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Migratory Bird Management Plan for Los Alamos National Laboratory

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Cover photo: Indigo bunting captured during bird banding efforts at Pajarito Wetlands to monitor migratory bird populations.

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EXECUTIVE SUMMARY

In this document, Los Alamos National Laboratory (LANL) biologists and subject matter experts in the Environmental Protection and Compliance Division outline relevant migratory bird compliance considerations and best management practices. The management plan provides site-wide mitigation measures that reduce risks to migratory birds and ensures compliance with the Migratory Bird Treaty Act of 1918 (MBTA) at LANL.

Under the provisions of the MBTA, it is unlawful "by any means or manner to pursue, hunt, take, capture [or] kill" any migratory bird except as permitted by regulations issued by the U.S. Fish and Wildlife Service ("USFWS" or "Service"). Unauthorized take of migratory birds is a strict liability offense, and violators can be found criminally liable. As such, even when engaged in an otherwise legal activity, violations can occur if there is bird death or injury.

It is estimated that 58 percent of native North American migratory bird species have declined since 1970 (Rosenberg et al. 2019). This decline is due primarily to habitat loss as well as other human-caused environmental changes (Rosenberg et al. 2019). Additionally, it is estimated that between 365 to 988 million bird deaths occur annually after window or building collisions (Loss et al. 2014). Window collisions are a risk especially prevalent for nocturnally migrating birds (Loss et al. 2014).

For LANL lands, many of the most significant risks to migratory birds can be mitigated and include:

- loss, alteration, or fragmentation of habitat;
- the potential take of eggs and nestlings during operations that disturb vegetation during the breeding season;
- the potential take of eggs and nestlings during operations that disturb infrastructure or equipment being used by breeding birds;
- mortality resulting from collisions with building windows and guyed towers;
- collisions and electrocutions on power lines;
- and open-top pipes that can trap birds.

By avoiding or minimizing the impact of LANL activities on migratory bird populations, LANL will reduce or eliminate any potential violation of the MBTA, as well as the possibility of enforcement action.

Migratory bird best management practices at LANL include:

- scheduling vegetation removal outside peak breeding season;
- preventing nesting in structures or equipment by sealing holes or covering problematic nesting areas;
- mitigating window collisions using window coverings or modifying building lighting;
- imposing regulations on powerlines and communications towers to reduce collision risk;
- and covering or removing open-topped pipes to reduce the risk of trapping birds.

1 Introduction

The Migratory Bird Treaty Act of 1918 (MBTA) is the main driver for protection of migratory birds in the United States (U.S.). The original 1918 statute implemented findings of the 1916 Convention for the Protection of Migratory Birds in Canada and the United States. Later amendments implemented treaties between the U.S. and Mexico, the U.S. and Japan, and the U.S. and the Soviet Union (now Russia). See Appendix A for a listing of primary international conventions and domestic legislation for migratory birds.

1.1 Definition of Migratory Birds

In the biological sense, a migratory bird refers to bird species that undertake a seasonal and somewhat predictable movement typically of substantial distances. For the sake of the MBTA, migratory birds are defined as all species covered by the four bilateral treaties. Generally, this definition includes all native birds in the U.S. except those non-migratory game species—such as quail and turkey—that are managed by individual states.

1.2 Prohibitions Under Migratory Bird Treaty Act

Under the provisions of the MBTA, it is unlawful "by any means or manner to pursue, hunt, take, capture [or] kill" any migratory bird except as permitted by regulations issued by the U.S. Fish and Wildlife Service (USFWS). The term "take" is not defined in the MBTA, but the USFWS has defined it by regulation to mean to "pursue, hunt, shoot, wound, kill, trap, capture, or collect" any migratory bird or any part, nest, or egg of any migratory bird covered by the conventions or to attempt those activities (50 Code of Federal Regulation (C.F.R.) § 10.12). Courts have differentiated between intentional take and incidental (unintentional) take in regards to the MBTA. Intentional take is take that is the purpose of the action. Incidental take is not a purposeful act but occurs as a result of an otherwise legal action (EO 13186, Appendix B).

The MBTA does not contain any prohibition that applies to the destruction of an unoccupied bird nest (without birds or eggs), provided that no possession occurs during the destruction (16 U.S.C. § 703). Nest destruction is also illegal and fully prosecutable under the MBTA. Due to the biological and behavioral characteristics of some migratory bird species (e.g., burrowing owls, other burrow nesters, cavity nesters, etc.), destruction of their nests entails an elevated degree of risk of violating the MBTA.

