(s) slow hovering over my house at max. 200 feet., noise so loud it shook my window panes. Circling back and forth every few minutes. These flights are in violation of just about every regulation that applies to USAF training flight in the Tombstone MOA. Why are you targeting the residential neighborhoods on the east side of the Chiricahuas???? Why don't you conduct these flights over uninhabited areas or better yet over the many hundreds of thousands of federal square miles at existing bases available for trainingvby the USAF???? This is nothing short of a total invasion of privacy for people who moved to this area to escape noise. It is unconscionable what you are doing to the peace and quiet of these private residential areas. Why won't someone contact me directly to explain this situation????
2023-08-17 19:23:00	Multiple	No idea- it was dark	500 ft	S Starview Place / Portal Rd. Castle Rock	Loud, disruptive low flying multiple aircraft for a sustained period over a populated area.
2023-08-17 21:00:00	unclear	Air Force Boeing KC-135R Stratotanker; Air Force Lockheed HC-130j Combat King II; other	16,000 ft and 18,850 ft	31° 54′ 49″ N, 109° 8′ 29″ W	Air Force aircraft circling loudly above the communities of Portal AZ and Rodeo NM. Third night in a row!

		unidentifiable craft (i.e. helicopter)			
2023-08-17 22:00:00	numerous	C-130s, E 38 sentries, Chinook helicopters, Pavehawk helicopters	500-20,000 (varied)	entire area between the Chiricahua and Pelloncillo mountains, from Portal, AZ to Apache, AZ and further south	This week we have experienced loud, low and frequent nuisance flights from D-M every day and all night. I understand that there is Red Flag Rescue training going on. Question: Does this negate adherence to all or some of the normal military flight regulations (which are currently being violated)? There are many people who live in this area. The combination of the population density, tourism here, and wildlife and biodiversity make this an unsuitable area for this kind of training. Many people here are upset about this. I have asked for USAF personnel to visit our area to talk with us and understand the situation here. While we were told once (about a year ago) that this was possible, numerous requests since then have been ignored. Please help us come to a better resolution to this problem before it destroys our area.
2023-08-17 19:37:00	1	Not any of your 3 choices	Unknown	USFS 42 x W Piedra Blanca Ln, Portal	Once again, an aircraft flew eclipses, repeatedly passing near my Portal home. I have no idea what kind of aircraft (it was night; I was indoors), so I guessed C-130. It disturbed me on both its northbound (W branch) and southbound (E) trajectories, which lay in close approximation to one another. Altogether, there were 10 eclipses or 20 disturbances before patchy storms apparently drove the beast back to its berth in Tucson. It was hard even to concentrate and read with this noise interrupting every 4 minutes or so.
2023-08-17 21:00:00	2	Helicopter	20 feet above my house	3422 S Mi Casita Lane, Portal, AZ 85632	My house was circled numerous times. It sounded and felt like an explosion. I couldn't hear my husband yelling, "Joanne, there is something wrong ... get down" until the helicopters flew down the road and we went outside to see what was happening. They circled the neighborhood several times and my house in particular at least 3 times. It felt like we were in a war zone (my husband being a vet will attest to that). The helicopters were so low they caused dust storms, the entire house to tremble as if in an earthquake, and the sound as loud as an explosion.
2023-08-17 20:30:00	4	Helicopters	100 ft to 500 ft	Sulpher Canyon Road and Mi Casita Ln (between Portal and Rodeo)	For the past week, every night even at midnight, I was woken up by my windows rattling, I was scared to death. The worst was last night at 8:30pm where they circled my house, and scared my horses causing them to run around. One of mine is a BLM rescue horse who is afraid of helicopters! This surely can not be a military exercise, what is the point of flying so low and rattling my windows? There is so much open space why circle a home???

2023-08-14 23:00:00	multiple times multiple times multiple circles	not helocopter just droney plane sound	2000 ft	2475 S Cave Creek Rd	I'm not sure of the dates. The ones at night woke me up with the drone sound that would disappear from my ears then reoccur each 4 or so minutes . Awful. And for many days this month were also awful repeating the noise for a number of hours. Sorry to tell you this but, it better be necessary, because it was form of torture for us on the ground. Linda Lee Pretty
2023-08-21 10:11:00	1	C-130?	NW to SE	1387 W Piedra La, Portal, AZ	Plane with tail number N761ST flew over, made loop E of Chiricahua Pk, and flew back over me at 11:35. A similar flight occurred at 07:55 on 08/22, but I wasn't able to monitor its path.
2023-08-22 11:55:00	1	C130	between 500 and 1000 feet	Portal Rd and S Rock House Rd	
2023-08-22 11:56:00	?	130 Hercules	Very low right over down town Portal	see above	It was a large prop. plane flying slowly SE across my property and over tiny down town Portal area. I hoped it was not planning to make landing on the road it seem so low.
2023-08-23 11:55:00	1	C-130	500' AGL or less	887 W Portal Rd (mile marker 2 out of portal)	Low hot pass (250-ish Kts +) down Portal Rd, pulling moderate power.
2023-08-17 20:30:00	Approx 5	C-130, possibly blackhawk Heilo's, A-10s, F35s, F16s	Can see pilots, approx 100ft altitude	Witnessed from Cielo Vista and Eagles Ridge	They fly low cradling the mountain and low to the desert floor then fly over top the mountain at the lowest clearance altitude. The frighten my livestock and even the dogs so I'm sure they are terrifying the wildlife, not to mention disturbing the peace and serenity of the area. They would be hard-pressed to justify why these maneuvers need to be done, and with ever increasing frequency in such a peaceful area where people have come to avoid these very types of disturbances. I'm sure there are many other mountains in more urbanized areas that are more accustomed to all the noise.
2023-08-24 13:33:00	1	RC-12 or MC-12	600'	Over Chiricahua National Monument	This place is turning into Sky Harbor and defeating the reason for living here (peace and quiet). The jet flew right over the Chiricahua National Monument … a sacred place full of wildlife. Go fly in truly empty space, like Nevada.
2023-08-16 11:00:00	1	A-10	1000 ft	8627 E Sunrise Rd	
2023-08-08 11:11:00		A-10	< 500 ft	8627 E SUNRISE RD	
2023-09-06 12:40:00	2	A-10	just above tree tops	2411 S. Rockhouse Rd.	Two A-10s flew directly over my house at a very low altitude. Not only was it loud, it was directly over Portal proper which is not approved airspace for these planes. This area has many soaring raptors and vultures and the thought of a jet colliding with one or several large birds is terrifying. A crash in the Portal area would be devastating to this community, not only for the human population, but also for our biologically diverse native animals and plants.

