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Title: Winter and Breeding Bird Surveys at Los Alamos National Laboratory
Progress Report for 2010 to 2012

Author(s): Hathcock, Charles D.
Keller, David C.

Intended for: Report
Environmental Programs



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Table of Contents

Table of Contents	2
Executive Summary.....	3
Introduction	3
Laws and Restrictions.....	3
Methods.....	4
Field Methods	4
Statistical Methods	5
Results and Discussion	7
Management Recommendations	15
Acknowledgements.....	15
References	15
Appendix 1 Executive Order 13186	17
Appendix 2. Memorandum of Understanding.....	21
Appendix 3. Survey Form	26

Executive Summary

Los Alamos National Security, LLC (LANS) biologists on the Resources Management Team at Los Alamos National Laboratory (LANL) initiated a multi-year monitoring program for migratory birds in Fiscal Year (FY) 2011 to implement the Biological Resources Management Plan and to comply with Federal laws, Executive Orders, and regulations related to migratory birds. The objective of this on-going study is to monitor patterns and trends of bird abundance and richness over time at LANL. LANS biologists completed a second year of surveys in the winter of 2011 and the summer of 2012. Four habitat types were surveyed for this project and they included 1) mixed conifer forest, 2) ponderosa pine forest, 3) pinyon-juniper woodland and 4) riparian/wetland. Transects were 2.0 to 2.5 kilometers (km) in length and contained nine survey points spaced approximately 250 meters (m) apart. Winter surveys took place in each of the four habitat types in December, January, and February. The summer breeding bird surveys were conducted in each of the four habitat types in May, June, and July.

Over 3,700 birds representing 95 species were recorded during the FY 2012 surveys with 40 species detected during the winter bird surveys and 76 species detected during the summer breeding bird surveys. Of the 95 species detected during this project, 92 are protected under the Migratory Bird Treaty Act. Additionally, six of the species detected are on the Birds of Conservation Concern Region 16 list, the Southern Rockies/Colorado Plateau region (USFWS 2008). Another conservation tool used in migratory bird management is the Birder's Conservation Handbook (Wells 2007), which lists the top 100 birds most at risk in North America. Four species detected during this study are on the top 100 list.

Introduction

As part of implementing LANL's Biological Resources Management Plan (LANL 2007; BRMP), a project to monitor avian use of four major habitat types at LANL during the winter and summer months began in the winter of 2010 (Hathcock et al 2011). Surveys were continued in winter 2011 and summer 2012. LANS biologists used standard point count methodology to record avian density and diversity along transects in these four habitat types. Winter surveys provide information about the presence or absence of migratory bird species using LANL as wintering grounds. Summer surveys provide information about what migratory birds are breeding at LANL. These surveys are most valuable when they are conducted over multiple years, as they provide trend data, which can be correlated with regional and national changes in bird populations, changes in the natural environment at LANL, and with LANL operations.

Laws and Restrictions

The Migratory Bird Treaty Act of 1918 (MBTA) is the primary driver for protection of migratory birds in the United States. The original 1918 statute implemented the 1916 Convention between the U.S. and Great Britain (for Canada) for the protection of migratory birds. 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). Under the MBTA, migratory birds are defined as all native birds in the U.S., except those non-migratory species such as quail and turkey that are managed by individual states.

In 2001, Executive Order 13186 *Responsibilities of Federal Agencies To Protect Migratory Birds* was signed (Appendix 1). Under Executive Order 13186, the U.S. Fish and Wildlife Service (USFWS) issued Director's Order 172 on Service Guidance to Conserve Migratory Birds. Identifying goals for federal program activities, the USFWS highlighted the need to identify means and measures to avoid and/or minimize potential for take of migratory birds, eggs, and active nests.

In support of Executive Order 13186, on August 1, 2006, a Memorandum of Understanding (MOU) was finalized between the USFWS and the Department of Energy (DOE) regarding the implementation of the

MBTA at DOE facilities. Under the MOU, subject to the availability of appropriations and in harmony with the DOE/National Nuclear Security Administration (NNSA) missions and capabilities, the DOE agreed to several actions. The full MOU can be found in Appendix 2.

Section **6b** of the MOU drives LANL's monitoring activities under the BRMP. Additionally, the *Migratory Bird Best Management Practices Source Document for Los Alamos National Laboratory, Revised November 2011* (LANL 2011), addresses how LANL mitigates impacts to migratory birds at an institutional level and also this plan identifies the need to monitor migratory birds to detect trends in migratory bird populations at the Laboratory.

