Department of Defense
Legacy Resource Management Program

**DEPARTMENT OF DEFENSE'S
AVIAN KNOWLEDGE NETWORK
PROGRAM
ANNUAL REPORT 2022**

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Department of Defense Avian Knowledge Network Program

Annual Report 2022

AVIAN
KNOWLEDGE NETWORK

Point Blue Conservation Science

ERDC
ENGINEER RESEARCH & DEVELOPMENT CENTER

Klamath Bird Observatory

Introduction

I'm very honored and excited to be writing a few remarks regarding DoD's work to adopt the Avian Knowledge Network (AKN) as the go-to solution for managing avian data across the organization. Establishing the AKN has been an evolving, collaborative process amongst a number of partner organizations and improvements continue to be made. Kudos to the entire team that has gotten us to this point. I'd like to specifically recognize Liz Neipert for her tireless work on behalf of DoD and as a key member of the national AKN Steering Committee. She has played a critical role in listening to needs of DoD natural resource managers and working to integrate the tools and functionality into the system to best support our installations. Liz will continue to direct DoD's effort to fully implement the AKN, including coordinating training opportunities, providing technical support, and interfacing with the AKN community to continue to make improvements.

The DoD plays an important role in the conservation of migratory birds and has invested tens of millions over the years for surveys, inventories and monitoring of bird populations on installations. Data informed decision-making is the key to effectively managing the resources entrusted to our care. However, there has not been a systematic, consistent or comprehensive way to utilize and analyze these data to track population trends across installations or species' ranges, or to fully understand the effectiveness of management actions. With the recent findings illuminating the loss of nearly 3 billion birds across the United States and Canada since 1970, it's more important than ever that we have the best and most comprehensive data and support tools to guide our future efforts. It is for these reasons that the DoD is adopting the AKN to better manage our avian data, and just as importantly integrate our efforts with all other stakeholders.

In June2022, this office issued policy that required the implementation of the AKN for managing DoD's avian data investments. We understand that this will take time, effort and resources and are providing support for each through the DoD Legacy Resource Management Program or the "Legacy Program". We have established long-term, national cooperative agreements with Point Blue Conservation Science and the Klamath Bird Observatory who collectively steward the AKN system. Through these agreements, and with the leadership of Liz Neipert, installation managers will have access to training, including recurring "Office Hours", technical and data support, a growing encyclopedia of standard survey protocols and continued system improvements. While these resources will provide a baseline of consistent support, it will not be adequate to meet all the needs out there to fully implement the AKN. This is why we also established these agreements to allow the Military Services or installations to leverage their own funding with ours to more efficiently implement and avoid unnecessary duplication of agreements and administrative burdens. This model is already bearing fruit, with each of the Military Services already contributing in collaboration with our office.

A shift in how an organization as large and complex as the DoD does business will certainly have challenges and lessons to be learned. This office is committed to continuing to learn, adapt and support installations through this transition. But as we are faced with the facts of precipitously declining bird populations (and biodiversity as whole), and the current and looming effects that climate change will have on our natural systems, it is critical that have the right tools in place to guide how we act. The AKN is one of those tools.

Ryan Orndorff

Director, Environmental Planning & Conservation
Office of the Deputy Assistant Secretary of Defense (Environment and Energy Resilience)
Office of the Assistant Secretary of Defense (Energy, Installations, and Environment)

Department of Defense Avian Knowledge Network Team Summary

- In 2020, the Department of Defense (DoD) Avian Knowledge Network (AKN) Team developed a set of priority upgrades and enhancements for the AKN that were needed to improve the use of avian data to support the conservation of birds and their habitats across the United States. In response to the identified priorities, the DoD, Point Blue Conservation Science and Klamath Bird Observatory entered into a five-year cooperative agreement to advance a coordinated and comprehensive approach for DoD's participation and leadership in the AKN. Specifically, this cooperative agreement provides funding for: training, DoD-specific tools, data initiatives, AKN tools, and on-going maintenance.

In the first two years of the cooperative agreement, the Team has made significant progress on each of these priorities. The Team has developed, improved and conducted in-person and virtual trainings to increase the capacity of DoD personnel to utilize the AKN for their data management needs. The Team also developed a set of training videos that supplement these trainings.

The DoD AKN Team at White Sands Missile Range, NM, during a Regional DoD AKN Training, January 2023. From left: Sam Veloz (Point Blue Conservation Science), Dianne Miller (Point Blue Conservation Science), Elizabeth Neipert (U.S. Army Engineer Research and Development Center), John Alexander (Klamath Bird Observatory), Caitlyn Gillespie (Klamath Bird Observatory).

- After the DoD personnel attend trainings, the Team meets with those that need further support for getting started with the AKN. The entire Team holds monthly "Office Hours" appointments and respond as needed to user support tickets. The Team's interaction during these engagements directly supports DoD personnel to use the AKN and allows the Team to provide guidance for improving methods used for ongoing and future survey efforts.

- The Team's guidance extends beyond directly supporting data collection and management. The Team is also working to provide guidance to DoD staff that hire contractors and collaborators to support their avian data collection and management needs in ways that align with the use of the AKN. Additionally, the Team is working with subject matter experts to establish best practices for monitoring the status of Mission-Sensitive Species, species that could threaten DoD's mission if their populations were listed under the Endangered Species Act.

- The DoD AKN Team has been very focused on developing the tools and system enhancements most needed to support DoD's avian observation data management needs. The initial work has been focused on the development of a Program Enterprise functionality that is transforming the AKN and how it is used. Additionally, the Team developed the DoD AKN Portal, a tailored website that provides DoD personnel access to AKN tools and DoD-specific news and resources.

Our History

The Avian Knowledge Network's (AKN) mission is to support a network of partnerships, data, and technology to improve bird conservation, management, and research across organizational boundaries and spatial scales. The AKN envisions a world where bird populations thrive through conservation and management informed by a network of avian knowledge.

Partnerships

The AKN community is comprised of a variety of partners, ranging from citizen scientists to conservation biologists, computer pro-grammers, non-governmental organizations, state/federal agencies, and private corpora-tions and businesses. System users range from people who wish to contribute their data for the greater cause of bird conservation, graduate students managing data online, researchers requesting data for larger analyses, and decision-makers who wish to use the best available bird science in their daily work.