2023-11-13 11:00:00	1	C-130?	5001 above town	directly over Portal	large military transport presumed C-130 flew low directly over "downtown" at approximately 1100h.
2023-11-08 11:30:00	1	A-10	less than 1000', below canyon walls	South Fork Cave Creek Canyon	A-10 flew down the South Fork of Cave Creek Canyon, about 1 mile above South Fork trailhead, probably flying the whole length of the canyon as it was not far above treetop level, well below the top of the canyon walls. I did not have a way to judge time, I believe around 1130h. A few minutes later presumably the same plane flew back, again within the canyon. In a separate incident, the previous week (not sure of date or time, approximately midday on 11/2/2023, a single A-10 flew about 500' over Fly Peak. I was near just E of the Fly Peak summit at the time.
2023-11-13 11:05:00	1	C-130	400 ft	Portal and Foothills Rds	Extreme low altitude flyover. Disruptive, noisy aircraft flying over a populated area.
2023-11-15 12:00:00		Multiple	Varies	Vicinity of N. Perilla St. and Hwy 80 countryside of Douglas, AZ	Nov 7th 2023: 920pm to 1155pm droning noise/vibration Nov 8th 2023: Around 8 am to 930 am intermittent loud passes. Nov. 9th 2023: 10am loud pass. 10am to 100pm constant low frequency noise and vibration aircraft noise and additionally Multiple loud passes. 1035am very loud pass 630pm - 715pm intermittent low frequency noise and vibration aircraft noise. nov 11th 2023: in middle of the night aircraft noise/vibration for a while. Nov 12 2023 around 3 am aircraft noise vibration for awhile. noon to 1250pm distant low frequency noise vibration from aircraft. Nov 13 2023: 10am to 130pm buzzing and/or very strong vibration. C130 on radar part the time and at least one other not on radar that continued. Extraordinarily loud pass around 1220pm propeller plane sounding. 251pm - 59pm,333pm,403pm, loud pass fighter jet sounding. Intermittent Droning noise throughout evening. 1020pm to 1115pm constant droning noise. Nov 14th 2023: Early in day multiple times of kc135 passing, very strong vibrations 330 pm, 455pm loud Passover. 537pm to 541pm onwards loud buzzing/vibration. Around 630 loud buzzing/vibration 803pm loud pass strong vibration. 925pm. 1115pm onwards buzzing/vibration. 1110pm very loud buzzing and vibration Nov 15th 2023: 9am-10 buzzing and vibration off radar aircraft 1000am-1125am Extraordinarily loud, constant EC 130H Hercules. 1125am to 150pm Very extreme and harmful levels of noise constant . EC130H Hercules. 825pm onwards for awhile loud buzzing and strong vibration. Another time about 2 hours later more buzzing/vibration,
2023-11-13 11:04:00	1	C-130	400'-450'	2393 S. Rockhouse Rd, Portal, AZ. 85632	Flying very low, right over downtown Portal during business hours so residents and visitors were gathered in densely

					populated business/residential district. Aren't there FAA regulations prohibiting aircraft to fly so low over populated areas?
2023-12-02 09:57:00	1	small noisy jet	low	1282 W Creek Rd	loud fast plane curving to left going low up cave creek canyon in chiricahuas we live in the canyon and look up into the canyon
2023-12-02 08:52:00	2	F-16	400 ft	FR 42 and South Fork Road	Low level high speed pass by two aircraft. Earsplitting noise level. Please advise: this overflight pattern is outside of MOA boundary guidelines. Please desist!
2024-01-20 11:45:00	1	F-16	800	USFS 42 at W Piedra Blanca Ln	I know the aircraft was legal at that elevation, but we are a community with an economy based on natural history tourism. The canyon was full of tourists who had stopped at the farmers market this Saturday. Your aircraft frighten birds and wildlife. Pick a less sensitive area for your noisy flight, please.
2024-01-22 13:15:00		F-16s, C-130s, Pavehawks	(various, see below)	(various, see below)	There have been numerous nuisance flights all week this week, including: 1/22/24 - Loud jets (F-16s?) flying over forest and nearby residential area near Horseshoe Canyon 31.774341, -109.116237 at low altitude at 1900 for about an hour 1/23/24 - USAF C130s flying repeated loops north of Douglas and then south to north along Pelloncillo Mountains; see attached radar image 1/23/24 - Loud jets flying over forest and nearby residential area near Horseshoe Canyon 31.769852, -109.108772 at 19:00. Loud boom (sonic boom?) heard at this time. 1/24/24 - Two large military helicopters flying south to north over the Pelloncillo Mountains (from north of Douglas to east of Apache) at 12:41 and then north to south over the Chiricahua Mountains (from Portal toward Price Canyon) at 13:15; see attached photos
2024-01-24 15:27:00	1	C-130 Hercules	500-1000 ft	31.9302749, -109.2198562	Very low flying aircraft banked hard just to the south of Paradise, AZ and then proceeded to fly directly over the town of Paradise heading North. Aircraft very low in the sky, shook house and windows.
2024-01-22 19:30:00	2	Two F-16's	200 ft	Horseshoe canyon area near Zent Rd and Owls Butte Trail	Two F-16's flying low altitude around 200ft and have been circling back and forth near entrance of Horseshoe Canyon for over one hour and still circling back and forth.
2024-01-25 12:30:00	1	C-130	200 feet	Latitude = 31.8054 N, Longitude = -109.0946 W	Extremely low-flying C-130, noise nuisance, invasion of privacy. Aircraft flew directly over my house in a residential area.
2024-01-24 15:30:00	2	C-130	500'	Over North Nolan Road 2 miles north of Paradise	Two C-130's (large grey 4 engine bombers) with USAF wing markings flew low over N Nolan Road 2 miles north of

					Paradise, first flying south then turning to return and flying north.
2024-01-26 11:30:00	2	Helicopters	200’	North eagle rd/Blacktail rd	Horse spooked, hard to control, high danger of injury
2024-01-31 12:35:00		C-130 Hercules	unknown	Highway 80 near Night Hawk Rd.	This plane frequently flies very low directly over my house. It’s extremely loud and the sudden noise is frightening. The time before this, it dipped so low that it seemed to barely miss the power lines, and a friend outside with me thought it was going to crash into my house.
2024-01-31 12:23:00	1	C130	4760	Portal Peak Lodge	I took a picture of the incident. Not sure where to upload it.
2024-02-04 09:10:00	jet	F-16	<500 ft	S Mi Casita Lane and Sulphur Canyon Road	two fighter jets coming out of the canyon flying southward, low and loud near S. Mi Casita Lane and Sulphur Canyon Road, Portal, Cochise County, AZ
2024-02-05 11:55:00	2	Helicopter	500’	Following USFS 42 up Cave Creek Canyon	Two helicopters frightening wildlife. No reason for military flights in our pristine canyon.
2024-02-07 17:08:00	4	Helicopters	unknown	near Highway 80 and Night Hawk Rd in Rodeo, NM	Flying very low and very loud over my house. This area is not suitable for all this increased low-altitude military activity we’ve been experiencing lately.It feels like I’m living on a military base again.
2024-02-07 23:15:00	One	C130 hercules	500 feet	111 Cemetery Rd, rodeo, New Mexico	There was one earlier today, same location, very low, there has been one several times a week , approximately the middle of the night, waking us up, for the last several weeks.
2024-02-08 09:27:00	2	F-35	Unknown, but too low in my opinion.	1st Avenue & River Road, Tucson, AZ	Very loud and low on an apparent landing pattern for Davis-Monthan AFB. Saw 2 F35s. Planes later turned to the southeast with landing gear down for apparent approach to DM AFB.
2024-02-08 11:46:00	1	A-10	??	USFS rd. 42 x W Piedra Blanca	
2024-02-12 11:24:00	1	Helicopter	300’	W Piedra Blanca Ln x USFS 42	Traveling up Cave Creek Canyon
2024-02-17 12:30:00	Many	multiple types	Varied as low as about 50 Ft AGL	Countryside of Douglas, AZ near hwy 80 and N. Perilla Road (Tombstone C MOA). I’m located outside the MTR.	Covers Jan. 22 2024 - Feb. 17 2024: Location: Countryside of Douglas, AZ near hwy 80 and N. Perilla Road (Tombstone C MOA). I’m located outside the MTR. Definitions/terminology: “buzzing” refers to a noise similar to a distant c130 (some might call it droning). “low buzzing” means relatively lower volume buzzing, Still loud and bothersome, especially due to the strong vibrations accompanying it. “” means noise continued beyond indicated time, but I did not know when it stopped since I was running my truck to mask the noise and periodically checked to see if it was gone. Jan 22 2024: 730 pm to 820pm: Extremely loud fighter jet noise, f-35? Sounds like back and forth trajectory