Section 704 of the MBTA authorizes the USFWS to issue permits for specific types of activities that involve the take of migratory birds. The regulations at 50 C.F.R. Part 21 explains these permits may include scientific collection, bird banding for research, and lethal and non-lethal measures taken to prevent depredation of agricultural crops and those that protect public health and safety. Existing migratory bird permit regulations do not authorize take that results from activities such as forestry or agricultural operations, construction or operation of power lines, or other activities where an otherwise legal action might reasonably be expected to take migratory birds but is not the intended purpose of the action. Birds that are trapped in buildings may be

humanely captured but must be released immediately into the wild or, if injured, transported to a permitted rehabilitator.

Under the provisions of the MBTA, the unauthorized take of migratory birds is a strict liability criminal offense. As such, even when engaged in an otherwise legal activity, violations can occur if bird death or injury results. The USFWS works collaboratively with entities to ensure that best practices are followed to minimize unintended harm to birds and their habitats.

The USFWS enforces the MBTA with discretion, focusing on individuals or organizations that take birds with disregard for the law, particularly where no valid conservation measures have been employed. In doing so, the USFWS has been able to focus its limited resources on working cooperatively with various industries, agencies, and individuals to reduce impacts on migratory birds. USFWS Office of Law Enforcement can use enforcement discretion, especially when organizations are willing to work with the USFWS to avoid or minimize impacts to migratory birds. When necessary, the USFWS has taken enforcement actions to stop activities that threaten migratory bird populations.

Species protected under the MBTA are included on the USFWS "10.13" list (50 C.F.R. § 10.13, see Appendix B). The 10.13 list is dynamic, meaning that species can be added or removed based on changes in distribution and/or taxonomy. The USFWS revision to the 10.13 list in 2023 brought the total number of species protected by the MBTA to 1,093.

2 Migratory Bird Management

This document describes migratory bird best management practices for LANL. This section explores the drivers behind these practices, including the stipulations of the MBTA. This section also denotes the responsibilities by various parties at LANL, as well as potential risks to LANL operations from MBTA violations and risks to migratory birds posed by LANL operations. By avoiding or minimizing the impact of LANL activities on migratory bird populations, LANL will reduce or eliminate any potential violation of the MBTA, as well as the possibility of enforcement action.

2.1 Drivers

The main driver for protection of migratory birds in the U.S. is the MBTA 16 U.S.C. §§ 703–712. The MBTA was amended by Public Law 86-732 in 1960, altering earlier penalty provisions. In 1986, the MBTA at 16 U.S.C. §707 was amended by Public Law 99-645, Emergency Wetlands Resources Act, requiring felony violations under the act must include intent, so that the violation was "knowingly" committed. Public Law 105-312 also amends the law to allow the fine for misdemeanor convictions under the MBTA to be up to $15,000 rather than $5,000.

There has been a split in the federal courts as to whether an agency is held accountable for violations of the MBTA. In the early 2000s, a decision by the DC Circuit Court prompted attention by the legislature. On December 2, 2002, President George W. Bush signed the 2003 National Defense Authorization Act (NDAA). Section 315 of the NDAA provides that, no later than 1 year after its enactment, the Secretary of the Interior (Secretary) shall exercise authority under Section 704(a) of the MBTA "to prescribe regulations to exempt the Armed Forces for the incidental taking of migratory birds during military readiness activities authorized by the Secretary of Defense or the secretary of the military department concerned." No definitive decision has been made by the U.S. Supreme Court to date regarding the applicability of the MBTA to all other agency activities, and the 10th Circuit has yet to address this issue.

However, under Executive Order 13186, the USFWS issued Director's Order 720 FW 2 on Service Guidance to Conserve Migratory Birds (Appendix B). In 2001, the President executed this Executive Order directing federal agencies that have or are likely to have a negative effect on migratory birds must execute an MOU with the USFWS. The Director's Order 720 FW 2 identified goals for federal program activities, and highlighted the need to identify means and measures to avoid and/or minimize potential for take of migratory birds, eggs, and active nests, including (1) project modification; (2) time-of-year restrictions on vegetation clearing; (3) avoidance of cavity trees, colonial bird nests, and other active nests; and (4) avoidance of nests of species of concern. The USFWS also seeks to ensure that environmental analyses of federal activities under the National Environmental Policy Act (NEPA) or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds, particularly on species of concern. Additionally, the USFWS called out the need for

compliance with communication tower and power line guidelines and wind power guidelines as they are developed in project assessments.

On September 12, 2013, a Memorandum of Understanding (MOU) from 2006 was updated and finalized between the USFWS and the U.S. Department of Energy (DOE). This MOU was valid for five years and no extension has been requested or executed since then. Despite its expiration, LANL continues to adhere to the responsibilities outlined for DOE as sound management practices. Those responsibilities include engaging with the USFWS to coordinate on DOE projects, missions and cleanup actions that may have an impact on migratory birds and/or migratory bird habitat, undertake actions to avoid/minimize take of migratory birds, continue to work with USFWS to improve or enhance conservation efforts of migratory birds, and utilize the best scientific information to avoid or minimize take of migratory birds or their habitat.