Data

The AKN handles a variety of field methods and data structures, ranging from area searches, checklists, point counts, call playback surveys, and even aerial surveys by plane. The AKN system development team continues to expand the data schema and protocol library as users join the system. The AKN is also able to manage discrete databases for site conditions, such as weather and vegetation data. All of this is built upon a platform of common data schemas and metadata standards that enables customized data entry screens and automated QA/QC processes.

Technology

Thanks to the web technology providers, the AKN database is able to preserve data (and metadata) as technologies change (or staff move on from positions). The AKN system managers are dedicated to making datasets discoverable, ensuring the widest and most appropriate use possible, while also developing customized applications and decision support tools for delivering information where it's most needed. In addition, AKN technologies also provide automated data summaries to help with annual reporting or education/outreach among partner organizations.

AKN History

The AKN was formed in 2002 during the Third International Partners in Flight (PIF) Conference at Asilomar, California. At that meeting, PIF prioritized consolidating the millions of bird monitoring data records that had been collected to apply PIF conservation strategies, because the existing data were stored in idiosyncratic ways across many different platforms, making comparisons and interpretation at meaningful scales all but impossible. With initial funding from the National Science Foundation, Point Blue Conservation Science, Cornell Lab of Ornithology, Bird Studies Canada, and Klamath Bird Observatory, in partnership with dozens of agency and NGO collaborators, the foundation for the AKN slowly began to form. The AKN now represents a collaborative effort among hundreds of land-management agencies, scientists, resource managers, and other stakeholders who are

leveraging data, information, and partnerships to revolutionize avian conservation. More recently, the Council for Conservation for Migratory Birds (CCMB) identified the AKN as an already existing and growing data management solution and decision support system, and the Council agencies committed funding and in-kind support towards further building AKN capacities. The Council agencies' support ensures federal agencies and their constituents have access to the best available science to help implement informed bird conservation actions and comply with bird conservation laws.

DoD-AKN History

The Department of Defense (DoD) spends millions of dollars annually, across all Military Services, on avian surveys in order to meet their regulatory requirements and to support the military mission. However, these data are rarely ever used to its full potential.

The DoD faces significant obstacles to optimizing its avian data, including:

1. inefficient access to data for regulatory requirements, environmental analyses, and planning;

2. a lack of visibility on avian species population trends and management across the Services and broader landscapes, and;

3. the lack of a centralized, secure data repository which can result in critical data loss during personnel turnover.

As a member of the CCMB, the DoD partnered with other federal agencies (U.S. Fish and Wildlife Service, Bureau of Land Management, National Park Service, U.S. Forest Service, Bureau of Ocean Energy Management, and Federal Highway Administration) in 2016 to build upon the existing AKN structure to address many of these data obstacles. The Council's "National Node" project created a federal agency portal for Council member agencies to access data aggregation solutions as well as new decision-support tools. The Legacy Program originally funded DoD's participation as a federal partner in the AKN to allow DoD the capability to upload, archive, access, and use extensive avian monitoring data within the AKN.

Military Mission Benefits

The level of data access and utilization provided through DoD's participation in the AKN can be used to assist with National Environmental Policy Act (NEPA) environmental reviews and assessing impacts of DoD readiness and non-readiness activities on migratory birds under the MBTA and the "Readiness" Rule. Leveraging these federal agency resources, the DoD is now using the AKN for all supported avian data collected on DoD lands. From planning level surveys to annual monitoring projects, the potential of these data can be unlocked and used to make important deci-sions on species health, population status, population trends, specific stressors, and conservation measures and management actions on the species contained therein therefore providing a dual benefit to bird conservation and mission readiness.

After the initial Legacy project to support DoD's involvement in AKN, the DoD AKN Team hosted their first training session at the National Military Fish and Wildlife Association's (NMFWA) Annual Meeting and Training Workshop in March 2020. After the initial training, it became clear this was a tool that installation natural resources personnel needed and wanted. A series of briefings to leadership for each Military Service and Office of Secretary of Defense (OSD) aimed to inform and gain support/ endorsement for DoD's use of the AKN. Throughout program development, the Program Director, Elizabeth Neipert (USACE ERDC Environmental Laboratory), has listened to the complex and specific needs of DoD natural resource managers throughout the Military Services and worked to integrate the tools and functionality into plans for the system to best support DoD installations. These briefings and integrated planning resulted in the establishment of funding to organize and manage the DoD AKN Program and to oversee and develop DoD's future work within the AKN including

prioritization of additional tasks and tools to empower historical, present, and future avian data for DoD use.

In June 2021, a long-term cooperative agreement was implemented between the DoD Legacy Resource Management Program and project partners Point Blue Conservation Science and Klamath Bird Observatory. This cooperative agreement was designed to: (a) to provide baseline funding from Legacy and (b) to provide the mechanism to move additional Military Interdepartmental Purchase Request (MIPR) funding from the Military Services and/or installations to the AKN project partners. This mechanism allows for oversight of all DoD AKN actions, allows cost-share actions, and enables the Services and installations to leverage smaller amounts of funding towards a greater effort.

In June 2022, OSD issued a policy memo that requires all DoD Components across all Military Services to use the AKN for their avian data to the maximum extent practicable.

Through a series of data analysis and decision-support tools, AKN offers DoD real-time data solutions by:
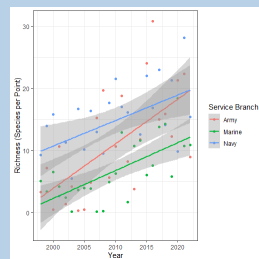
1. allowing efficient access to data for regulatory requirements, environmental analyses, and planning;

2. creating visibility on avian species population trends and management across the Services and broader landscapes, and;

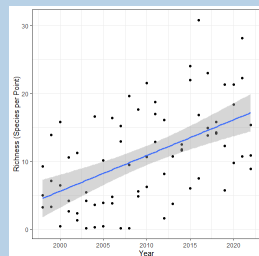3. offering a secure, centralized data repository and archive.
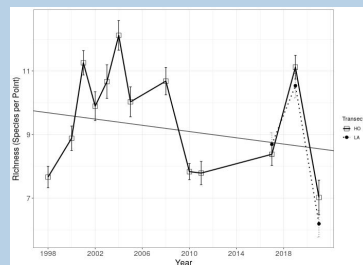
Vandenberg Space Force Base Project
Riparian Bird Richness

Service Branch Program
Riparian Bird Richness

DoD Program
Riparian Bird Richness

Program Enterprise

The Department of Defense (DoD) is actively supporting enhancements to the Avian Knowledge Network to facilitate easier summaries and analysis of data across projects.