Methods

Field Methods

To monitor patterns of bird abundance and richness, and population trends, in habitats found at LANL, point count surveys along a transect were chosen as the most rigorous method for the fewest number of person hours necessary to complete the job. The surveys were conducted along two replicate transects for each of four habitat types based on the 1/4 hectare physiognomic cover classes in the LANL land cover map (McKown et al 2003) and other habitat surveys (riparian/wetland is not well identified in the land cover map). The four cover types to be surveyed for this project are mixed conifer forest (MC), ponderosa pine forest (PIPO), pinyon-juniper woodland (PJ), and riparian/wetland (Rip/Wet) (Figure 1). Transects are approximately 2.0 to 2.5 km in length and allow for 9 survey points spaced approximately 250 meters apart. These survey routes and points may change over time due to construction activities or access constraints. The Sandia riparian/wetland route is too short to fit 9 survey points so it will be surveyed twice per survey effort. This is a type of pseudo-replication, but it is unavoidable because there are not any reaches of riparian/wetlands long enough elsewhere at LANL to get two full replicates.

The time frame for winter surveys is December 15 – March 15. Ideally the winter surveys should take place in the 3rd week of December, January, and February. There will be a total of 3 surveys per transect for the winter effort. The time between surveys should not exceed 4 weeks nor should they be run closer than 2 weeks apart. Winter surveys should be conducted between 0.5 hours after sunrise and 0.5 hours before sunset, but the mornings should be preferred.

The time frame for breeding bird surveys is May 1st – August 15. Ideally the breeding bird surveys should take place in the 2nd week of May, June, and July. There will be a total of 3 surveys per transect for the summer breeding bird survey effort. The June surveys are the most important for the breeding bird surveys. The time between surveys should not exceed four weeks nor should they be run closer than 2 weeks apart. Surveys should be conducted between 0.5 hours before sunrise to 4 hours after sunrise.

For each survey effort (1-3) the transect to be surveyed will be selected randomly until all eight are finished for that particular effort.

The following steps apply to both winter and breeding bird surveys:

- Each survey consists of nine points along the transect, 250 meters apart
- At each point of the survey the surveyor will look and listen for 5 minutes, noting any birds encountered. The distance for observations is considered as an “unlimited-distance circular plot”; however, noting the distance to each bird out to 100 meters should be done. Care is needed to ensure that individual birds are not re-counted from point to point. Use a range finder when possible for measuring the distance.

- While walking between points, any birds encountered that have not otherwise been counted from a previous point or (after reviewing notes) future point should also be noted. It should not be the intent for the surveyor to dawdle between points looking for additional birds.
- Surveys should not be conducted during rain or snow events or wind greater than 15 mph (25 kph).
- Any bird(s) encountered will be recorded on the attached data sheet. For each observation, the minimum data collected should be: point number, time, species, number of individuals, and distance from the point.
- The “NOTES” section should be used for indicating any potentially important aspects of the survey that may affect the data. Examples include: excess noise from nearby equipment and vehicles or aircraft that make it hard to hear the birds. Also, noting other wildlife or evidence of wildlife that could be used for further reference is worth writing down.

Statistical Methods

Summary statistics are compiled annually to look at trends in species abundance by season and habitat type. To compare abundances between years, the “birds per hour” was calculated for each season and habitat type. This was calculated by taking the total number of birds per habitat type by season and dividing by the total number of minutes surveyed. Then this number is multiplied by 60 to get the number of birds per hour. Since replicates were added in the winter of 2011, this measure can account for the difference from past years where a single replicate was used in order to make all the data comparable.

The Shannon’s diversity index (H) (Shannon 1948) will be used to examine species diversity by season and habitat type. This diversity index is a popular measure in ecology that is used to describe both the species richness and relative abundance of each species in a community. The Shannon’s H can range from 0.0 to 4.6, where larger values represent increasing diversity. H is calculated using the following formula:

$$H = -1 \sum (p_i (\ln (p_i)))$$

Where p_i is a percentage value of a specific species in the total population and \ln is the natural log.

Another useful measure is the Shannon’s equitability estimate (E_H) which is a measure of evenness in the population. This measure ranges from 0 to 1 where one represents a completely even community in which all of the species’ abundances are equal. The Shannon’s E_H is calculated using the following formula:

$$E_H = H/\ln S$$

Where S is species count, \ln is the natural log, and H is the Shannon’s diversity index.

The values for each Shannon statistic are averaged to obtain an overall value for each habitat type by season. The data are maintained by LANS biologists.