					1035pm several minutes of loud aircraft noise, Jan 23 2024: 120am aircraft noise for a few minutes. Around 130pm very low flying helicopters. 230pm to 445 pm c130 around 1000 ft AGL well below authorized levels for tombstone C MOA, not in MTR either. 640pm to 750pm extremely loud aircraft, fighter jet sounding. Maybe f 35? Sounds like back and forth trajectory. Jan 24 2024: 931am loud pass. 1233pm to 1238pm and 124pm to 129pm noise from 2 low flying helicopters. 201pm to 204 pm ...2 loud aircraft going east , likely fighter jets looked about 4000' - 5000' AGL. 346pm to 349 pm aircraft noise. A little after 9pm buzzing aircraft noise Jan 25 2024: 310 am loud aircraft noise. 847am to 850am,noise from extremely loud pass(sounded like fighter jet). Summary of day: From 9am to 7 pm almost constant noise, if not constant. (Was running truck this entire time to mask the noise and every time I got out of my truck to check if there was noise during this time, there was) 9am to 915am+ plus loud droning, likely past this time too but was driving so truck noise masks. 10am to 1022am+ extraordinarily loud sound like prop plane 1122am extraordinarily loud aircraft noise. 1230pm to 1250pm still noise. 129pm helicopters passing several minutes noise. 155pm very loud pass fighter jet sounding. Around 230pm very low loud C130 pass maybe 500' to 1000' AGL going west. 230pm to 330 pm c130 noise, looping nearby. 542 pm to around 550pm some aircraft sounded like helicopter noise distant. 616pm to 632pm 2 helicopters going west, hovering for around 10 minutes then going back east. 703pm some kind of noise sounded like helicopter. Jan 26 2024: 1227pm- 1235pm helicopter heading west, hovering., then west again, looked as low as 50' AGL 2 helicopters heading west, looked 100'- 200' AGL , hovering and turning, then west again. 910pm to 1105pm frequent buzzing aircraft noise. 1020pm to 1042pm plus buzzing aircraft noise even over massive winds. 435am to 444am plus buzzing aircraft noise even over massive winds, 1130am to 1150am buzzing. 1208pm for around 15 min intermittent buzzing 235pm to 255 pm buzzing. Around 415pm consecutive extremely powerful thumps. Jan 29 2024 Intermittent buzzing in the morning. 1215pm to 1238pm helicopter noise hovering or flying west, Extremely low at some points maybe 50 ft to 100 ft AGL, might have landed, still very low other times 100 ft to 300 ft or so AGL, around 130pm to 145pm multiple loud passes. 820pm to 825pm plus blinking plane buzzing , seems to have changed direction. Jan 30 2024: 123am very loud buzzing ,and also another time a

					few hrs later. Also 543am low buzzing. 845am to 852am at least aerodynamic jet noise plus vibrations (yes there was a Gulfstream on radar but this noise was present even after that landed). 915 am still noise. 953am to 957am aircraft noise 530pm to 6pm+ buzzing. Jan 31 2024: 1233pm to 1235 pm very low pass c130, around 100 to 200 ft AGL. 1pm to 2 pm some kind of in and out the out buzzing, not consist volume , occasionally bass thumping....good chance it's aircraft but not sure on this one. 645pm to 7pm+, buzzing I think continued to around 730pm based on seeing flashing lights in the sky. 950pm to 10pm + sounded like aircraft noise. Feb 1 2024: Multiple overnight buzzing noise episodes from late PM Jan 31 to early am Feb 1. 10am to 1025am+ buzzing noise even in high winds. 1150am 3500 ft. AGL loud c130 pass going west 1225pm extremely loud pass. 103pm buzzing. 155pm rumble, thump. and vibration. 421pm sounded like civilian prop plane but nothing on radar so assume it's military. Around 610pm to 625pm low buzzing. Feb 2 2024: 230pm to 3 low buzzing. 9 to 930pm+ buzzing late at night after around. Feb 4 2024: 930am to 1255pm+ buzzing noise sounds like military aircraft 1114am to 1118am 2 low flying helicopters heading east. Looked 50 ft. AGL. 204pm to 208pm sounded like distant helicopters. 345pm to 355 pm buzzing. 7pm to 710pm+ buzzing. 825pm to 828 pm buzzing. Feb 5 2024: 132 am to 135am buzzing. 138am to 142am buzzing. 208am to 211 am buzzing. APPROX 730AM TO 840AM+ buzzing. 10am and 1020am still hear something in the wind with vibration. 1125am still buzzing(likely buzzing all morning, was in truck to mask noise and would not turn it off for an hour a time to check if noise had stopped. When turned truck off, noise still there, so presume it was there the entire time). 1220pm to 1245pm helicopter noise vibration...hovering circling. Around 110pm to 145pm buzzing noise. 230 pm to 5pm intermittent buzzing. 730pm to 740pm+ buzzing. 930pm to 933pm buzzing. Feb 6 2024: Around 4 am buzzing for 5 min 515am to 540am+ some unusual noise not sure if aircraft 827am to 831am loud pass. Early afternoon buzzing for 15 min 510pm to 540pm+ buzzing. Feb 7 2024: 1246pm to 112 pm extraordinarily loud pass fighter jet passing noise. 410 pm to 415 pm 4 helicopters going east looked as low as 50 ft to 100 ft AGL. 1000Pm tp 1020pm buzzing. 1127pm very loud aircraft. Feb 8 2024: Early am hours aircraft noise for about 20-30 minutes, estimate around 1am 753am to 758am very loud aircraft going north , maybe 3000 ft AGL. 820am to 824am loud aircraft. Around 915am buzzing, next time I

					checked at 950am still buzzing even in the wind. 952am to 1000am extremely loud propeller aircraft noise. 1015am still buzzing. 1026am still buzzing. 527pm to 532 pm 4 extremely loud helicopters very low maybe 100ft to 300 ft AGL. Feb 10 2024. 1105am loud I think aircraft while snowing (likely longer but was running the truck which masks most of the noise). 642pm I think loud aircraft. Feb 12 2024 1150pm previous night to 1207am+ some kind of noise ...possibly plane. Approx. 330am tp 415am, 3 minute long buzzing episodes about every 10 min. 908am loud pass. 942am to 947pm+ buzzing. Around 1240pm loud aircraft 1248pm to 1255pm loud aircraft. 130pm extremely strong rumble , I think fighter jet coming and loud pass , had muffs and ran into truck so can't confirm for sure. Between 130pm to 230pm intermittent Aircraft noise , strong vibration/rumble 241pm aerodynamic noise from aircraft. Feb 13th 2024 530am to 550am loud buzzing 645am still buzzing. (noise likely continued all morning as I was running the truck to mask the noise and every time I turned off truck to check, shown below, there was noise still). 848am loud jet pass noise when turned off truck to check if still noise there. 1056am open door sounded like military droning aircraft buzzing 1119am checked again and still buzzing. 1233pm to 130 pm extremely loud c130 looping 17000 ft. MSL. 9pm to 1030pm buzzing. 1030pm to 205am+ intermittent buzzing. 835am to 935am extraordinarily loud c130 looping. 1015am to 1120am some kind buzzing rumbling noise that sounds like military aircraft. 1237pm to 1240 pm+ very sudden and loud pass 1257pm to 101 pm very loud pass. 410pm to 553pm+ buzzing 730pm (probably stated earlier actually) to 745pm+ buzzing Likely noise between 745pm to 9 pm was in whiting out noise in truck. 925pm to 933pm buzzing. Feb 15 2024: 835am to 930am extraordinary loud c130 looping 17000 ft MSL. 925am to 928am loud pass in addition and separate from c130 noise 1040am to 1047am+ aircraft noise. 1207pm to 1209pm aircraft noise. 1236pm sudden extremely loud rumbling/bass noise from the sky. 1240pm to 1243pm very loud pass, 1243pm to 1250pm low to loud buzzing noise, 107pm very loud pass. 215pm to 218pm loud buzzing. 235pm to 245pm low to loud buzzing. 311pm to 315pm+ vibrations then buzzing too. 336pm to 342pm buzzing pass, extraordinarily loud buzzing at peak. 418pm to 420pm , 434pm to 445pm , 455pm to 5pm+ buzzing. 457pm to 459pm extraordinarily loud aircraft noise. 531pm to 535pm+ buzzing. 605pm to 609pm+ buzzing. 638pm to 648pm+ buzzing 702pm 705+