Historically, the management and analysis of data within the AKN occurred either at the project level (for DoD this means for data at the installation level) or broadly across the AKN with limited fidelity to support broad hemispheric research.

Currently, it is difficult to ask what may seem like a simple question: how many installations have sighted a specific management species across the Air Force? It's easy to ask this question for a single installation and straightforward to ask this question across all of the AKN. However, asking this question within a management construct that covers multiple installations (e.g., Air Force) is difficult because of the way data have been traditionally organized into data warehouses for query and analysis.

Solution: Program Enterprise

The goal in developing the Program Enterprise is to enable analyses to address a wide suite of data needs, such as avian observation summaries, occupancy analyses for a specific species, or trends of species richness over time, and allowing for these data-driven questions to be easily answered at the individual installation level, for an entire service branch, or the DoD, overall.

What is the Program Enterprise?

The Program Enterprise is a database functionalist that allows for the flexibility to analyze data at various levels which can improve management for bird species by enabling the ability to compare how bird distribution, abundance, and diversity are responding to management activities across installations, service branches, and the DoD as a whole. This improves accountability and provides the means to more broadly deploy actions that are achieving management objectives and halting activities that lead to results falling short of conservation objectives. The Program Enterprise will also allow DoD staff to more easily report on bird monitoring activities at all levels of the DoD Program.

This past year, the DoD AKN Team has prototyped the mechanism for creating these program warehouses. This coming year, the Team will build the mechanism in production for the creation and maintenance of these program data warehouses and have it in Beta testing with key DoD users, making sure the mechanism works properly and can answer these important questions that the DoD AKN Program is intended to support. The Team will also be allowing program leaders to download data from across a program (e.g., Air Force) for their own use in the very near future.

Left: Graphs show observed riparian bird species richness at Vandenberg Space Force Base and simulated bird species across military service branches and the DoD as a whole. These figures illustrate the types of analyses that will be possible once implementation of the Program Enterprise enhancements are complete. Opposite: Mourning Dove on jet, Davis-Monthan AFb, AZ. Photo by Chris Eberly.

DOD PROGRAM STRUCTURE

AIR FORCE SUBPROGRAM	ARMY SUBPROGRAM	NAVY SUBPROGRAM	MARINE SUBPROGRAM	NATIONAL GUARD SUBPROGRAM
Installation Project Databases	Installation Project Databases	Installation Project Databases	Installation Project Databases	Installation Project Databases

Memorandum

OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE
3400 DEFENSE PENTAGON
WASHINGTON, DC 20301-3400

ENERGY, INSTALLATIONS, AND ENVIRONMENT

June 24, 2022

MEMORANDUM FOR DEPUTY ASSISTANT SECRETARY OF THE ARMY
(ENVIRONMENT, SAFETY AND OCCUPATIONAL HEALTH)
DEPUTY ASSISTANT SECRETARY OF THE NAVY
(ENVIRONMENT AND MISSION READINESS)
DEPUTY ASSISTANT SECRETARY OF THE AIR FORCE
(ENVIRONMENT, SAFETY AND INFRASTRUCTURE)

SUBJECT: Department of Defense Avian Knowledge Network Program

     The Department of Defense (DoD), like other federal agencies, has significant regulatory, management, and stewardship responsibilities related to migratory birds. These requirements are driven primarily by the Migratory Bird Treaty Act (MBTA), the "Military Readiness Rule" (50 CFR § 21.15, Authorization of take incidental to military readiness activities) and Executive Order (EO) 13186 "Responsibilities of Federal Agencies to Protect Migratory Birds." In accordance with EO 13186, DoD has also established a Memorandum of Understanding with the U.S. Fish and Wildlife Service outlining the management and stewardship activities DoD will implement for migratory bird conservation. All DoD natural resources conservation programs support DoD access to its land, air, and water resources for realistic military training and testing and to sustain the long-term ecological integrity of the resource base and the ecosystem services it provides, in accordance with the Sikes Act. Collecting data and information from ongoing surveys, inventories, and monitoring are essential to make informed management decisions, efficiently and effectively meet regulatory requirements (e.g., the MBTA, the Sikes Act), conduct environmental analyses, and support planning to adaptively manage migratory bird populations in the context of mission activities. As such, the DoD spends millions of dollars annually to collect these data.

     However, even with the collection of large amounts of data, DoD faces significant challenges to fully utilize and optimize our avian data. These challenges include: (1) inefficient access to data for regulatory requirements, environmental analyses, and planning; (2) a lack of visibility on avian species population trends and management across the Military Services and broader landscapes; and (3) a lack of a centralized, secure data repository resulting in data loss during personnel turnover.

     To address these challenges, DoD began partnering with other federal agencies (i.e., U.S. Fish and Wildlife Service, Bureau of Land Management, U.S. Forest Service) in the development of the Avian Knowledge Network (AKN) in 2016. The AKN is a national clearinghouse for avian data and decision support tool for assessing bird population health, status and trends, specific stressors, and conservation measures. The AKN connects partner datasets, includes metadata and data assumptions, contains powerful data analysis tools, and is a permanent archive of all data records.