Department of Energy Order 436.1A dictates that DOE must, "Manage land and natural resources to ensure the protection of land, water, and biodiversity (including pollinators and migratory birds), including deployment of nature-based solutions, recognizing the co-benefit of resilience enhancement such as wildfire risk reduction, preservation of ecosystem services, carbon sequestration, and minimization of regulatory restrictions associated with endangered and threatened species." (DOE 2023). LANL will further ensure the protection of migratory birds by minimizing window collision risk to migratory bird species, including those that are endangered or threatened.

2.2 Risk to the LANL Mission

Violations of the MBTA have the potential to delay projects, interrupt mission objectives, and draw negative public attention to the Lab. To manage and prioritize instances of incidental take —guided by judicial precedent—and to minimize incidental take that is foreseeable and preventable, the USFWS has delineated instances of non-enforceable and enforceable incidental take in 2021 in the USFWS Director's Order No. 225 (Order 225).

Section 5 of Order 225 details violations that the Service does not prioritize as a public member engaged in a legal activity; a federal agency following the executed MOU with the Service; an entity, public or private, utilizing best management practices to minimize or avoid incidental take; and activities that maintain active permits under the regulations.

Order 225 details enforceable violations as illegal activities that result in incidental take; incidental take resulting from legal activities that are foreseeable and occur where best management practices are not implemented.

Migratory bird management requirements and best management practices are intended to minimize compliance risk to the institution. Uncertainty inherent in detecting and predicting the presence of migratory birds scales positively with compliance risk to the institution. For example, vegetation removal during peak breeding season is discouraged by the plan but could be required to meet mission objectives under certain circumstances.

2.3 Roles and Responsibilities

LANL EPC-ES Biologists

- Prepare, maintain, and update Migratory Bird Best Management Practices based on regulatory requirements and best available science. This plan should be reviewed and updated if needed or on a 5-year basis
- Conduct project reviews in the Integrated Review Tool
- Identify best management practices for projects and activities that mitigate risks to migratory birds
- Conduct nest searches in vegetation and infrastructure during the breeding season to support project activities, as needed
- Identify problematic locations for high incidences of bird window strikes and mitigate by procuring and providing bird collision deterrents to windows
- Work collaboratively with federal and state agencies, tribal nations, and other interested nongovernmental entities to identify, protect, restore, enhance, monitor, and manage important migratory bird areas
- Maintain a robust monitoring program for migratory birds at LANL to ensure operations are not impacting avian populations
- Coordinate trainings such as the Avian Protection Plan Workshop taught by the New Mexico Avian Protection Working Group
- Implement any applicable MOU beneficial practices (see examples in Appendix C) as funding and opportunities arise
- Promote MBTA issues and awareness through outreach and briefings
- Ensure that staff are involved in local avian management meetings and conferences for collaboration with other conservation experts

Program or Project Managers

- Incorporate best management practices for protection of migratory birds into project planning and implementation
- Select project locations in existing developed areas to reduce greenfield (undeveloped area) conversion at LANL
- Prioritize work activities that are likely to impact breeding birds outside of the peak breeding season which is May 15 through July 31

Integrated Work Document Preparers

- Contact EPC-ES biologists when directed to do so by the Work Management System (WMS), according to LANL P300, *Integrated Work Management*
- Ensure that best management practices identified in the WMS or by EPC-ES biologists are incorporated into the job activities

Environmental Management System Specialists

- Ensure that potential impacts to migratory birds are considered when identifying environmental aspects and impacts of work activities and incorporate best management practices into procedures

Workers

- Identify areas of conflict with migratory birds during tailgate meetings and pre-job briefings to raise awareness
- Report occurrences of bird mortality or injury to supervisors and to EPC-ES biologists
- Follow procedures as defined in work documents

2.4 Risks to Migratory Birds at LANL

For LANL lands, many of the most significant risks to migratory birds can be mitigated and include

- loss, alteration, or fragmentation of habitat;
- the potential take of eggs and nestlings during operations that disturb vegetation during the breeding season;
- the potential take of eggs and nestlings during operations that disturb infrastructure or equipment being used by breeding birds;
- mortality resulting from collisions with building windows and guyed towers;
- collisions and electrocutions on power lines;
- open-top pipes that can trap birds.

2.5 Migratory Bird Treaty Act Requirements

The MBTA presents broad migratory bird protection requirements. In general, any activity that results in intentional, foreseeable, or preventable take is prohibited by the MBTA.

To avoid foreseeable and preventable take, LANL prohibits certain activities during certain times of year:

- Vegetation removal, infrastructure modifications that will impact active nests (e.g. sealing holes in buildings), and use of equipment with active nests in and around buildings are prohibited during peak migratory bird-breeding season (May 15 through July 31) unless EPC-ES biologists are able to check and clear vegetation or infrastructure for nests.
- Disturbance or destruction of bird nests in and around new and existing infrastructure is not allowed. Note that we do not prohibit ongoing operational activities but ask that they limit disturbance if an active nest is found in operational area during peak migratory bird-breeding season (May 15 through July 31).