					buzzing. 8pm to 812pm+ buzzing. Also 103 PM, 113 PM, 144pm, 204pm, 323pm, 325pm , 327pm, 347pm, 4pm Rumbling/thump. (likely noise all morning and much of afternoon and early evening. I was running truck to mask noise and wouldn't know if there was noise until I turn it off an check again, or if it was extra loud and heard it with truck running). Feb 16 2024: 3am loud buzzing pass. 352am to 356M plus buzzing. 414am to 417am buzzing. 835am to 905am c130 looping extraordinarily loud. 915am to 926am+ loud aircraft noise, rumbling, loud passes, buzzing...949am still noise. 1124am to 1127am+ loud buzzing pass 1152am to 1156am loud aircraft noise. 1220pm to 145pm c130 looping 145pm to 2 pm intermittent rumbling. 419pm to 422 pm rumbling. 426pm rumbling , checked again at 438pm rumbling still there. 704pm to 708pm and 727pm to 731pm buzzing noise heading east. Feb. 17 2024: 1215am to 130am plus buzzing. 844am loud pass. 853am extraordinarily loud pass. Around 9am to 945am distant but still loud C130 noise, most of the time--every time I turned off the truck to check (truck running to mask it). 954am extraordinarily loud pass. Around 1220pm loud fighter jet noise. 1225pm loud to 115pm constant extraordinarily loud fighter passes. F35? Likely going back and forth. 142pm buzzing
2024-02-21 12:25:00	1	C130	3000 agl	80 and 533	Continuous flight back and forth over and over! This is exasperating my tinnitus with the ongoing thrumming of the engine. There is no reason to fly back and forth over and over.
2024-02-21 13:15:00	2	Helicopter	50 feet	84 Rattler Road	Two helicopters flew from the south right in front of our house and continued flying north along Rattler Road.
2024-02-21 12:00:00	1	Crown 79	21,783 ft	Portal Rd and Stateline Rd	Ever since I've returned home I've been hearing this very loud aircraft circling. It has been hours now. Please restrict your air traffic to areas near military bases. We specifically chose to live in an area far from military bases, which is not easy to do in the SW. Thank you for reading this.
2024-02-21 13:00:00		C-130	unknown	Rodeo, NM	This plane was circling over Rodeo over and over for a long time. The noise was very annoying.
2024-02-22 13:47:00	Many	c-130	Could not see	Paradise rd x foothill/Noland rd	Grip of noisy planes disrupt sikence
2024-02-24 13:10:00	1	Supersonic aircraft	far below 30,000 feet	Lat = 31 degrees, 48.3 minutes North Long = 109 degrees, 5.7 minutes West	Extremely loud sonic boom from supersonic aircraft flying well below the 30,000-foot minimum altitude required for the Tombstone MOA. the Sonic Boom was the loudest of several we've hard recently. This one rattled my home's windows to the point I thought they might break. I'm indicating I need a follow-up response ASAP, as these types of excessive aircraft noises now appear also likely to

					cause structural damages as well as create fear in people, livestock and wildlife. I will look forward to hearing from you!
2024-02-24 13:00:00		Unknown, not visible	unknown	State Line and Cattle Drive, Rodeo, New Mexico	There have been repeated loud booms since about 1pm, with loud, almost constant air traffic since about 10 am. The loud booms rattle my windows and doors.
2024-02-24 13:00:00	Unknown (trackers off)	Jets (unidentifiable as tracker is off)	Unknown	Portal Road and Stateline Rd	There has been the sound of jet planes in the canyon and sonic booms overhead for hours! I can't identify them because they apparently have their transponders off. Supposedly the MOA doesn't include Portal, AZ. Yet the flights continue to be a problem here.
2024-02-26 10:45:00	2	Not sure - some kind of fighter like F14	8k	Hwy 80 and 533 over Chiricahuas	Excessive noise by both! Second one just went over at 10:58
2024-02-26 13:15:00	Unknown (transponder off)	Jets (unidentifiable as transponder is off)	Unknown	Portal Road and Stateline Rd	Very loud jet planes flying overhead! I can't identify them because they apparently have their transponders off. Supposedly the MOA doesn't include Portal, AZ. Yet the loud flights continue to be a daily problem here.
2024-02-26 13:20:00	1	F-16	8k	Portàl rd and Sanford	Excessive noise by F16 flying over again. May be at approved level but noise is too much!!
2024-02-26 13:15:00	unknown	unknown	unknown	Portal Road and Stateline Road	Very loud jet noises that have been continuing. I thought Portal wasn't supposed to be in the MOA boundary.
2024-02-26 14:40:00	Unknown (transponder off)	Jets (unidentifiable as transponder is off)	Unknown	Portal Road and Stateline Rd	Very loud jet planes are still flying overhead! This has been going on for awhile. I can't identify them because they apparently have their transponders off. Supposedly the MOA doesn't include Portal, AZ. Yet the loud flights continue to be a daily problem here.
2024-02-26 13:41:00	multiple	Supersonic aircraft above the clouds	below 30,000	Latitude = 31.8054 N, Longitude = -109.0946 W	Extreme noise levels from multiple jet aircraft. Noise is far beyond tolerance and directly above residential neighborhoods.
2024-02-26 10:00:00		C-130	Low	Vicinity Zent rd	Multiple flights in valley below me. You will drive me to move if this keeps up. I worked in my garden from about 9:30 to 10:15, and the dammed noise was continuous. You are ruining my life here. We live here because we value peace and quiet, a sacred thing which no longer exists. Take your noise somewhere else. SE AZ is not empty space! I don't know what kind of aircraft these flights were. I am an ecologist and field naturalist, not a pilot.
2024-02-26 13:11:00	3	F-16	Low	SW of Portal	I don't know if there were 3 planes or one making multiple passes. I live in a forested canyon so can't actually seeing the aircraft … only hearing their awful noise. You are ruining our peace and quiet, and our very lives here. What you are authorized to do differs from what you should do.