Overall Transects for Winter and Breeding Bird Surveys at Los Alamos National Laboratory

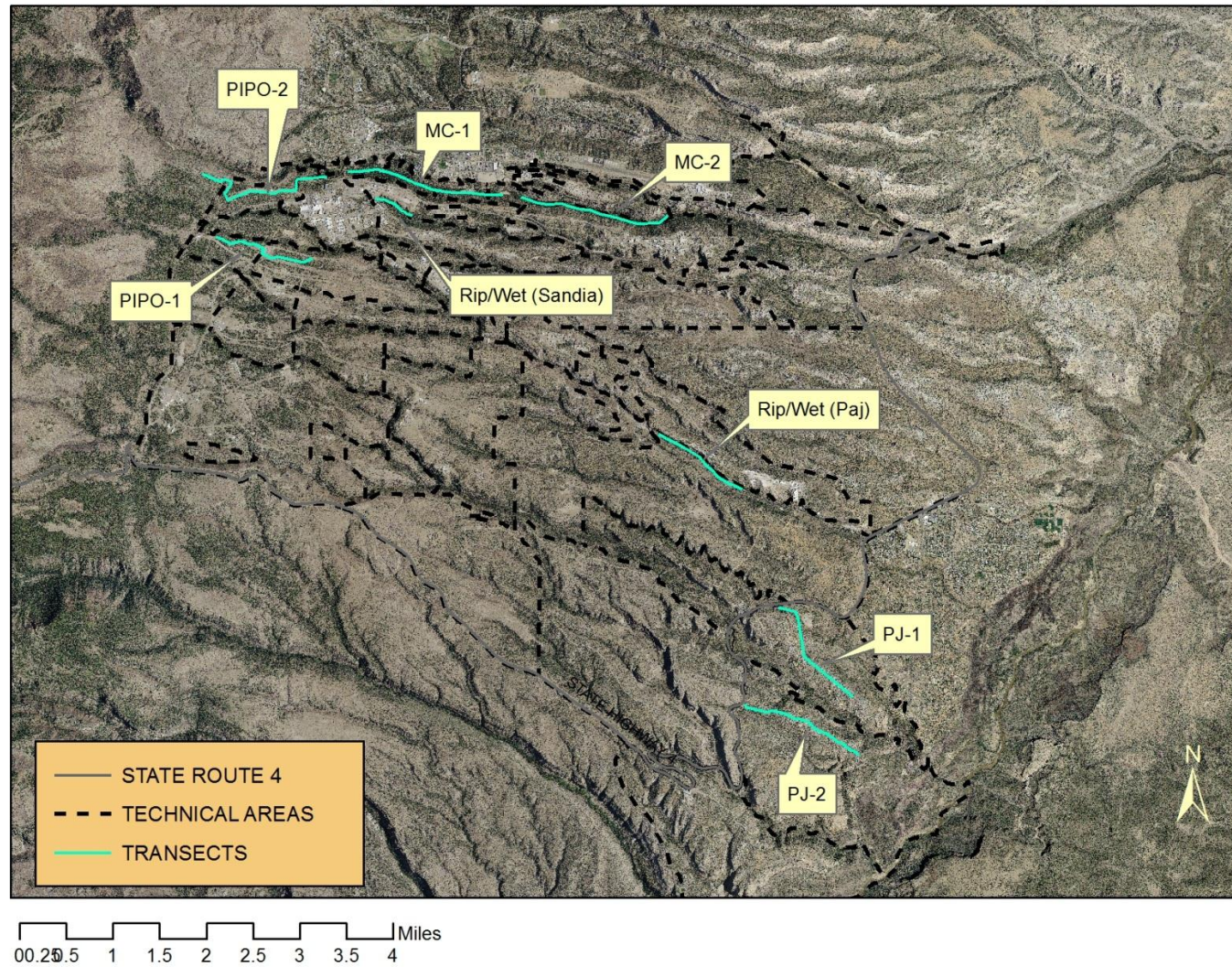


Figure 1. Transects used in the Winter and Summer Bird Surveys. MC: Mixed Conifer Forest, PIPO: Ponderosa Pine Forest, PJ: Pinyon-Juniper Woodland, Rip/Wet: Riparian / Wetland.

Results and Discussion

Eight winter surveys were conducted at the four habitat types (two transects per habitat type) between December 2011 and February 2012, and eight summer breeding bird surveys were conducted at the four habitat types between May 2012 and July 2012.

During the winter 2011 – summer 2012 effort, over 3,700 birds representing 95 species were recorded, with 40 species detected during the winter bird surveys and 76 species detected during the summer breeding bird surveys. A full account of the project since its beginning in 2010 is detailed in Table 1. The ten most common species in the winter 2011 surveys were the Sandhill Crane, Dark-eyed Junco, Pygmy Nuthatch, Common Raven, House Finch, Red Crossbill, White-breasted Nuthatch, Mountain Chickadee, American Crow, and Steller's Jay. The ten most common species in the summer 2012 surveys were the Violet-green Swallow, Western Wood-Pewee, House Finch, Pygmy Nuthatch, Spotted Towhee, Mourning Dove, Ash-throated Flycatcher, Lesser Goldfinch, American Robin, and Plumbeous Vireo.