3 Best Management Practices for Protection of Migratory Birds

3.1 Disturbance of Vegetation and Nests

Eggs and nestlings are the life stages of migratory birds that are most vulnerable to inadvertent take through disturbance or destruction of nests. Avoidance is the most effective means of minimizing these takes of migratory birds. Most nests at LANL are constructed in trees, shrubs, or grassy fields.

Where practicable, LANL will schedule the removal of trees or shrubs outside of the breeding season. The peak of the breeding season for most songbird species includes mid-May, June, July, and early August (NMBBAP 2001, Travis 1992). Larger birds such as raptors, falcons, and owls breed from February through August. Any active nests, including nests of larger birds, are protected and should not be disturbed. We define an active nest as a nest that contains eggs and/or nestling birds.

Mitigation Measures for Vegetation Removal

- The best management practice to protect nests is to schedule tree and shrub removal outside of the peak bird-nesting season: May 15 through July 31. During this time, EPC-ES biologists can survey trees and shrubs immediately before removal.
- If any active nests are found during the surveys, vegetation removal may be paused until the nests become inactive.
- EPC-ES biologists recheck trees every 5 calendar days to determine if any new nests have been built before allowing vegetation removal to proceed (USFWS 2021).
- EPC-ES biologists will opportunistically look for flushed ground-nesting birds and active ground nests.
- EPC-ES biologists will determine and demarcate buffer areas around active nests identified during the breeding season, the size of which will be determined by EPC-ES biologists based on species, habitat type, and proposed activity (USFWS 2021).
- If active nests are discovered outside of the breeding season, work will pause, and EPC-ES biologists must be notified.
- Standing dead trees should not be removed from the landscape unless they present a hazard to personnel or structures or are a fire hazard. They are an important habitat component for nesting birds.

EPC-ES biologists can reliably check smaller, less dense vegetation for nests with confidence, but taller and denser trees or shrubs present less certainty and therefore higher compliance risk. If EPC-ES biologists cannot confidently determine that a tree or shrub is not a current nesting site for migratory birds, they mark the vegetation and prohibit its removal until breeding season has ended.

Any active bird nests encountered regardless of the time of year are protected, including nests built within structures or equipment. Contact an EPC-ES biologist if an active nest is encountered during work activities. Do not disturb active nests.

3.2 Infrastructure and Equipment

Some species opportunistically use existing openings, overhangs, ledges, or drill holes in buildings, equipment, or other infrastructure to nest. To avoid compliance concerns with these types of nest locations, the following mitigation measures should be implemented.

Mitigation Measures for Infrastructure and Equipment

- Stucco repairs should be prioritized outside of the peak bird-nesting season (May 15 through July 31). During this time, EPC-ES biologists can survey holes in stucco, prior to sealing, only if there is an immediate safety or security concern.
- If an active nest is found within a building, it should be avoided and not disturbed until an EPC-ES biologist determines it is no longer active.
- Old nests or nests that are determined inactive by an EPC-ES biologist should be removed immediately if found in infrastructure or equipment. If possible, the location of the nest should be retrofitted so another nest is not built in the same location.
- Problematic infrastructure and equipment should be retrofitted to prevent future nesting opportunities.

3.3 Collisions with Buildings and Windows

Migratory birds collide with human-made structures during the day and at night. Annual bird mortality resulting from window collisions in the U.S. is estimated to be between 365 million and 988 million birds (Loss et al. 2014) with some annual estimates as high as 500 million birds (Klem et al. 2009, Klem et al. 2024). Birds are easily deceived by reflected images of habitat and sky on windows installed in the conventional vertical position and can strike these windows, leading to injury or mortality (Bird-Safe Building Guidelines). Additionally, lights on buildings or towers have been shown to dramatically alter migratory bird behaviors and cause mortality in migrating birds (Manville 2009). The USFWS provides best management practices in the document *Reducing Bird Collisions with Buildings and Building Glass Best Practices* (https://www.fws.gov/sites/default/files/documents/reducing-bird-collisions-with-buildings.pdf, last accessed 08/07/2024).