     This office fully endorses the use of AKN and requests that each DoD Component utilize AKN to the maximum extent practicable and provide staff the support needed to make AKN the best tool for DoD. A coordinated and comprehensive approach to implement DoD's participation in the AKN will directly support the military mission and improve the quality and effectiveness of bird conservation on DoD installations. For DoD to fully employ the power of AKN, user training and significant initial data management is required. This office, through the DoD Legacy Resource Management Program, is committed to providing baseline support and resources to help implement AKN. This support will provide training and education for personnel, and technical assistance related to system use and data management. The DoD AKN Director is Ms. Elizabeth Neipert, at elizabeth.s.neipert@erdc.dren.mil or 907-201-6244.
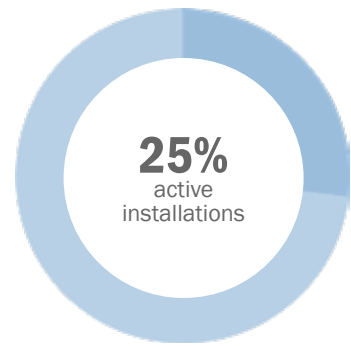
     Additionally, a national Cooperative Agreement has been established to support AKN implementation. It provides a streamlined process for DoD Components and installations to contribute additional resources to meet their unique needs.

     The point of contact for this office is Ms. Liz Galli-Noble, DoD Senior Natural Resources Program Manager and Legacy Resource Management Program Manager, elizabeth.j.galli-noble.civ@mail.mil or 406-581-8148
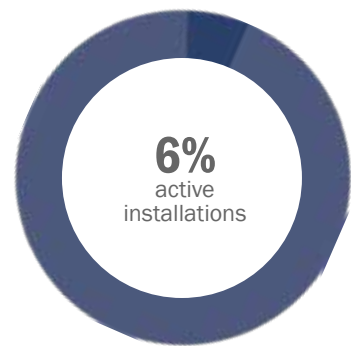
Richard G. Kidd IV
Deputy Assistant Secretary of Defense
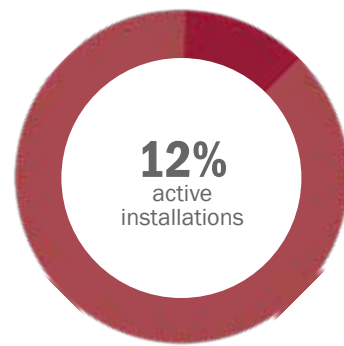(Environment and Energy Resilience)

Metrics
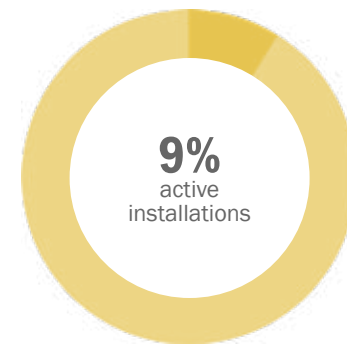
Installations with Active Projects by Service Branch

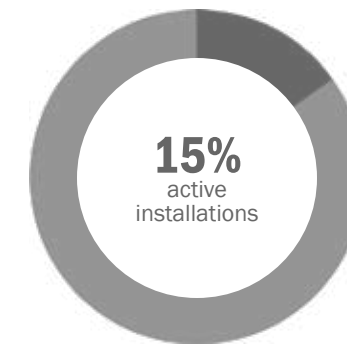**25%** active installations — Air Force

6% active installations — Army

12% active installations — Marine Corps

9% active installations — Navy

15% active installations — National Guard

User Support

Legend:
- Air Force
- Army
- Marine Corps
- Navy
- National Guard
- USACE

Bar chart categories: User Support and Database Issues, "Office Hours" Appointments, "Office Hours" Issues

AKN Data Records

45%, 35%, 18%, 2%, 0%

## Researchers

44%, 21%, 21%, 9%, 5%

Trainings

The trainings the DoD AKN Team provide introduce the AKN system and tools and the opportunity for participants to walk through common processes within the AKN system that replicate real-life data entry, management, and analysis steps with the support of the DoD AKN Team. In addition to the in-person and virtual trainings, the Team created a set of short static videos that cover many of the concepts users need to store and analyze their data in the AKN as refreshers to reinforce those processes introduced during training. These videos are available to the public on the AKN YouTube channel here https://www.youtube.com/@avianknowledgenetworkakn8439. To date the videos have been viewed 221 times.

2022 Training Metrics

In 2022, the DoD AKN Team provided two trainings- one in-person training at the National Military Fish and Wildlife Association (NMFWA) Annual Training Workshop in March and one virtual training for Air Force personnel in November. Between the two trainings, a total of 53 individuals were trained representing 33 different installations from nearly every service branch- Air Force, Army, Army National Guard, Marine Corps, Navy, and Space Force- as well as biologists from private consulting firms and a university that work on military installations.
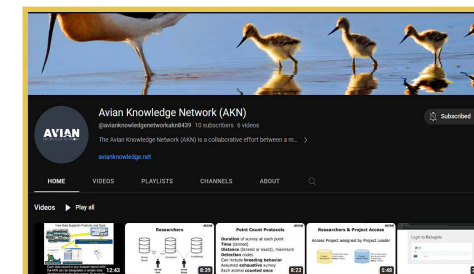

Opposite: Osprey, Dam Neck Annex, VA. Photo by Paul Block. Clockwise from above left: training metrics, online AKN training resources, and in-person training at the National Military Fish and Wildlife Association (NMFWA) Annual Training Workshop.

DoD AKN Portal

This fall, the DoD AKN Team launched the DoD AKN Web Portal, https://www.dodakn.org/. The portal is the DoD's one-stop-shop for all things Avian Knowledge Network. The portal provides a modern avian data management system approach to foster efficient, cost-effective, and resilient conservation outcomes in support of the military mission. The portal provides DoD staff with a single place to go to access all AKN tools. Additionally, the portal provides DoD specific announcements and guidance such as the memo mandating that all avian data collected on DoD installations should be managed in the AKN. The portal provides a simple place to register in the system and sign up for monthly "Office Hours" and other upcoming trainings.