One Willow Flycatcher was detected in June 2011 in the riparian/wetland transect in the Pajarito wetlands. There are five recognized subspecies of the Willow Flycatcher, each of which has a distinct breeding range (USFWS 1995 and Browning 1993). Three of these five could occur at LANL during migration, including the federally endangered subspecies, the Southwestern Willow Flycatcher. The subspecies of the single Willow Flycatcher detected during this project is not certain.

In addition to supporting federally protected species like the Southwestern Willow Flycatcher, LANL lands are important for understanding migratory bird conservation. Of the 95 species detected during this project, 92 were protected under the MBTA. Additionally, six of the species detected were on the Birds of Conservation Concern Region 16 list, the Southern Rockies/Colorado Plateau region (USFWS 2008). Those six species were the Flammulated Owl, Willow Flycatcher, Pinyon Jay, Juniper Titmouse, Grace's Warbler, and Cassin's Finch. The primary statutory authority for Birds of Conservation Concern is the Fish and Wildlife Conservation Act of 1980. Another conservation tool used in migratory bird management is the Birder's Conservation Handbook (Wells 2007), which lists the top 100 birds most at risk in North America. Four species detected during this study were on the top 100 list. These four species were the Rufous Hummingbird, Pinyon jay, Virginia's Warbler, and Grace's Warbler. Several other species in the top 100 occur or potentially occur at LANL, but have not yet been detected during this project. They include the Olive-sided Flycatcher, Mexican Spotted Owl, Gray Vireo, Dusky Grouse, Ferruginous Hawk, Brewer's Sparrow, and Bendire's Thrasher

Table 1. Total Number of Birds Detected by Season

Common Name	Bird Type	2010 Winter	2011 Summer	2011 Winter*	2012 Summer*	Grand Total	Percent of Total
Blackbirds							1.85%
Brown-headed Cowbird		--	19	--	25	44	
European Starling		--	--	11	18	29	
Great-tailed Grackle		--	19	--	--	19	
Red-winged Blackbird		--	--	--	13	13	
Bushtit							0.83%
Bushtit		20	25	--	2	47	
Chickadee, Titmice							3.55%
Mountain Chickadee		13	16	54	28	111	
Juniper Titmouse		22	21	21	26	90	
Corvids							8.45%
American Crow		3	4	45	--	52	
Clark's Nutcracker		1	--	4	1	6	
Common Raven		71	32	116	53	272	
Pinyon Jay		--	--	1	1	2	
Steller's Jay		2	4	41	11	58	
Western Scrub-Jay		8	21	20	40	89	
Cranes							7.35%
Sandhill Crane		12	--	405	--	417	
Doves							2.54%
Eurasian Collared-dove		--	--	--	5	5	
Mourning Dove		--	29	1	103	133	
White-winged Dove		--	4	--	2	6	
Finches							10.34%
Cassin's Finch		--	--	--	1	1	
House Finch		9	62	93	144	308	
Lesser Goldfinch		--	62	1	83	146	
Pine Siskin		1	25	1	6	33	
Red Crossbill		--	7	74	17	98	
Flycatchers							7.85%
Ash-throated Flycatcher		--	50	--	86	136	
Cordilleran Flycatcher		--	3	--	9	12	
Dusky Flycatcher		--	1	--	--	1	
Gray Flycatcher		--	18	--	8	26	
Hammond's Flycatcher		--	5	--	27	32	
Say's Phoebe		--	5	--	8	13	
Western Kingbird		--	7	--	5	12	
Western Wood-Pewee		--	54	--	158	212	
Willow Flycatcher		--	1	--	--	1	
Geese							0.10%
Canada Goose		--	--	--	6	6	
Gnatcatchers							0.25%
Blue-gray Gnatcatcher		--	6	--	8	14	