Mitigation Measures for Building and Window Collision

- For new or remodeled buildings, designers can use features such as overhangs, shutters, louvers, mesh, and awnings to reduce glass reflections or reduce visibility into transparent areas. Another option is to install windows at an angle so that the pane reflects the ground instead of the surrounding sky and habitat (Klem et al. 2024) or install specific bird friendly glass; example products can be found here: (last accessed on 11/07/2024):
    - Guardian Glass

  - Walker Glass
  - Viracon©
  - GlasPro
  - Pilkington AviSafe™
  - BirdSafe©
- Reduce the exterior reflectivity of windows by applying bird collision deterrents such as window film or exterior brackets with monofilament that creates a pattern to break up reflective surfaces (Riggs et al. 2023); example products can be found here (last accessed on 11/07/2024):
  - Collidescape Window Tape
  - Feather Friendly Glass Markers
  - Bird Crash Preventers
- Report all observed bird mortalities and injuries to EPC-ES biologists (epc_biologists@lanl.gov). If the event is a collision with a building or window, communicate the location so that problem areas can be identified and rectified.
- EPC-ES biologists will identify problematic window strike locations and mitigate the threat by adding bird collision deterrents to windows.
- Turn off, dim, or install motion-activated lights near windows at night.
- Program building lighting systems to achieve a measurable reduction in night lighting from 7 p.m. to 6 a.m., or ideally, ensure that all lights are switched off during that time period.

The document *Bird-Safe Building Guidelines* offers many more design suggestions, mitigation, and case study examples for reducing bird collisions; available online at https://www.darkskysociety.org/handouts/birdsafebuildings.pdf, last accessed 10/28/2024).

3.4 Power Lines

Bird electrocution is caused most often by a bird's simultaneous contact of an energized conductor and a ground or a second energized conductor. This contact produces a completed circuit and electrocution.

Electrocutions often can be quite violent, causing power outages and starting forest fires. Generally, the electric lines involved in these events are the everyday distribution structures. In areas where raptors and other large birds, including bald and golden eagles (16 U.S.C. § 668) are likely to use line structures for perches, the problem has been the design of the line and the transformers, arrestors, and switches attached to them.

A major part of the solution requires identifying problem pole locations and taking remedial action. Reporting records from maintenance activity or observations of electrocutions can identify not only problem poles and pole configurations but also regions of special concern along lines. With this information, crews can retrofit poles with raptor-protection devices or rebuild poles that are raptor safe. New construction standards can also be adapted to reflect raptor-safe configurations.

The most complete and up-to-date documents on raptor and avian protection for power lines are *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006) and *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* (APLIC 2012).

Currently, LANL EPC-ES biologists track all documented electrocutions of birds on power lines and include them in annual reports to the USFWS. LANL utilities personnel have agreed to retrofit all power poles that have documented electrocutions to mitigate future electrocution events.

Mitigation Measures for Power Lines

- New power lines should comply with the suggested practices adopted by the electrical industry (APLIC 2006, 2012). Priority should be given to poles likely to be used by raptors or other birds that have a high electrocution risk.
  - A minimum of 60 inches (1.5 meters; 48 inches [1.2 meters] vertical and 60 inches [1.5 meters] diagonal) of spacing between electrically conductive points on the power line through spacing in new construction or shielding (e.g., phase to phase or phase to ground).
  - The use of insulated coverings over bare conductors at structures.
- Power lines located in known raptor or waterbird concentration areas, daily movement routes, major diurnal migratory bird movement routes, or stopover sites should have daytime visual markers on the wires to prevent collisions by these diurnally moving species. For guidance on markers, see Avian Power Line Interaction Committee reports (APLIC 1994, 2006, and 2012).
- Report observed bird mortalities and injuries to an EPC-ES Biologist (epc_biologist@lanl.gov). EPC-ES biologists will track trends.
- Retrofit old power poles that are identified as problems. *Suggested Practices for Avian Protection on Power Lines* states that, "95 percent of all eagle electrocutions could be eliminated by correcting 2 percent of all the poles." Fabricated products are available to retrofit poles to make them unattractive for perching or to provide insulation to prevent phase-to-phase and phase-to-ground contact by birds (Dwyer et al. 2017).

Because of their large size, eagles are particularly susceptible to electrocution risks. Bald eagles are known to occur at LANL during the winter (November 1 through March 31), most commonly along the Rio Grande. LANL EPC-ES biologists give special scrutiny to power line projects in areas that were previously managed as bald eagle habitat under the Endangered

Species Act to minimize the potential for electrocutions. Bald eagles are currently protected under both the MBTA and the Bald and Golden Eagle Protection Act.

The LANL *Engineering Manual PD 342, Section G4010 – Site Electrical Distribution* (Revision 4, 01/15/19) requires wildlife protection mitigation techniques (pp. 34–35). These measures include requirements that new or modified overhead distribution lines in bald eagle habitat (TAs 33, 70, and 71) provide no less than 60 inches of phase-to-phase conductor spacing and no less than 60 inches of phase-conductor-to-grounded-conductor or grounded-object spacing and the use of appropriate insulation for dead-ends, jumpers, and bushing covers.