Home Page: dodakn.org
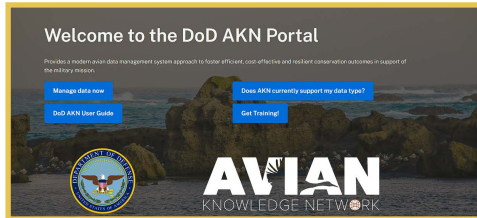
Landing page to the DoD AKN Web Portal
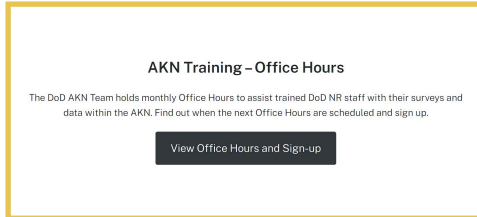
Easily accessible link to sign up for monthly office hours for technical support from the DoD AKN Team.
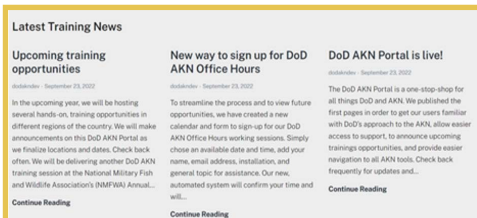
Announcements about training and support opportunities.

Get Training: dodakn.org/resources/get-training
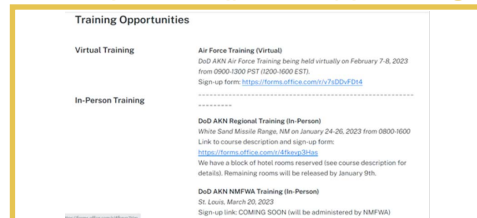
Upcoming training opportunities available to DoD staff.

Manage Data: dodakn.org/manage-data
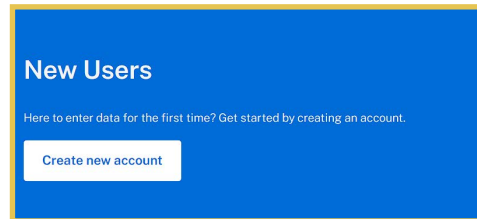
Easily accessible link for new users to sign up for an AKN account.

Policy and Guidance: dodakn.org/resources/policy
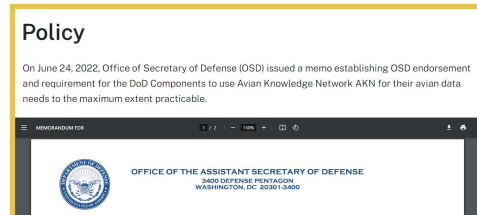
Guidance for DoD staff for bird monitoring best practices and the use of the AKN to manage and analyze bird monitoring data.

Piping Plover, Dam Neck Annex, VA. Photo by Paul Block.

DoD AKN Mission-Sensitive Species Initiative

DoD Partners in Flight has identified 15 bird species that occur on DoD installations that have the highest potential to impact the military mission should they become Federally listed. The Mission-Sensitive Species (MSS) list is designed to aid in prioritization of monitoring and management on DoD installations to help reverse declines, prepare installations for potential listing of species, identify potential mission impacts, and provide management and monitoring recommendations based on the best available science.

To support using the best available science to aid in planning and prioritization of monitoring and management of MSS on DoD installations, the goals of DoD AKN Mission-Sensitive Species Initiative include 1) identifying past and current monitoring protocols, objectives, and data for MSS on DoD installations, 2) recommending standardized monitoring protocols for all DoD installations for future monitoring, including providing support for data entry and management in the Avian Knowledge Network, and 3) providing a link to broader species conservation groups, such as Partners in Flight Priority Species Working Groups and the Road to Recovery initiative, to identify opportunities for management that may help reverse species declines. Decision support tools focused on MSS will provide data query and analytical tools that will support direct application of monitoring efforts towards adaptive management of species and habitats on DoD installations.

The DoD AKN Team has identified a process for consolidating historical data, identifying commonly used field methods, making recommendations for future monitoring and associated data management solutions, and setting up and developing decision support tools for all 15 Mission-Sensitive Species. So far, the DoD AKN Team has piloted this approach with Burrowing Owl and Pinyon Jay and plan to move forward with additional MSS in the next year. The team's process includes:

1. Literature reviews to identify commonly applied monitoring methods and survey protocols for each MSS

2. Contacting subject matter experts to develop relationships and to learn about protocols and existing monitoring recommendations relevant to each MSS

3. Communicating with DoD biologists currently working with MSS to identify historic data and monitoring objectives

4. Creating focus groups of species experts and DoD biologists to recommend priority monitoring objectives and field methods

5. Developing appropriate AKN sampling protocol definitions based on identified monitoring protocols that can be used for data entry and management for all AKN users

6. Setting up data entry and management systems for standardized protocols and assist with upload of historic datasets for MSS to the AKN

7. Developing specific MSS analytical tools to support science-based species and habitat management on DoD installations

MISSION-SENSITIVE SPECIES

Burrowing Owl

Burrowing Owl surveys were one of the first priorities for the Mission-Sensitive Species initiative, as 50 installations have at least some Burrowing Owls present and many installations that responded to a survey provided by the DoD AKN Team are either currently doing or plan to start surveys for them in the next year. A review by the Team identified the primary protocols currently being implemented by biologists, including Standardized Monitoring Strategies for Burrowing Owls on DoD Installations (Garcia et al 2008), Guidelines and Recommendations for Burrowing Owl Surveys and Mitigation (California Burrowing Owl Consortium 1993), and Comparison of Detection Probability Associated with Burrowing Owl Survey Methods (Conway and Simon, 2003). The DoD AKN Team will be meeting with focus group biologists to identify recommendations for how these protocols should be used and whether they meet priority research and monitoring objectives, and the Team is developing standard data entry protocols to allow biologists to enter Burrowing Owl survey data into the AKN.

Pinyon Jay

The DoD AKN Team has been working with the Partners in Flight Pinyon Jay Working Group as they finalize the Data Standards and Survey Protocol for Pinyon Jays (Version 2.0). They have developed the protocol to promote and facilitate the collection of standardized and biologically relevant data about Pinyon Jays. The goal of the working group is to establish a fundamental commonality across diverse projects in order to lead to powerful analytical opportunities and larger-scale insights that would not otherwise be possible. They have developed data protocols that include either area search or point count field methodologies. The DoD AKN Team is now working on developing AKN sampling protocol definitions based on these data structures to create a data entry system that can be made available to all AKN users including biologists on DoD installations.