Common Name	Bird Type	2010 Winter	2011 Summer	2011 Winter*	2012 Summer*	Grand Total	Percent of Total
Grosbeaks							4.13%
Black-headed Grosbeak		--	13	--	2	15	
Blue Grosbeak		--	4	--	1	5	
Evening Grosbeak		20	181	--	13	214	
Hawks, falcons							0.35%
Cooper's Hawk		1	--	--	1	2	
Red-tailed Hawk		1	--	5	8	14	
Sharp-shinned Hawk		--	--	1	--	1	
American Kestrel		--	1	1	1	3	
Hummingbirds							2.10%
Black-chinned Hummingbird		--	7	--	2	9	
Broad-tailed Hummingbird		--	39	--	42	81	
Rufous Hummingbird		--	--	--	2	2	
Unknown Hummingbird		--	--	--	26	26	
Kinglets							0.18%
Golden-crowned Kinglet		2	--	--	--	2	
Ruby-crowned Kinglet		--	7	1	--	8	
Mockingbird							0.03%
Northern Mockingbird		--	1	--	1	2	
Nightjar							0.02%
Common Nighthawk		--	1	--	--	1	
Nuthatches							10.71%
Pygmy Nuthatch		52	14	239	136	441	
Red-breasted Nuthatch		--	3	--	2	5	
White-breasted Nuthatch		17	14	74	45	150	
Brown Creeper		--	--	7	4	11	
Orioles							0.02%
Bullock's Oriole		--	1	--	--	1	
Owls							0.09%
Flammulated Owl		--	--	--	4	4	
Northern Saw-whet Owl		--	1	--	--	1	
Rails							0.05%
Virginia Rail		--	--	2	1	3	
Sparrows							15.30%
Chipping Sparrow		--	32	--	38	70	
Dark-eyed Junco		157	15	341	18	531	
House Sparrow		--	--	--	--	1	
Indigo Bunting		--	--	--	1	1	
Lazuli Bunting		--	--	--	2	2	
Lincoln's Sparrow		--	--	--	1	1	
Song Sparrow		--	1	2	18	21	
White-crowned Sparrow		9	1	27	--	37	
Violet-green Swallow		--	45	--	159	204	
Swifts							0.74%
White-throated Swift		--	--	--	42	42	

Common Name	Bird Type	2010 Winter	2011 Summer	2011 Winter*	2012 Summer*	Grand Total	Percent of Total
Tanagers							0.30%
Hepatic Tanager		--	1	--	--	1	
Summer Tanager		--	1	--	--	1	
Western Tanager		--	9	--	6	15	
Thrushes							8.24%
American Robin		72	49	2	74	197	
Hermit Thrush		--	1	--	8	9	
Townsend's Solitaire		18	2	4	1	25	
Western Bluebird		114	45	14	63	236	
Towhees							4.52%
Canyon Towhee		3	8	7	8	26	
Green-tailed Towhee		--	10	--	11	21	
Spotted Towhee		2	70	6	131	209	
Vireos							2.31%
Plumbeous Vireo		--	35	--	65	100	
Warbling Vireo		--	16	--	15	31	
Vultures							0.48%
Turkey Vulture		--	--	--	27	27	
Warblers							2.81%
Audubon's Warbler		--	6	--	36	42	
Grace's Warbler		--	--	--	4	4	
MacGillivray's Warbler		--	7	--	1	8	
Virginia's Warbler		--	45	--	57	102	
Wilson's Warbler		--	1	--	--	1	
Yellow Warbler		--	1	--	--	1	
Yellow-breasted Chat		--	1	--	--	1	
Woodpeckers							3.09%
Acorn Woodpecker		10	10	7	18	45	
Downy Woodpecker		2	5	--	--	7	
Hairy Woodpecker		4	9	15	17	45	
Red-shafted Flicker		10	19	18	25	72	
Williamson's Sapsucker		--	2	2	2	6	
Wrens							1.40%
Bewick's Wren		--	3	--	16	19	
Canyon Wren		--	8	1	12	21	
House Wren		--	3	--	15	18	
Rock Wren		--	3	7	11	21	
Grand Total		656	1251	1671	2087	5667	

* Transect replicates were added in Winter 2011 through Summer 2012

The bird surveys were analyzed to determine the “birds per hour” for each habitat type and season (Figures 2 and 3). Between years, the birds per hour increased slightly for all four habitat types in the winter and decreased slightly for all four habitat types in the summer. Summer decreases were also noted during the bird banding operations at LANL and elsewhere in 2011, with record low numbers of birds being captured (Hathcock et al 2012). The years with two transects will be reported using the median with the range of the two transects next to it in parentheses with the original transect on the left and the new transect on right.