2024-02-26 16:55:00	Unknown (transponder off)	Jets (unidentifiable as transponder is off)	Unknown	Portal Road and Stateline Rd	Very loud jet planes are still flying overhead! This has been going on for awhile. I can't identify them because they apparently have their transponders off. Supposedly the MOA doesn't include Portal, AZ. Yet the loud flights continue to be a daily problem here.
2024-02-27 08:30:00	1	A-10 or F-16	4000'	south of Rodeo, NM	Very loud. Difficult to determine altitude but low. These flights have been occurring nearly every day for more than a week. Several times a day and ofter multiple aircraft. There was sonic boom on Saturday 2/24 that rattled the windows in Rodeo. Another sonic boom on Monday 2/26. Difficult to determine aircraft type with cloud cover.
2024-02-27 10:21:00	2	F-16	100	Owls Butte Trail, Zent Rd, Horseshoe Canyon area	Will you please STOP flying over residential area in Portal, Arizona on Zent Rd and North Owls Butte Trail. This has to stop now! We have children here and your LOUD obnoxious jets are scaring our children. DO US ALL OF HUGE FAVOR AND GO PRACTICE YOUR WAR GAMES SOMEWHERE ELSE. Learn to have some respect for US civilians for crying out loud ?
2024-02-27 10:30:00	3-4	F-35 or A-10 or f-16	4,000"	South and right over Rodeo, NM	Loud noise. Likely F-35 but no visual ID. Disturbance lasted 15 minutes (10:30 - 10:45).
2024-02-29 12:18:00	1	A-10 or F-16 (I'm not good with aircraft types	below surrounding peaks	2095 S. Milky Way, Portal, AZ	This flight was clearly over the village, flying below peak level, and heading towards canyon. For the past two days, with lots of cloud cover, similar paths taken by multiple aircraft, although aircraft could not be seen, they certainly could be heard.
2024-02-29 12:19:00	2	F16 or A10	Unsure	2031 s pearl st Paradise AZ	
2024-02-29 12:27:00		Unknown	12000	Sunny flats cg cave creek	Two fighters flew over cave creek at low altitude. Loud. The fighters have been in the area Monday Tuesday and today. There were on the edges of the Chiriqahua mnt. Monday. Tues. Sonci booms heard. Today Low over cave creek I have photos and time stamps
2024-02-29 12:17:00	2	A-10	/VISUAL looking up at bottom of plane, low	2410 cathedral rock rd.,SW of Portal Rd & Cave Creek CanyonRD. intersection	I heard them coming from the south coming up the valley, then a gentle left turn and up the canyon (west)
2024-02-29 12:00:00	2	A-10	100ft	North Owls Butte Trail, Zent Rd, Portal, Arizona	PLEASE PLEASE PLEASE PLEASE STOP FLYING OVER OUR HOME. WE HAVE CHILDREN FOR CRYING OUT LOUD. PLEASE HAVE RESPECT AND FLY SOME WHERE ELSE AWAY FROM OUR HOME. THIS IS NOT RIGHT. STOP THIS STUPID NONSENSE. YOU ARE SCARING OUR CHILDREN!

2024-02-29 12:16:00	2	A10	Less than 500’	2525 S H Bar M Rd, Portal, AZ 85632	
2024-02-29 13:26:00	3	F16s and helicopter	Less than 8k	Portal Peak, Cave Creek Canyon in Portal	At 1:30, helicopter hovering and flying near and around Portal Peak for 20 minutes. No record of emergency given to justify this. At apprx 1130, 2 F16s flew above Cave Creek Canyon extremely low with excessive noise to customers and birders. Disturbed birds, dogs, horses.
2024-03-01 16:26:00		Heard inside house, not seen	Unknown, not seen	2525 S H Bar M Rd	Loud inside house couldn’t see by the time I got outside
2024-03-01 16:25:00	1	small noisy jet	shockingly loud	1282 W Creek Rd, in Cave Creek Canyon	4 min later, heard rumbling, not as loud, at higher elev SW of house,
2024-03-01 16:25:00	1	F-16	100ft	11833 North Owls Butte Trail, Portal, Arizona 85632	Please STOP flying over our homes. We have children for crying out loud. Will you have some respect and fly somewhere else. You’re obnoxiously loud jets are scaring our children. PLEASE STOP…
2024-03-01 16:30:00	?, we saw one, but heard 4	F-16	1000 above the ground	2830 Darley Ave	4 flights were very noisy. My husband, who is a veteran and a former pilot, only saw one that was excessively noisy and extremely fast. It was probably an F-16, it was a fighter jet. It was going towards the east and was approximately 1000 ft high or possibly lower.
2024-03-01 16:30:00	1	F-16	500’	directly over Portal	single presumed F-16 flew downcanyon well below canyon wall and exited directly over Portal, turning to S. Around the same time (1600-1640) there must have been additional planes maneuvering upcanyon, judging from excessive noise in that direction (I was inside)
2024-03-01 16:12:00	3	F-16	400’ when verifiable	Cave Creek Canyon, over my home	Two jets flew SSE to WSW at 16:12, then both returned at 16:20. One of the latter flew very low. I thought it might hit my home, and I couldn’t plug my ears fast enough to protect them. Flight was low enough to cause severe hearing loss. Trees impeded my view of all but the last (low) flight.
2024-02-28 12:15:00	2	A-10	300'	777 w mcreynolds	Low pass near our house. We’ve had several in the last week. They came out of the south. Went around sanford hill, past our place and then looked to be heading towards Portal.
2024-03-04 10:28:00	1	F16	8k	Portal Rd and Sanford Rd	F16 flying over head is excessive flights and noise disturbance
2024-03-04 15:51:00	1	A310-CC-150 304 MRTT (Canadian Air Force)	25200	Portal Rd and Stateline	Loud circling above for quite some time. Also other loud unidentifiable jets passing over all throughout the day!
2024-03-04 22:28:00		Not seen	Not seen, heard	2525 S H Bar M Rd	
2024-03-04 14:38:00		Not seen	Heard, not seen	2525 S H Bar M Rd	

2024-03-04 15:55:00		Heard not seen	Unknown	2525 S H Bar M Rd	
2024-03-06 13:44:00	2 or 3	F-16	480-520 ft elevation from terrain	11347 N. Eagle Ridge Trail, Portal, AZ 85632	Low flying fighter jets flew close above my home twice within less than a minute. The noise was very intense.
2024-03-07 08:15:00	2-4	A 10 or F 16	5,000’	181 Hwy 80, Rodeo, NM	Loud rumbling over Rodeo at 8:15 AM and on over the Chiricahuas. Half hour later another one. Not sure if it’s the same aircraft circling back. Heard two more this afternoon between 1 and 3 PM.
2024-03-06 08:30:00	2-6	F 16 A 10	3,000"	181 Hwy 80, Rodeo, New Mexico	Above data refers to 2 F-16s that flew over Rodeo and on over the Chiricahuas. Later that same morning heard what seemed to be 2 sonic booms to the north. Booms were about 1 second apart. At 1:20 PM and 2:40 PM loud rumblings over Rodeo and the Chiricahuas. May have been separate aircraft or same aircraft circling around which has been occurring regularly.
2024-03-07 08:14:00	Sounded like one	Not seen	Unsure	2525 S H Bar M Rd, Portal AZ 85632	
2024-03-07 20:41:00	2	Jets, unable to see details	High but could be heard as nuisance noise	2525 S H Bar M Rd, Portal, AZ 85632	
2024-03-06 13:45:00	3	F-16	500	Horseshoe Canyon	Horseback riding with friend in canyon Jets streaked overhead very loud spooking horses causing extremely dangerous situation
2024-03-11 13:34:00	2	F-16 we think too fast for positive ID	500	8631 e Blacktail rd	One aircraft very low directly over our corral spooked horses fortunately I was not mounted could have caused bodily harm
2024-03-13 10:05:00		Helicopter	400 ft	Portal Rd)/ FR 42	Two helicopters (Apache?) flying directly over residential area outside of MOA and right up Cave Creek Canyon at low elevation. No regard for existing guidelines of flying at low elevation through the canyon.
2024-03-13 10:05:00	2	Helicopter	5500	into the Cave Creek Canyon	two fast helicopters with turbine engines
2024-03-13 10:04:00	2	Helicopter	250’	Traveling up Cave Creek Canyon (a wildlife area)	2 gray military helicopters
2024-03-13 10:13:00		Helicopter military with gun turretts	1500 above camp lower than cathedral rock by half	Over sunny flats camp	Two military helicopters with gun turrets up cave creek drainage from ne to sw.
2024-03-13 16:00:00	4	F-16s and others F-22(?)	Unknown, but too low and too loud in my opinion.	zip code 85718	