3.5 Open-Top Pipes

Open-top vertical pipes are a hazard to birds, lizards, small mammals, and other wildlife that get into these pipes and are unable to get out. Birds, bats, rodents, and reptiles enter the pipes to nest or find shelter, but the smooth interior and tight confines of the pipes prevent individuals from escaping, leading to a slow death by stress, dehydration, or starvation (Hathcock and Fair 2014, Malo et al. 2016, Harris et al. 2019). Open bollards, open pipes used as fence or gate posts, and open vent tubes all pose threats to migratory birds.

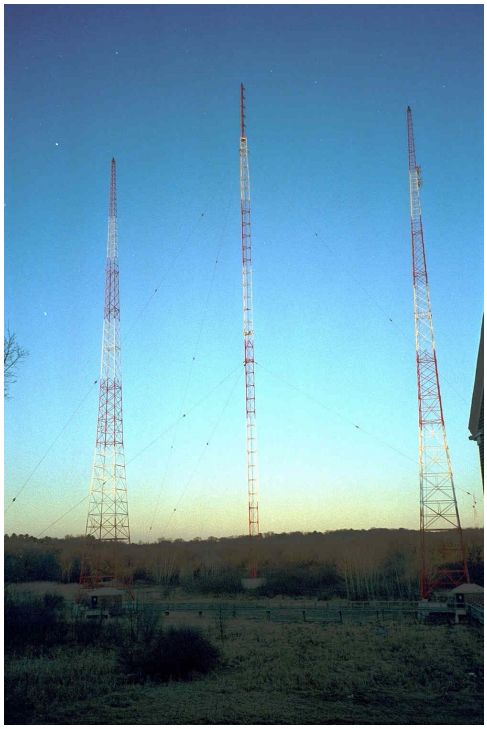
The most common bird species affected are cavity-nesting birds such as northern flickers, western bluebirds, and ash-throated flycatchers. Cavity-nesting owls can also be prone to open-top pipes. Best management practices include identifying any open-top pipe locations and blocking the entrances.

Mitigation Measures for Open-Top Pipes

- Install covers on any new open-top pipes that are greater than 2 inches in diameter.
- Identify any existing open-top pipe locations, cover them with fitted tops, or fill them with cement, dirt, or gravel.
- Contact a LANL EPC-ES biologists (epc_biologist@lanl.gov) if an open-top pipe that could be covered is encountered.

3.6 Communications Towers

The USFWS estimates that communications towers kill 4 million to 5 million birds annually (Shire et al. 2000). Towers supported by guy wires kill significantly more birds than towers that are self-supporting (Gehring et al. 2004).



Two independent mechanisms of bird mortality occur at towers. Fatality can occur when birds, flying in poor visibility, do not see the structure in time to avoid it (i.e., blind collision). Towers that are lighted at night for aviation safety might help reduce bird collisions caused by poor visibility, but they bring about a second mechanism for mortality. During low-cloud-ceiling or foggy conditions, lights on a tower refract off water particles in the air, creating an illuminated area around the tower. Birds tend to remain in the lighted space by the tower, and mortality occurs when they fly into the structure or its guy wires—or even other migrating birds as more and more passing birds force into the relatively small, lighted space. The lights apparently do not attract birds from afar but rather tend to hold birds that pass within the vicinity.

Mitigation Measures for Towers

From the USFWS *Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning*, available online at https://www.fws.gov/sites/default/files/documents/usfws-communication-tower-guidance.pdf last accessed 10/28/2024:

- Any company/applicant/licensee proposing to construct a new communications tower should be strongly encouraged to co-locate the communications equipment on an existing communications tower or other structure (e.g., billboard, water tower, or building mount).
- If co-location is not feasible and a new tower or towers are to be constructed, communications service providers should be strongly encouraged to construct towers no more than 199 feet (60 meters) above ground level using construction techniques that do not require guy wires (e.g., use a lattice structure, monopole). Such towers should be unlighted if Federal Aviation Administration (FAA) regulations permit.
- If constructing multiple towers, providers should consider the cumulative impacts of all towers to migratory birds and threatened and endangered species as well as the impacts of each individual tower.
- If possible, new towers should be sited within existing "antenna farms" (clusters of towers). Towers should not be sited in or near wetlands, on ridgelines, or in other known bird concentration areas (e.g., state or federal refuges, staging areas, rookeries, or large areas of nesting birds), in known migratory or daily movement flyways, or in habitat of threatened or endangered species. Towers should not be sited in areas with a high incidence of fog, mist, and low ceilings.