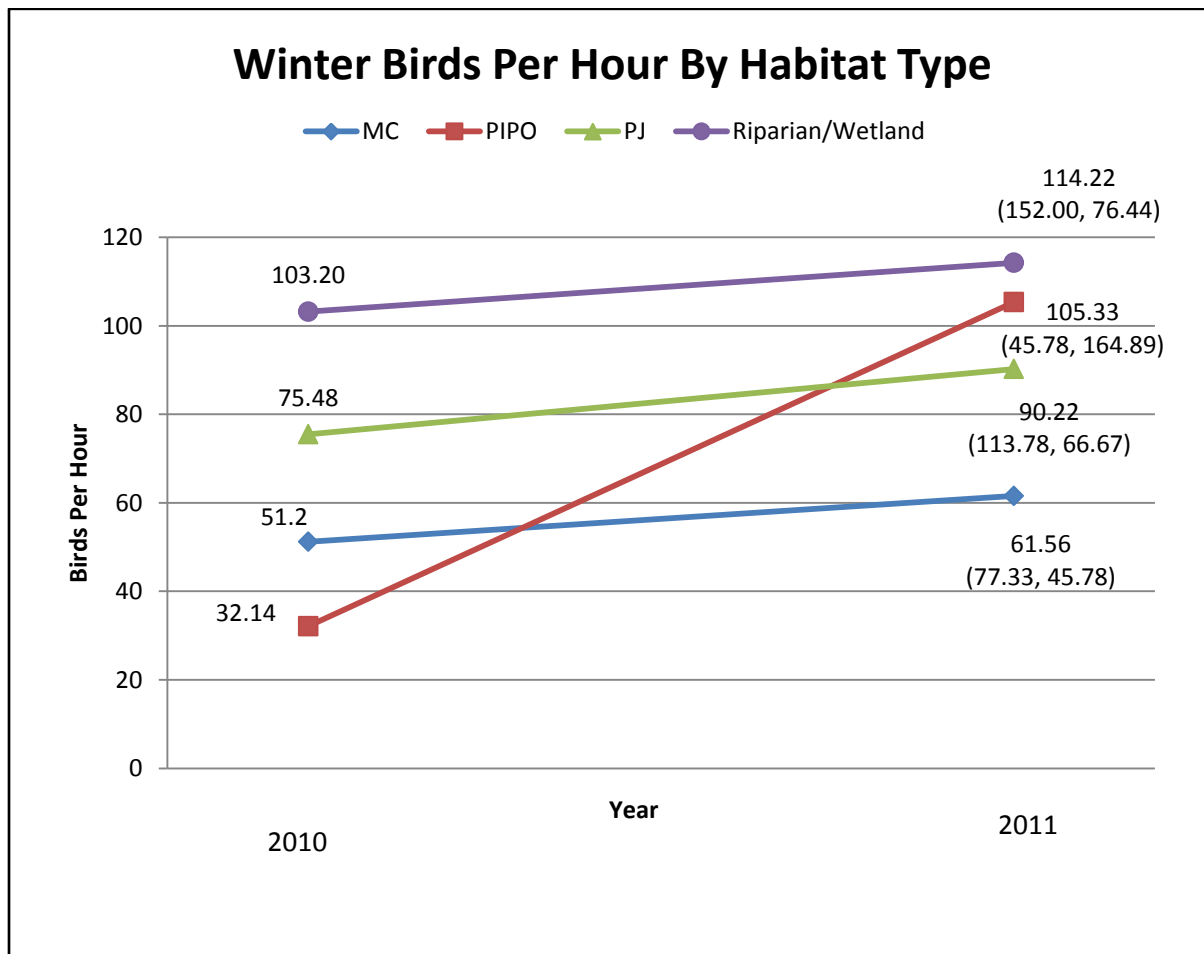


Figure 2. Winter Birds per Hour from 2010 to 2011 By Habitat Type. MC: Mixed Conifer Forest, PIPO: Ponderosa Pine Forest, PJ: Pinyon-Juniper Woodland.