Team and Partners

Elizabeth Neipert

Elizabeth is a Research Wildlife Biologist with the U.S. Army Engineer Research and Development Center's (ERDC) Environmental Laboratory (EL) in the Ecological Resources Branch stationed in Interior Alaska, where she conducts wildlife research and monitoring projects on DoD lands nationwide. She also serves as the National Technical Coordinator for DoD's Bird Conservation Program and DoD Partners in Flight where she co-leads a steering committee of military natural resources managers and directs DoD-wide conservation efforts designed for mission support for the Military Services and Office of Secretary of Defense (OSD) Natural Resources Program.

Ms. Neipert is the Director of DoD's Avian Knowledge Network (AKN) Program where she leads the interagency partnership to address all DoD avian data needs. She coordinates DoD's use of the AKN with OSD, the Military Services, installations, cooperators, and partners to create an organized, strategic, and comprehensive approach that directly supports the DoD Bird Conservation Strategic Plan and supports DoD's military missions.

She also chairs the National AKN Steering Committee, the primary decision-making body for the AKN, committed to fostering the international collaboration of diverse institutions and agencies with goals to improve the conservation of birds and their habitats utilizing scientific data and cooperative partnerships. She also represents DoD and leads the federal agency partnership, coordinating future plans and actions with all AKN partners, over 100 organizations.

Previously, Elizabeth served as President of the National Military Fish and Wildlife Association (NMFWA) from 2016-2018 and co-founded NMFWA's Bird Conservation Working Group in 2015. From 2008-2014, she was the Natural Resources Program Manager and Wildlife Biologist at U.S. Army Garrison Fort Wainwright's Donnelly Training Area, Alaska managing over 750,000 acres of military training and testing lands.

Sam Veloz

Sam is the Director of Ecoinformatics and Climate Solutions at Point Blue Conservation Science. He leads a team that uses science to help decision makers and natural resource managers prepare for future environmental changes. His group specializes in the development of models and tools that enable climate-smart decision making. His group works in ecosystems ranging from upland and tidal marsh ecosystems in the San Francisco Estuary, to coastal forests and grasslands of the Pacific Northwest, to the deserts of the southwest United States and in the Ross Sea in Antarctica. The Point Blue Ecoinformatics team supports the management of Point Blue's and partners' bird monitoring data through the Point Blue Science Cloud. Sam also represents Point Blue on the Avian Knowledge Network (AKN) Steering Committee.

Dr. Veloz represents Point Blue on the DoD AKN team. His role is to direct the Point Blue Ecoinformatics team to develop new features and upgrades to the Point Blue Science Cloud to support DoD and AKN priorities. He also leads the training of DoD staff on the use of the AKN for data management and analyses.

Sam came to Point Blue in 2010 after working as a postdoctoral researcher at the University of Wisconsin, Madison, where he studied how plant species responded to global warming following the last deglaciation as a proxy for how species will respond to future climate change. He received his PhD from UC Davis in ecology in 2008 where he studied how urbanization in Australia led to behavioral changes in megabats and the coincidental emergence of fatal zoonotic diseases in humans. He received his bachelors degree in environmental studies from UC Santa Cruz in 1997.

John D. Alexander, PhD

John is Executive Director of Klamath Bird Observatory and has been an AKN collaborator since its inception. Dr. Alexander has been working to integrate bird conservation with natural resource management in the Pacific Northwest since 1992. He is focused on applying bird conservation science as a tool for advancing ecosystem conservation regionally, nationally, and internationally. His expertise includes participatory action research; ecological monitoring and research using standard bird and habitat sampling techniques; the use of scientific results for overcoming land stewardship challenges; and the development of applied science tools and teaching materials for natural resource management professionals, community members, and students of all ages. John's KBO team manages the Avian Knowledge Northwest regional AKN node, as well as the eBird Northwest portal. John represents the AKN on the North American Bird Conservation Initiative US Committee. John plays several roles on the DoD AKN Team, working with Ms. Neipert and Dr. Veloz to set strategic direction for the program; supervising the KBO team; advising on database, project, and decision support tool design; consulting with DoD associates on monitoring and research design, field methodology selection, analysis, and data management; and representing the DoD program by meeting with and presenting to various partners and collaborations.

Ellie Armstrong

Ellie works for Klamath Bird Observatory where she works on many things AKN related. Much of Ellie's work has focused on helping bulk upload large historic datasets into the AKN to help preserve the integrity and accessibility of previously collected data in many formats. She also helps run the AKN's helpdesk ticketing system, Zendesk, and attends DoD "Office Hours" where she helps with a wide array of issues from getting people first set up to enter data into the AKN to using AKN customized tools to analyze data.

Michael Fitzgibbon

Michael was the lead designer and architect for the Point Blue Science Cloud, the web and database technology that serves the Avian Knowledge Network. Working with the DoD, Michael developed and ran the training class that 100+ DoD staff have taken and participates in "Office Hours" helping DoD staff to get data into the AKN database. In the 14 years at Point Blue Conservation Science, Michael held the roles of Chief Technology Officer and Chief Operations Officer for the organization. Michae's career prior to Point Blue was working in software development at Intuit, Autodesk, and ESRI. Michael holds degrees from the University of Wisconsin, Green Bay, and the University of California, Berkeley. Michael is an independent contractor.

Caitlyn Gillespie

Caitlyn is a Research Biologist at Klamath Bird Observatory where she has managed data collection, analysis, and reporting for numerous long-term bird monitoring and applied ecological field studies throughout Oregon and northern California. She now works within KBO's informatics and data science program to assist with AKN program support and data management, analyze data for applied avian monitoring research, and develop conservation planning tools. As part of the DoD AKN support team, she attends DoD "Office Hours" to consult with installation biologists to help identify ways in which the AKN can meet their data management needs and support their research objectives. She is also working with biologists to help identify protocols, historic datasets, and data management solutions for Mission-Sensitive Species and assists with DoD AKN virtual and in-person trainings.