- If taller (>199 feet [60 meters] above ground level) towers that require lights for aviation safety must be constructed, the minimum amount of pilot warning and obstruction avoidance lighting required by the FAA should be used. Unless otherwise required by the FAA, only white or red continuous or flashing lights should be used at night, and these should be the minimum number, minimum intensity, and minimum number of flashes per minute (longest duration between flashes) allowable by the FAA. Current research indicates that flashing lights attract night-migrating birds at a lower rate than continuous lights (Rebke et al. 2019). Similarly, studies indicate that red and white light attract a lower volume of nocturnally migrating birds than blue or green light (Rebke et al. 2019, Zhao et al. 2020). However, there seems to be no difference in attraction between continuous and blinking red light (Rebke et al. 2019). Additionally, birds' visual sensitivity varies among species and the attraction to light, or phototaxis, in nocturnally migrating birds is still being studied (Burt et al. 2023).
- Tower designs that use guy wires for support that are proposed to be located in (1) known raptor or waterbird concentration areas, (2) daily movement routes, (3) major diurnal migratory bird movement routes, or (4) stopover sites should have daytime visual markers on the wires to prevent collisions by these diurnally moving species. For guidance on markers, see Avian Power Line Interaction Committee reports (APLIC 1994, 2006, and 2012).
- Towers and appending facilities should be sited, designed, and constructed to avoid or minimize habitat loss within and adjacent to the tower "footprint." However, a larger tower footprint is preferable to the use of guy wires in construction. Road access and fencing should be minimized to reduce or prevent habitat fragmentation and disturbance and to reduce above-ground obstacles to birds in flight.
- If significant numbers of breeding, feeding, or roosting birds are known to habitually use the proposed tower construction area, relocation of the tower to an alternate site should be recommended. If relocation is not an option, seasonal restrictions on construction could be advisable to avoid disturbance during periods of high bird activity.
- To reduce the number of towers needed in the future, providers should be encouraged to design new towers structurally and electrically to accommodate the applicant/licensee's antennas and comparable antennas for at least two additional users (minimum of three users for each tower structure), unless this design would require the addition of lights or guy wires to an otherwise unlighted and/or unguyed tower.
- Security lighting for on-ground facilities and equipment should be motion or heat sensitive, down-shielded, and of a minimum intensity to keep light within the boundaries of the site.
- If a tower is constructed or is proposed for construction, USFWS personnel or researchers from the Communications Tower Working Group should be allowed access to the site to evaluate bird use; to conduct dead-bird searches; to place net catchments below the towers but above the ground; and to place radar, global positioning system, infrared, thermal imagery, and acoustical monitoring equipment, as necessary, to assess and verify bird movements and to gain information on the impacts of various tower sizes, configurations, and lighting systems.

- Towers no longer in use or determined to be obsolete should be removed within 12 months of cessation of use.

Any active bird nests encountered regardless of the time of year are protected, including nests built within structures or equipment (including communications towers). Contact a LANL EPC-ES biologist (epc_biologist@lanl.gov) if an active nest is encountered during work activities. Do not disturb active nests.

4 Reporting Violations

If LANL actions are determined by EPC biologists to result in "take," the following series of steps will occur.

1. Information about the event and circumstances leading up to the event will be collected.
2. The information will be presented to Triad legal counsel.
3. Once vetted through Triad legal counsel, the information will be transmitted to the DOE/NNSA action agency.
4. DOE will decide if the event constitutes "take."
5. If deemed "take," DOE will report the event to the U.S. Fish and Wildlife Service.

Foreseeable and preventable take committed by LANL actions could result in various negative impacts to the mission, such as lawsuits, unwanted publicity, or direct action again LANL personnel (fines, jail time).

To avoid extended litigation, some companies are simply pleading to misdemeanors, but if an entity is operating on federal land under a federal lease, then they have agreed to follow federal law and could lose their lease with a misdemeanor pleading. (Christine R. Fritze, professor, University of North Dakota School of Law, available at http://www.youtube.com/watch?v=lyLSfJL5KyE and Rozan, Kristina, *Detailed Discussion on the Migratory Bird Treaty Act*, MICHIGAN STATE UNIVERSITY COLLEGE OF LAW. 2014. https://www.animallaw.info/article/detailed-discussion-migratory-bird-treaty-act).

Although judicial rulings on MBTA violation vary widely and many are dismissed, public knowledge of alleged MBTA violations could damage public trust in LANL and open the Lab to lawsuits from conservation organizations.

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6 Acronyms and Abbreviations

Acronym	Definition
ARAR	applicable or relevant and appropriate requirements
DOE	(U.S.) Department of Energy
EPC-ES	Environmental Stewardship
FAA	Federal Aviation Administration
LANL	Los Alamos National Laboratory
MOU	Memorandum of Understanding
NDAA	National Defense Authorization Act
NEPA	National Environmental Policy Act
NNSA	National Nuclear Security Administration
TA	Technical Area
U.S.	United States
USFWS	U.S. Fish and Wildlife Service

Appendix A Primary International Conventions and Major Domestic Legislation for the Conservation of Migratory Birds and Their Habitats in the United States