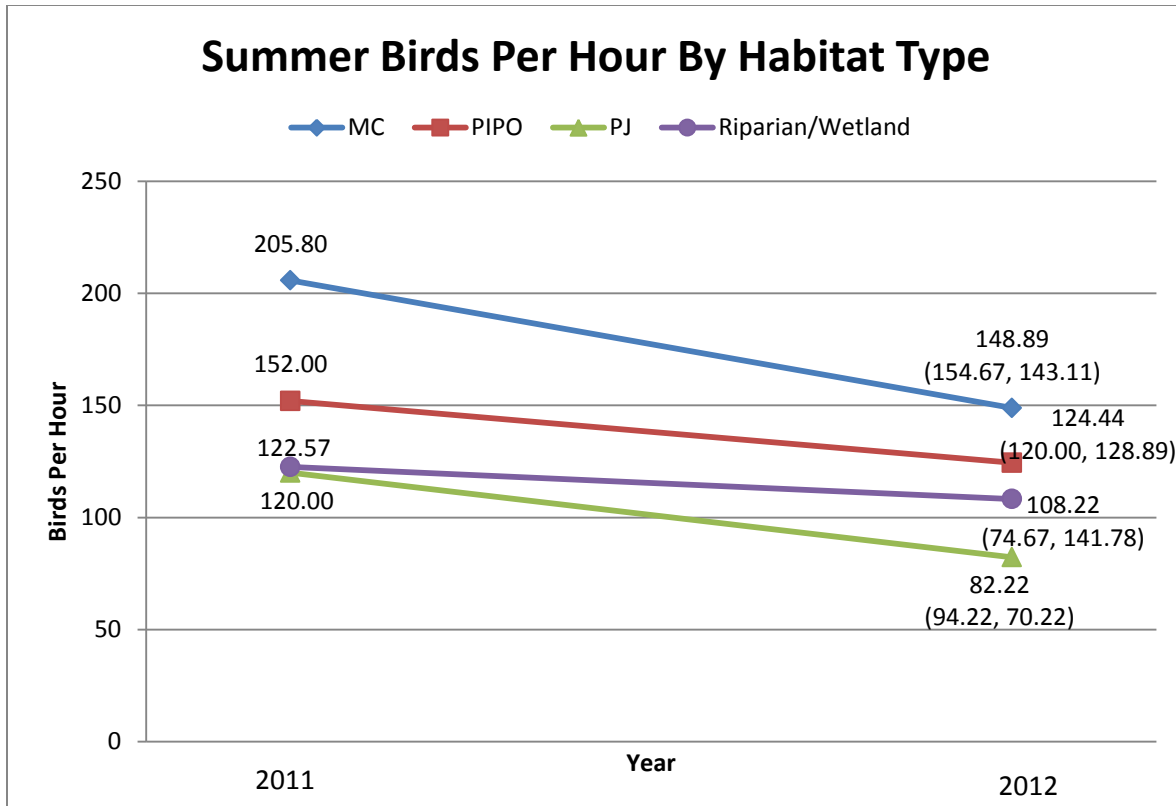


Figure 3. Summer Birds per Hour from 2011 to 2012 By Habitat Type. MC: Mixed Conifer Forest, PIPO: Ponderosa Pine Forest, PJ: Pinyon-Juniper Woodland.

LANS biologists further analyzed these birds by dividing them into feeding guilds based on a species' primary diet type as defined by the online resources at the Cornell Lab of Ornithology. Hawks and hummingbirds were not included in this analysis since they were recorded in much lower numbers. Birds were grouped into three feeding guilds: insectivores, granivores, and omnivores. These groups were then graphed out by habitat type by year (Figures 4 and 5). The trends were similar to Figures 2 and 3; however, there was a spike in granivores in winter 2011. Not unexpected, there were also many more insectivores in the summer and granivores in the winter (Figure 6).

The winter bird surveys showed a large increase in granivores in winter 2011 compared to winter 2010. This was due to large flocks of Sandhill Cranes that were recorded during winter 2011 surveys. The cranes generally don't use LANL as habitat; however, they were flying over LANL during the surveys and were recorded. The summer surveys showed decreases by all three feeding guilds.