Case Studies

Barry M. Goldwater Range (East—Air Force, West—Marines)

As part of the work supporting the Barry M. Goldwater Range (BMGR), BMGR biologists participate in the Desert Thrasher Working Group with colleagues across the Southwest from BLM, US Fish and Wildlife, state agencies (AZ, NM, UT), Sonoran Joint Venture, Universities, and several bird conservation NGOs. This Working Group has a collaborative project in the AKN for participants to provide field surveys into.

The BMGR wanted to participate in this with surveys from the installations but wanted to maintain ownership and control over those data. The BMGR set up two projects in the AKN and, in coordination with contractors from Colorado State University, have entered over 500 observations for field seasons 2021 and 2022 using the web data entry tools.

Moving forward, this Case Study is being used to help design improvements that allow DoD facilities to participate in and share data with efforts like the Desert Thrasher Working Group while still maintaining data ownership and control.

From the BADC: "The Desert Thrasher Working Group (DTWG) was formed in January 2010, following enthusiasm generated from a LeConte's Thrasher Workshop held at the Barry M. Goldwater Range in Southwest AZ. During this workshop, concerns were raised about negative population trends in LeConte's Thrashers, and concerns were mirrored for Bendire's Thrashers. Loggerhead Shrikes also exhibit significant population declines, and in

desert habitats are largely overlapping with these two thrasher species. All three species have showed significant population declines based on BBS data and are listed as species of conservation concern by the USFWS and Partners in Flight (PIF). In fact, PIF considers these two thrasher species among species requiring the most urgent action. Similarly, within their respective ranges, each state lists them as a Species of Greatest Conservation Need. Conservation action is needed to improve the status of these species. However, research gaps (e.g., true population size and trends, habitat needs, movement patterns, limiting factors) are significant, and mechanisms to achieve meaningful conservation measures are not well understood or defined."

https://borderlandsbirds.org/projects/desert-thrasher/

Massachusetts Army National Guard

A staff biologist was leaving MA Army National Guard, and they had eight years of point count surveys (2013-2020) with over 35,000 observations that were at risk of being lost once he left. The biologist took a 1-day DoD AKN training at NMFWA to learn about how the system worked. Following that training, they worked very quickly, and with just a couple of emails to the Point Blue team, was able to use the bulk uploading tools to get these data from Excel spreadsheets to the AKN database right before they moved on to their next assignment. These data are now organized, archived, and available to any current or future MA ARNG biologists.

Fort Hood

Fort Hood (now Fort Cavazos) has a robust natural resources program, with many staff biologists, several of which have completed the DoD AKN training and attended multiple "Office Hours" where they could ask specific questions to meet their data needs. Through meeting with the DoD AKN Team and attending training to better understand how to use the AKN, they were able to get a new project created, structure 1,155 sampling locations into the AKN across the installation, have custom protocols created to meet their data entry needs, bulk upload over 3,000 rows of previously collected data and now are set up to directly enter data into the AKN. Fort Hood Biologists continue to attend "Office Hours" and work with the DoD AKN Team to develop more customized AKN protocols to fit all of their data needs.

Willamette Valley – USACE

A USACE Project Biologist for the Willamette Valley project in Oregon took the DoD AKN training workshop at NMFWA. Through the training, the biologist was able to better understand how the AKN works and how it can help fit their project's needs. After the training, the biologist attended "Office Hours" and worked with the DoD AKN Team to identify all USACE and partner data within the project's boundaries; they were then able to obtain acccess to all USACE-owned data and reach out to partners for other data access.

Opposite: Curve-billed thrasher. Photo by birdiegal/Adobe Stock.

OSD and Military Service Actions

The DoD is one of many partners within the AKN, as a whole. The AKN is also a close collaboration within the DoD between the Office of Secretary of Defense (OSD) Natural Resources Program and the Military Services. OSD provides ongoing base funding support for DoD AKN partners including project coordination, back-end technical support, installation consulting and data support (i.e., "Office Hours"), quarterly regional DoD AKN trainings, and annual support for Science Cloud. Additionally, OSD has provided support for the development of standardized Mission-Sensitive Species (MSS) monitoring protocols (e.g., pinyon jay), DoD AKN Portal creation and management, as well as partial funding for

enterprise support for Programs, new system user roles, and additional DoD data standards and monitoring protocols.

Additionally, each Military Service funds tasks that provide support for the overall DoD efforts as well as Service-specific actions, including service-hosted trainings, development of online training videos, MSS monitoring and data support initiatives, data discovery surveys, Scope of Work (SOW) language development, and new user role development.

AKN Open Access Tools

While the core functionality of the Avian Knowledge Network is centered on managing and analyzing the data that teams collect, there are a set of tools available that don't require having your own data in the system and that are available without an AKN account. Broadly, these tools allow users to discover and explore the types of data in the system. Additionally, there are decision support tools that use data from the AKN to support conservation and ecosystem management.

Species Lookup
(https://data.pointblue.org/science/biologists/php/sppsearch.php)
Use this tool to find the scientific name, common name and/or a four-letter ABA code for any bird species in the AKN.

Avian Observation Map
(https://avianknowledge.net/index.php/observations-map/)
Users can utilize the Avian Observation Map to discover what accessible bird monitoring data (i.e., at a data sharing level of 3 or higher) is available at specific geographic locations. The data are grouped by general protocols and include eBird and Breeding Bird Survey observations. Users can also generate summaries of the data displayed by user-defined polygons or by selecting individual points.
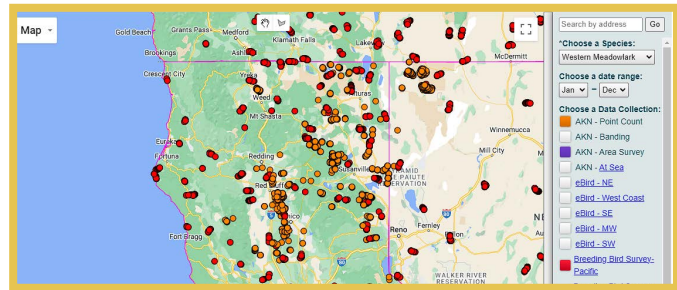

Figure 1. Observation map screenshot.