2024-03-02 16:30:00	1 ?	F-16	5,000-6,000	Stewart Campgournd , south fork of Cave Creek, Portal	ear splitting jet flying low over Cave Creek Canyon-way too loud and low. heard twice, but not sure if it was same plane. It was very low, near the campgrounds on the South fork of Cave Creek Canyon , right over the Stewart Canyon . It was so fast and loud I couldn't identify the type of military plane.
2024-03-21 08:08:00	2	A-10, F-10	100feet	Zent Rd and North Owls Butte Trail	Every morning between 8am - 12pm, these military aircrafts continue to fly too low creating very loud excessive noise and shaking our home. Please stop this nonsense. The military does not need to continue this route where civilians currently live. This is gross violation of MOA regulations.
2024-03-21 08:20:00	Numerous	F16s	10k	Portal Rd and 533	Multiple crossovers by multiple jets. Nuisance flights and noise. Exacerbating tinnitis and stress level. Bothering animals.
2024-03-21 08:31:00	Multiple or 1 going back and forth	F16	10k	Portal and 533	Excessive noise and flights overhead. Back and forth. Circles.
2024-03-21 08:30:00	Unknown	Unknown	Unknown	Portal rd and Stateline rd	Very loud jet sounds that sounded like circling for an hour over the area.
2024-03-21 14:00:00	1	Unknown	Unknown	Portal rd and Stateline	Loud overhead jet
2024-03-22 13:00:00	1	F-16	200 ft.	31º48'19.54"N 109º05'40.57"W	Low-flying, extreme noise-producing F-16 directly over my house at about 200ft. This is clearly in violation of existing USAF regulations. I would like to know how you can justify these nuisance flights being too low. Please email me with the legal descriptions of the existing boundaries for the Tombstone MOA, as many flights appear to be outside of those boundaries. PLEASE RESPOND TO ME WITH THESE ANSWERS.
2024-03-22 12:08:00	2	A-10, F-10	100feet	Zent Rd and North Owls Butte Trail	Every morning between 8am - 12pm, these military aircrafts continue to fly too low creating very loud excessive noise and shaking our home. Please stop this nonsense. The military does not need to continue this route where civilians currently live. This is gross violation of MOA regulations.
2024-03-28 12:20:00	1	Bell Jetranger	7500 feet	31.863531, -109.156582	This afternoon we watched a helicopter with call letters N3893U fly around portal peak. It was flying very close to the mountain right in the area where birds nest. It looked to be a sight seeing flight. After flying around Portal Peak it went over the Darnell peak about 4 miles to the south and flew around there. It was clearly inside of the wilderness area. It didn't look to be military, but I thought it should be reported.
2024-04-01 14:07:00	1	F16	5k	Portal Rd and 533	Low flying in heavy clouds, loud jet expulsion, scary in this weather, sounded like coming below clouds and too close. Guessing F16

2024-04-02 21:00:00	1	C-130 cargo	600 ft	31.8 N 109 W	Night, mountain training low level cargo plane flying south down western front slope of Peloncillo Mountains. This is training is consistent each month. Flying low and well below established flight levels.
2024-04-17 07:00:00	1	huge fat propeller plane	low	1282 W Creek Rd	can't see thru trees sounds large and slow
2024-04-18 10:24:00	20 or so	C-130 prop	High	Mouth of cave creek canyon	Many,many planes. Feels like I live in Tucson.
2024-04-18 12:08:00	1	A-10	100feet	Zent Rd and North Owls Butte Trail	Every morning between 8am - 12pm, these military A-10 aircrafts continue to fly too low creating very loud excessive noise and shaking our home. Please stop this nonsense. The military does not need to continue this route where civilians currently live. This is gross violation of MOA regulations.
2024-04-18 17:33:00	2	A-10	Less than 1000ft	9084 E Sky Ranch Rd	Low flying A-10 directly over my house.
2024-04-18 16:32:00	2	A-10	400'	Mouth of Cave Creek Canyon	Jets flying over canyon natural area
2024-04-23 12:08:00	1	C-130	100feet	Zent Rd and North Owls Butte Trail	Every day these military C-130 aircrafts continue to fly too low creating very loud excessive noise and shaking our home. Please stop this nonsense. The military does not need to continue this route where civilians currently live. This is gross violation of MOA regulations.
2024-05-01 12:15:00	1	C-130	100feet	Zent Rd and North Owls Butte Trail	Every day these military C-130 aircrafts continue to fly too low creating very loud excessive noise and shaking our home. Please stop this nonsense. The military does not need to continue this route where civilians currently live. This is gross violation of MOA regulations.
2024-05-02 07:15:00	1	C-130	100feet	Zent Rd and North Owls Butte Trail	Every day these military C-130 aircrafts continue to fly too low creating very loud excessive noise and shaking our home. Please stop this nonsense. The military does not need to continue this route where civilians currently live. This is gross violation of MOA regulations.
2024-05-02 19:43:00	1	Not seen	Uncertain	2525 S H Bar M Rd & Portal Rd	Almost dark could not see the aircraft
2024-05-13 10:15:00	1	Prop surveillance plane	500'	1387 W Piedra Blanca Ln, Portal, AZ	This type of plane has been flying W to E and then the reverse (so in loops?). for days now. I feel like I live in Tucson and not a pristine natural area. Enough!
2024-05-15 14:55:00	1	helicopter	500'	2414 S Rock House Road	military helicopter flew along E face of Chiricahuas directly over Portal town, ca 500' above ground
2024-05-21 10:50:00	2	A-10 or C-130	1,000 ft	Junction of South Fork and Cave Creek.	I was hiking near the Southwest Research Station in Cave Creek. I saw two of these aircraft drop down into the canyon about where South Fork meets Cave Creek. They were flying well below Portal Peak in the South Fork canyon. Very loud.