Year	Authority
1900	Lacey Act (Amended 1981)
1913	Weeks-McLean Law (Migratory Bird Conservation Act 1913)
1916	Convention for the Protection of Migratory Birds (Canada)
1918	Migratory Bird Treaty Act
1929	Migratory Bird Conservation Act
1934	Migratory Bird Hunting and Conservation Stamp Act (Duck Stamp Act)
1936	Migratory Bird Convention with Mexico (amended 1972)
1940	Pan American (or Western Hemisphere) Convention
1956	Waterfowl Depredations Prevention Act
1961	Wetlands Loan Act of 1961 (Amended 1969, 1976)
1972	Migratory Bird Convention with Japan
1972	Convention on Wetlands of International Importance Especially as Waterfowl Habitats
1973	Endangered Species Act
1973	Convention on International Trade in Endangered Species of Wild Fauna and Flora
1976	Migratory Bird Convention with the Union of Soviet Socialist Republics
1978	Antarctic Conservation Act
1980	Fish and Wildlife Conservation Act (Amended 1988, 1989)
1982	Convention on Conservation of Antarctic Living Marine Resources
1986	Emergency Wetlands Resources Act
1987	Driftnet Impact Monitoring, Assessment, and Control Act of 1987
1989	North American Wetlands Conservation Act
1990	Coastal Wetlands Planning, Protection, and Restoration Act
1992	Wild Bird Conservation Act
2000	Neotropical Migratory Bird Conservation Act
2001	Responsibilities of Federal Agencies to Protect Migratory Birds (Executive Order 13186)

Appendix B Executive Order 13186 – linked document

Federal Register
Vol. 66, No. 11
Wednesday, January 17, 2001

Presidential Documents

Title 3—

The President

Executive Order 13186 of January 10, 2001

Responsibilities of Federal Agencies To Protect Migratory Birds

By the authority vested in me as President by the Constitution and the laws of the United States of America, and in furtherance of the purposes of the migratory bird conventions, the Migratory Bird Treaty Act (16 U.S.C. 703–711), the Bald and Golden Eagle Protection Acts (16 U.S.C. 668–668d), the Fish and Wildlife Coordination Act (16 U.S.C. 661–666c), the Endangered Species Act of 1973 (16 U.S.C. 1531–1544), the National Environmental Policy Act of 1969 (42 U.S.C. 4321–4347), and other pertinent statutes, it is hereby ordered as follows:

Section 1. *Policy.* Migratory birds are of great ecological and economic value to this country and to other countries. They contribute to biological diversity and bring tremendous enjoyment to millions of Americans who study, watch, feed, or hunt these birds throughout the United States and other countries. The United States has recognized the critical importance of this shared resource by ratifying international, bilateral conventions for the conservation of migratory birds. Such conventions include the Convention for the Protection of Migratory Birds with Great Britain on behalf of Canada 1916, the Convention for the Protection of Migratory Birds and Game Mammals-Mexico 1936, the Convention for the Protection of Birds and Their Environment- Japan 1972, and the Convention for the Conservation of Migratory Birds and Their Environment-Union of Soviet Socialist Republics 1978.

These migratory bird conventions impose substantive obligations on the United States for the conservation of migratory birds and their habitats, and through the Migratory Bird Treaty Act (Act), the United States has implemented these migratory bird conventions with respect to the United States. This Executive Order directs executive departments and agencies to take certain actions to further implement the Act.

Sec. 2. *Definitions.* For purposes of this order:

(a) "Take" means take as defined in 50 C.F.R. 10.12, and includes both "intentional" and "unintentional" take.

(b) "Intentional take" means take that is the purpose of the activity in question.

(c) "Unintentional take" means take that results from, but is not the purpose of, the activity in question.

(d) "Migratory bird" means any bird listed in 50 C.F.R. 10.13.

(e) "Migratory bird resources" means migratory birds and the habitats upon which they depend.

(f) "Migratory bird convention" means, collectively, the bilateral conventions (with Great Britain/Canada, Mexico, Japan, and Russia) for the conservation of migratory bird resources.

(g) "Federal agency" means an executive department or agency, but does not include independent establishments as defined by 5 U.S.C. 104.

(h) "Action" means a program, activity, project, official policy (such as a rule or regulation), or formal plan directly carried out by a Federal agency. Each Federal agency will further define what the term "action" means with respect to its own authorities and what programs should be included

Appendix C MOU between DOE and the USFWS Regarding Executive Order 13186 – linked document

MEMORANDUM OF UNDERSTANDING
between
THE UNITED STATES DEPARTMENT OF ENERGY
and
THE UNITED STATES FISH AND WILDLIFE SERVICE

Regarding Implementation of Executive Order 13186,
"Responsibilities of Federal Agencies to Protect Migratory Birds"

Prepared by:

United States Department of Energy
and
United States Fish and Wildlife Service

September 12, 2013