Rapid Avian Information Locator (R.A.I.L.) Tool
(https://data.pointblue.org/apps/rail/)
The R.A.I.L tools enables users to quickly discover the relative probability of presence and index of abundance of birds throughout the year at selected locations in the United States. Additionally, the tool provides summary information about each bird species that is predicted to occur at the location selected. The tool creates summaries of the observations of birds in the AKN within 10 x 10 km grid cells at user-selected locations on a map. This tool can help generate lists of birds that are likely to occur in a project site and can help facilitate NEPA and INRMP processes.
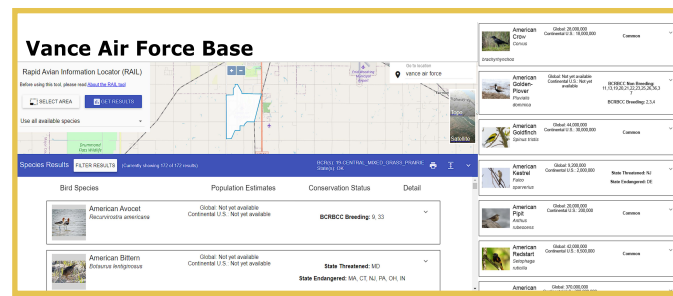

Figure 2. R.A.I.L. Tool screenshot.

Data Catalog
The Data Catalog provides basic information about project data sets that are managed in the AKN. Through the Catalog, users can find information about the geospatial extent of project and survey types used. In some cases, project leaders will make the data and/or metadata about the project downloadable.
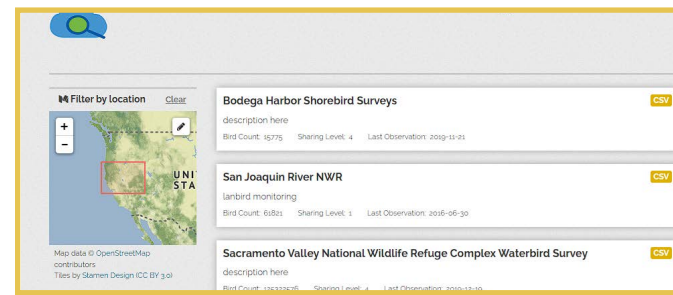

Figure 3. Screenshot of the Data Catalog.

Office Hours

The DoD AKN Team began holding monthly virtual "Office Hours" in mid-2022 to provide installations with one-hour, one-on-one support and expertise to assist in the integration of their avian datasets into the AKN in addition to the "Office Hours" provided during the NMFWA Annual Training Workshop. Issues raised during "Office Hours" ranged from simple topics, such as adding new users to Projects, to more complex topics, such as consulting on how contemporary data can be collected to meet installation-specific conservation or management objectives. "Office Hours" appointment slots are reserved through the DoD AKN Portal and have DoD AKN Team members available from each of the three Team entities – ERDC, KBO, and Point Blue – to provide support on any aspect of the DoD AKN Program from DoD mission objectives to avian data protocols to database structure and function.

Since March 2022, 27 total hours were dedicated to one-on-one "Office Hours" appointments. During these appointments, the DoD AKN Team helped installation biologists, natural resource managers, and DoD contractors from 18 different installations across nearly all Military Services including Air Force, Army, Army National Guard, Army Corps of Engineers, Navy, and Marines, as well as one private DoD contractor.
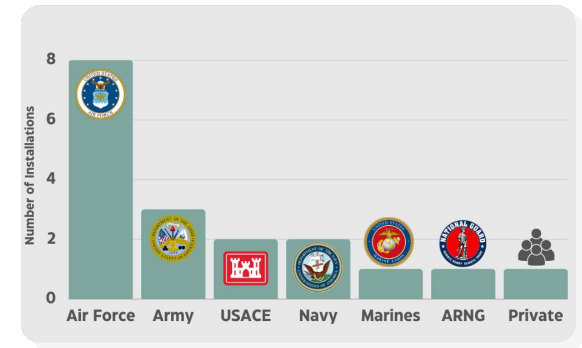
Number of installations represented in "Office hours"

USER QUOTES

DoD AKN Training is a must for anyone working with birds on their installations. However, it is the "Office Hours" that Liz and others are providing that bring the training and the real-world data together for analysis. They are so helpful. What an incredible resource!
Russ Lawrence, Natural Resource Manager Hill AFB and Utah Test and Training Range

I just want to pass along the message that the DoD AKN training was fantastic and put together perfectly for someone who has never been introduced to it before. The pace was good, hands-on, and involving. Looking at the big picture, my installation has planning level surveys that go back many, many years and occur about every 5-7 years. Most of these surveys are offered in report format and do not have digitized raw data. It was daunting and not-likely a beneficial task to think about digitizing that data when I would only really use it for the INRMP re-writes. However, knowing that those data can now be shared and used across the country and across many partners makes it a worthwhile effort. Also knowing that my effort would be warehoused for future natural resource managers in my shoes is actually exciting.
Adam Priestley, Habitats Biologist Fort Eustis, Virginia 23604

After completing a DoD AKN Training session, I joined one of their monthly "Office Hours" offerings. It was very helpful, efficient, and empowering for me going forward to have real time access to all DoD AKN support personnel. Together, they worked through my questions, and I appreciate the follow-up emails I've received. I intend to use these "Office Hours" sessions in the future as I move multiple projects into AKN.
Kevin Warner, Environmental Management Office Idaho Army National Guard

AVIAN
KNOWLEDGE NETWORK

DEPARTMENT OF DEFENSE · UNITED STATES OF AMERICA

ERDC
ENGINEER RESEARCH & DEVELOPMENT CENTER

Point Blue
Conservation Science

Klamath Bird Observatory

Laysan Albatross, PMRF Kauai, HI. Photo by Paul Block. Cover: Cactus Wren. Photo by robitaillee /Adobe Stock.

2022 DoD AKN Program Funding Sources

DEPARTMENT OF DEFENSE · LEGACY PROGRAM

U.S. AIR FORCE

www.dodakn.org

Questions?
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