2024-05-24 08:30:00	1	Cessna 208B Grand Caravan	below 500 feet	11 Lariat Rodeo NM	I don't know if this plane is related to the military, but it is registered in Canada. It is circling Rodeo and flying very low to the ground, buzzing our property and upsetting our animals in addition to being a general nuisance. Its info is: Registration [Canada (CA)] C-GSGZ; Mode-S C074E6; Serial Number 208B0493
2024-06-20 11:25:00	1	2 engine prop plane	approximately 500 - 750 feet	2375 S. Cave Creek Rd near Cathedral Rock Rd. in Portal	Plane flew very low and directly over our house. It continued at the same or lower altitude over the town of Portal heading towards the town of Rodeo.
2024-06-27 13:15:00	2	F-16	100feet	11833 North Owls Butte Trail, Portal, Arizona 85632	2 F-16s flying way too close to our home. Please stop this nonsense and unnecessary flying over civilians private homes. It shakes the foundation of our home and is very very very loud. This is a gross violation of MOA regulations.
2024-06-27 08:15:00	1	EC-130H	500	USFS 42 with W Piedra Blanca Ln	Multiple flights in this direction or reverse at frequent intervals over Cave Creek Canyon in Portal, AZ
2024-08-03 09:27:00	Two	Two fighter jets	7,000 ft	1900 W CAVE CREEK RD	Two loud military jets flew over our house in Cave Creek Canyon at a very high speed about 15 seconds apart at 9:27 AM AZ time. They were about 2,000 feet above the canyon bottom, but well below the elevation of the cliffs on both sides of the canyon. They flew inside the canyon airspace heading west toward the Chiricahua peaks.
2024-08-03 09:27:00	1	F-16	low	2365 Cave Creek Rd, Portal AZ 85632	Low-flying, excessively loud military jet roaring down the canyon in Portal
2024-08-03 09:27:00	2	Jet	350'	1387 W Piedra Blanca Ln, Portal, AZ	I was vacuuming my back patio when the fricking cowboys flew over me and right up Cave Creek Canyon, with its various protected zones. The noise was terrifying, causing me to fall on the hard (stone) surface. I am 76 yrs old and can't take any mor falls. If my injury proves to aggravate existing hip damage, I will get back to you with a lawsuit. I will also have my formerly okay hearing tested. This is NOT empty space. Please direct you cowboys elsewhere.
2024-08-03 09:28:00	Not seen	Not seen	Not seen, loud from inside home	H Bar M close to Portal Rd	Loud inside house so assume over head, so fast I was unable to get outside in time to view aircraft type or direction
2024-08-03 09:30:00	2	looked like F16s	7000-8000 ft.	31.9037, -109.15526	I work at Cave Creek Ranch, and two jets came over - too low; too loud! Guests came in: "what the h was that??!" I thought you had put a stop to those flights!" I said, "not yet, obviously - but you can enter a nuisance flight report on this form ..."
2024-08-27 01:30:00	multiple	C-130	low-flying	31.8054 N, 109.0946 W	2:30 a.m. ---- low-flying C-130 3:30 a.m. --- low-flying C-130 4:30 a.m. ----low-flying C-130 5:30 a.m. -----low-flying C-130

					Extreme loud noise in middle of the night---well after allowable flights end at p p.m. Loss of sleep and extreme annoyance--- illegal flight times
2024-08-27 13:11:00	3	F-16s	1000	31.769654, -109.092359	8/27/24 - Three F-16s doing low fast flyover and side to side rolls directly over residential buildings here. Flying from Chiricahuas in the west over the valley to the east and then south bearing. night of 8/25 and 8/26 - repeated loud droning passes of C-130s from roughly 3am - 5am
2024-08-27 13:15:00	one	F-16	200' plus or minus	4464 W. Gleeson Rd. and Harris Blvd.	This aircraft was heading from the east to the west at a very low level. I equate it with the buzzing the tower in the movie Top Gun. The noise was extremely stressful and whoever the pilot was seemed to think this manuever was funny. My wife and I were on our land doing work. We are in our late 70's and if we were not in good health this incident could have caused a heart attack. This kind of training flight is totally uncalled for in this region. I don't care if it's in the Tombstone MOA or not. There is no reason you cannot take these flights to the Barry Goldwater site. That is why those locations are set aside for this purpose. My wife and I moved to this area to get away from this kind of noise. Go somewhere else.
2024-08-27 13:15:00	1	F-16 Fighter Jet	too low	Gleeson Rd. and Harris Blvd.	While working on my land, I heard a fighter jet approaching, it was directly over my head before I could secure sound attenuators for my ears. The sound was painful and I feared it bursting my eardrums. The area is open pastureland with a few groves. We were clearly visible in our area. There was no need for the pilot to fly over my husband and I. It was too low and close, and I do not believe it was at 500 AGL This high speed low-altitude flight training episode appeared to be in violation of Federal Aviation Regulation 91.79. Please consider us as you would want consideration for yourself.
2024-09-10 12:15:00	2	A-10s (possibly F-16s)	under 500 ft AGL	31.772054, -109.115021, base of Chiricahua Mtns near mouth of Horseshoe Canyon	Two loud jets flying less than 500 ft AGL, clearly visible to be less than one-third of the way up the mountains, close to the mountains. Directly over structures.
2024-09-19 08:50:00	2	A-10	100 ft.	1822 W. Hunt Rd.	We heard the high pitched whistle of the engines of an A-10 before it roared directly over our house. About 30 seconds later the second A-10 flew directly over our house less than 100 ft. with even a louder roar. Our two dogs had a terrified look in their eyes and it took a while for them to settle down. In 38 years of living here, we have NEVER had A-10s flying so low in the Cochise Stronghold Canyon area. They flew from the Northeast to the Southwest at a high speed. The A-

					10s can occasionally be seen flying from the east to the west in the afternoons probably about 10,000 ft. But never low in our area. Shocking and very disturbing!
2024-09-19 08:50:00	2	A-10	100 ft.	1822 W. Hunt Rd.	We have always been in support of the military. Every member of my family has served except me because of extreme tinnitus. The two A-10s that flew directly over our house this morning were less than 100 ft. above our home and dangerously low through the Cochise Stronghold Canyon below the peaks. There are residents, campers, hikers, people on horseback in the canyon daily and this is unacceptable to be playing Top Gun in a populated area. There are turkey vultures that fly up to 1,000 ft. or more throughout the day. A bird strike with turkey vultures would be disastrous for the pilots, planes, people, wildlife and environment. Stop this irresponsible behavior!
2024-09-24 13:00:00	unknown, tracker is off	unknown, tracker is off	unknown, tracker is off	Portal Rd and State Line Road	From 1 pm to around 1:20 pm there was very loud and rumbling noise coming from a jet plane(s) passing through the Chiricahua Mtns.
2024-09-26 11:36:00	2	A-10	300	31.9378, -109.2207	Low flying and loud
2024-09-26 22:22:00		sounded like C-130	unknown	Highway 80 near Night Hawk Rd.	Very loud plane flying way too low directly over my house. Sounded like a C-130. It's too late at night for flights this low over our homes.People are trying to sleep.
2024-09-26 10:35:00	1	Not seen	Not seen	2525 S H Bar M close to Portal RD	
2024-09-27 12:23:00	1	Heard not seen	Not seen	2525 S H Bar M nearPortal Rd	Heard inside house coudn't see once I got into yard
2024-10-01 09:07:00		Not seen	Unknown	2525 S H a bar M Rd, Portal AZ	Heard from inside house, by time I got out I could not see, sound fading
2024-10-01 09:07:00	1	F-16	300'	Idlewilde campground Cave Creek Canyon	I was helping put out an abandoned campfire at Idlewilde Campground when the jet flew through the Canyon, outside the current (and even future proposed) boundary of the Tombstone MOA. This was definitely an illegal flight by another one of your cowboy pilots that doesn't care about the rule of law. And just wants to 'play' in our pristine canyon.
2024-09-30 09:06:00	1	F-16	200'	31°53'39.01"N 109° 9'57.20"W	I was helping Rene Donaldson and Ali Morse put out an abandoned campfire. (You will receive complaints from them as well.) The plane flew over the campground illegally in Cave Creek Canyon, outside the present or planned MOA. Cowboy pilots love to fly through canyons and do this illegally all the time.
2024-10-01 09:15:00	1	F-16	300 AGL canyon walls	over the town of Portal and just west of Portal	F-16 flying east to west over Portal and Cave Creek Canyon. Flight was outside of the northern boundary of the Tombstone MOA.

2024-10-02 08:56:00	1	F-16 I think	2000 feet	2365 Cave Creek Rd, Portal, AZ85632	Noisy overflight of sensitive area not included in Tombstone MOA
2024-10-01 09:00:00	1	Fighter jet	800	South Cave Creek Rd	On a second morning (today 10/02/2024) TWO fighter jets flew the same approximate direction directly and very close overhead Cathedral Rock at the mouth of South Cave Creek. They proceeded to fly extremely low turning through the canyon on this clear day. They were extremely loud and went lower as they flew up the canyon and between the canyon walls through the National Forest. My husband and I live approximately one mile from the mouth of the canyon and find this is extremely disturbing. I am the daughter of a B-52 pilot who served during WWII and my husband is a Vietnam Veteran. We believe in defending our country and now we find ourselves defending the National Forest with one of its main purposes being for the enjoyment of the our beautiful nation.
2024-10-02 08:54:00	2	F16	350’	1387 W Piedra Blanca Ln	Two jets flew low overhead in a residential area and up Cave Creek Canyon, which lies outside the Tombstone MOA. Cowboy pilots love to fly illegally in our Canyon. I was getting my dog into a car for a walk up Canyon, and the chihuahua was frightened by the loud noise and ran off. I eventually caught her, but it was dangerous for such a small dog to have been out running alone. I live beneath a forest overstorey and could have mis-identified the military jet. The proposed increase in numbers of flights will bring more cowboys and illegal flights. Who is policing them? Where is accountability and oversight?!
2024-10-02 14:04:00	2	jet (A-10 or F16?)	350’	1387 W Piedra Blanca Ln, Portal, AZ	2 jets flew over my residence in supposedly protected Cave Creek Canyon west of the town of Portal. Are you specifically trying to punish us with these ILLEGAL flights (6 jets within 30 hours) because we dared to comment against your expansion/intensification of activities within the Tombstone MOA? Stop it, you SOBs! It certainly seems like it. Noise is magnified within canyons. Stay in the Goldwater Range, or go somewhere uninhabited, somewhere that isn’t a biodiversity center of the country. Where is the accountability for these illegal flights?
2024-10-04 08:48:00	One	F16	8000	Portal Rd	Excessive noise, low flight 10/4. Interruption of outside conversation with our guests. 10/2 low flying through canyon at trail #246 from last bridge at Portal road heading to Snowshed trail. Excessive noise with high decible level. We were unable to prevent ear and sound protection at their unexpected and fast arrival!

2024-10-02 09:58:00		Heard not see	Unknown	2525 S H Bar M Rd	Heard loudness from inside home not visible by time I got outside & around house
2024-10-02 14:02:00		Not seen	Not seen	2525 S H Bar M Rd Portal	Heard loud jet from inside house, by time I got outside and away from house I could not see the jet
2024-10-08 09:00:00	2	F-16s	200 feet	31.8054 N, 109.0946 W	2 F-16s flying at extremely low altitudes along the E. base of the Chiricahua Mts. Excessive noise, something has to be done about these violations of MOA regs. Why are you allowing it to happen? Please give me an immediate, truthful answer.
2024-10-08 09:04:00	2	Jets	450’	USFS42 x W Piedra Blanca Ln	View impeded by trees, so can’t identify jets. Could be wrong about direction because of echos between canyon walls … persisted a long time. For sure I heard two military jets. Enough!!
2024-10-08 08:30:00	1	Military Jet	Unknown	Above Bisbee	I don’t know what officially constitutes a nuisance flight, but to be on the safe side, I want you to know that I’m not accustomed to the frequency and volume of flights over Bisbee that I’ve heard very recently. It’s possible that two of the three were supersonic flights below 30,000ft above sea level. Aside from the date above, I’ve heard flights two other mornings within about a week, with one of the flights a bit further away-seeming (maybe that one at 30K ft?). On the first occasion, I was indoors, and was surprised into action by a loud persistent roar. I went outside to investigate. I couldn’t see a plane---I’m surrounded by mountains---but there was a thunderous sound that lasted a surprisingly long time. This is not a normal sound here. The second flight (the day following the first flight) was seemingly further away as it was only half the volume of the first, and was not shocking, but did last a long time also. Then this third time was this morning, the time listed is approximate. It was nearly as loud as the first of these three, but I was already outside, and had experienced the others, so it wasn’t as mysterious or surprising. In none of these cases did I spot the plane. It may well be that by the time the sound was available, the planes had already moved on? I hope this is helpful. Thank you for your kind consideration.
2024-10-09 09:28:00		Unk	Unk	South east	Sonic boom that scared livestock.
2024-10-09 08:00:00	1	Don’t know	Don’t know	Portal rd and S Brittany Lane	Sonic boom heard. I’m outside the Tombstone MOA. Rattled my RV. Not sure the exact time.
2024-10-01 09:00:00	1-2	F-16	under 500 ft	Cave Creek Canyon in the Chiricahuas	Multiple low-level flights throught Cave Creek Canyon: OCt 1st - one aircraft over the SWRS in the 9 am hour Oct 2nd - 2 F-16’s over Cave Creek Canyon at low altitude in

					the 0900 h Oct 3rd one aircraft over the SWR
2024-10-09 08:55:00	1	Jet (A10 or F-16)	500'?	Foothill Rd x S Turkey Creek Rd	Location and jet ID could not be confirmed visually. Location estimated by sound
2024-10-09 13:26:00	Not seen	Loud	Heard not seen	2525 S H Bar M Rd	Was inside my house when I got outside the aircraft no longer visible, sound seemed to be going up canyon (south, southwest?)
2024-10-11 13:13:00	2	A-10	200'	USFS 42x Pogo Hill Rd	Two military jets flew over Sunny Flat campground, where many campsites were occupied at the start of the long weekend. (One pulled up somewhat while the other did not.) The flights elicited outrage from campers that military jets could fly so low and dangerously through populated Cave Creek Canyon, where visitors were seeking quiet recreation. The person filing this report spoke with campers at 5 sites on Friday night and heard the flights earlier down canyon at her home.
2024-10-16 21:45:00	1	Prop plane	Night	Portal rd. X Paradise rd.	This unusual flight disturbed sleep in rural area. This is not Tucson and shouldn't sound like Tucson. Altitude and plane type not verified due to dark night conditions, but Flight Aware shows it came from NW Az and was doing some sort of loop maneuvers there.
2024-10-29 09:45:00	6	A-10 or C-130	7- 10,000 ft. above sea level	31*51' N, 109*12'W	Hiking in the Chiricahua Wilderness this morning heard nearly constant jet noise from approximately 9:30 to 10:30 AM. PDT. Sightings and times are: 9:45 AM 1 A-10, 9:55 AM 1 A-10 in opposite direction, 10:10 1 A-10, 10:15 AM 2 A-10's in opposite direction, 10: 45 AM 1 A-10. All of these aircraft were right over the wilderness area. Two flew just above Flys peak. One flew below and between Flys and Chiricahua peaks. Very loud. Disruptive in a wilderness setting.