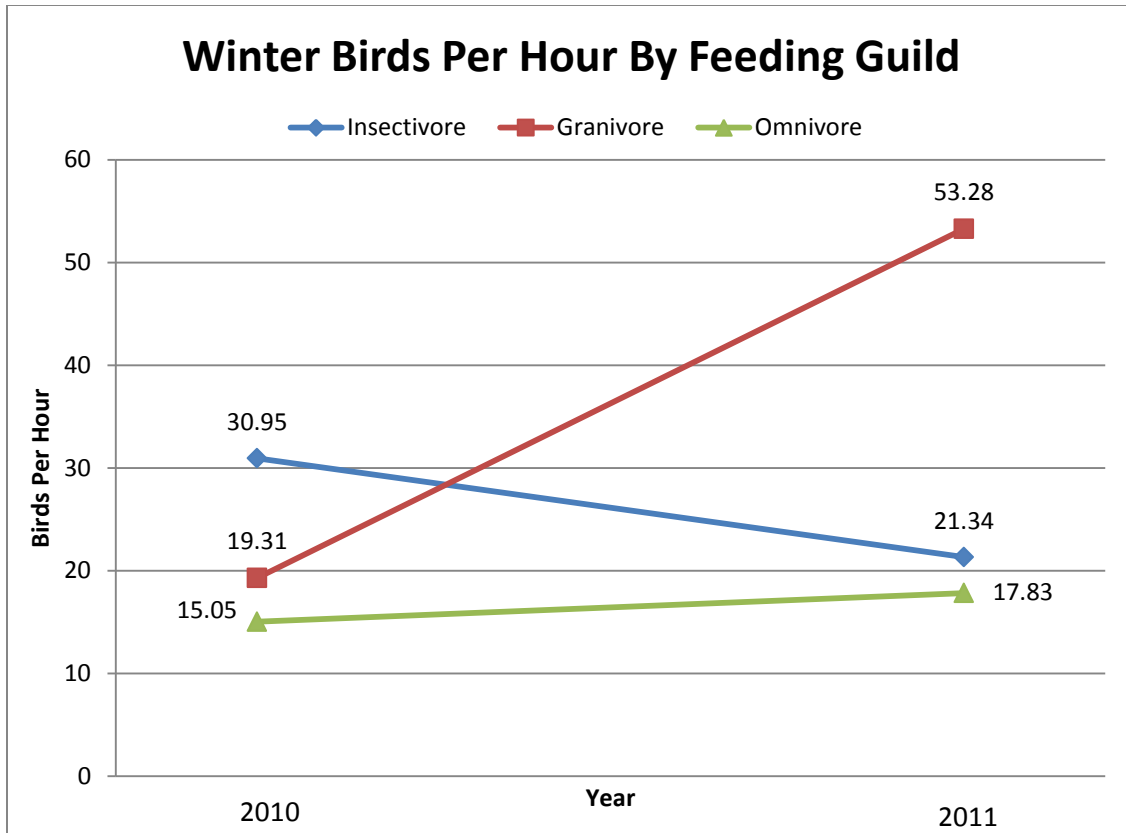


Figure 4. Winter Birds per Hour from 2010 to 2011 By Feeding Guild

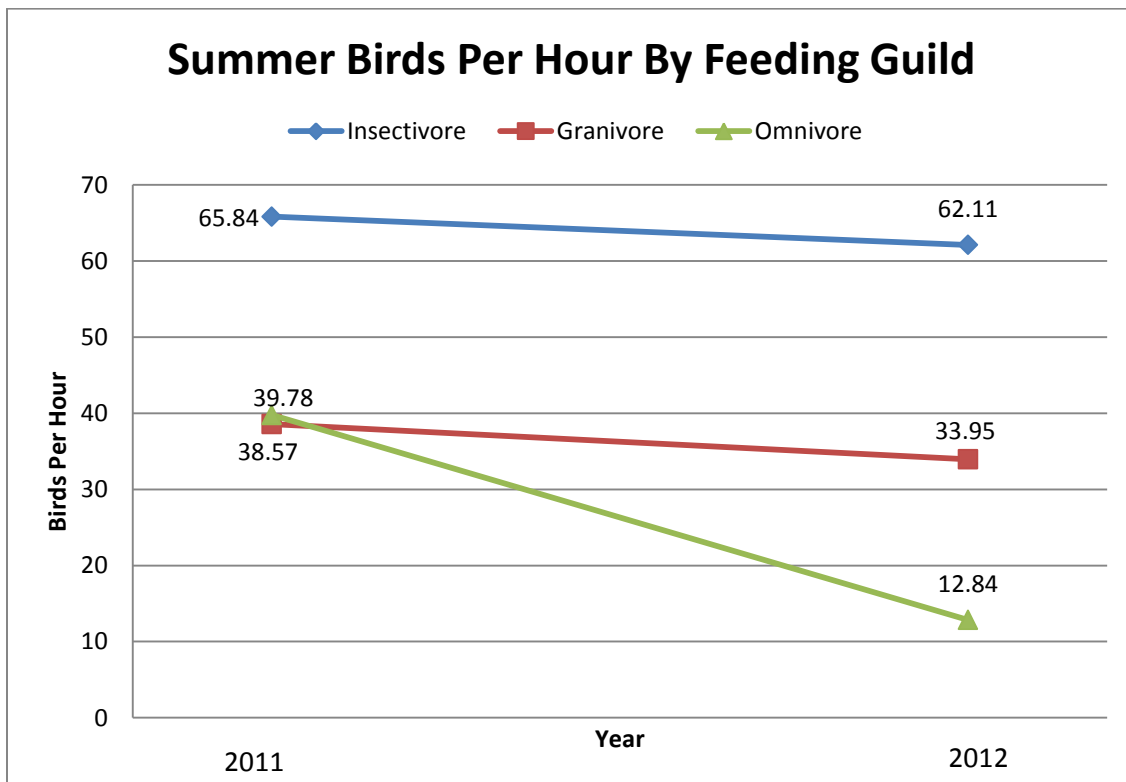


Figure 5. Summer Birds per Hour from 2011 to 2012 By Feeding Guild

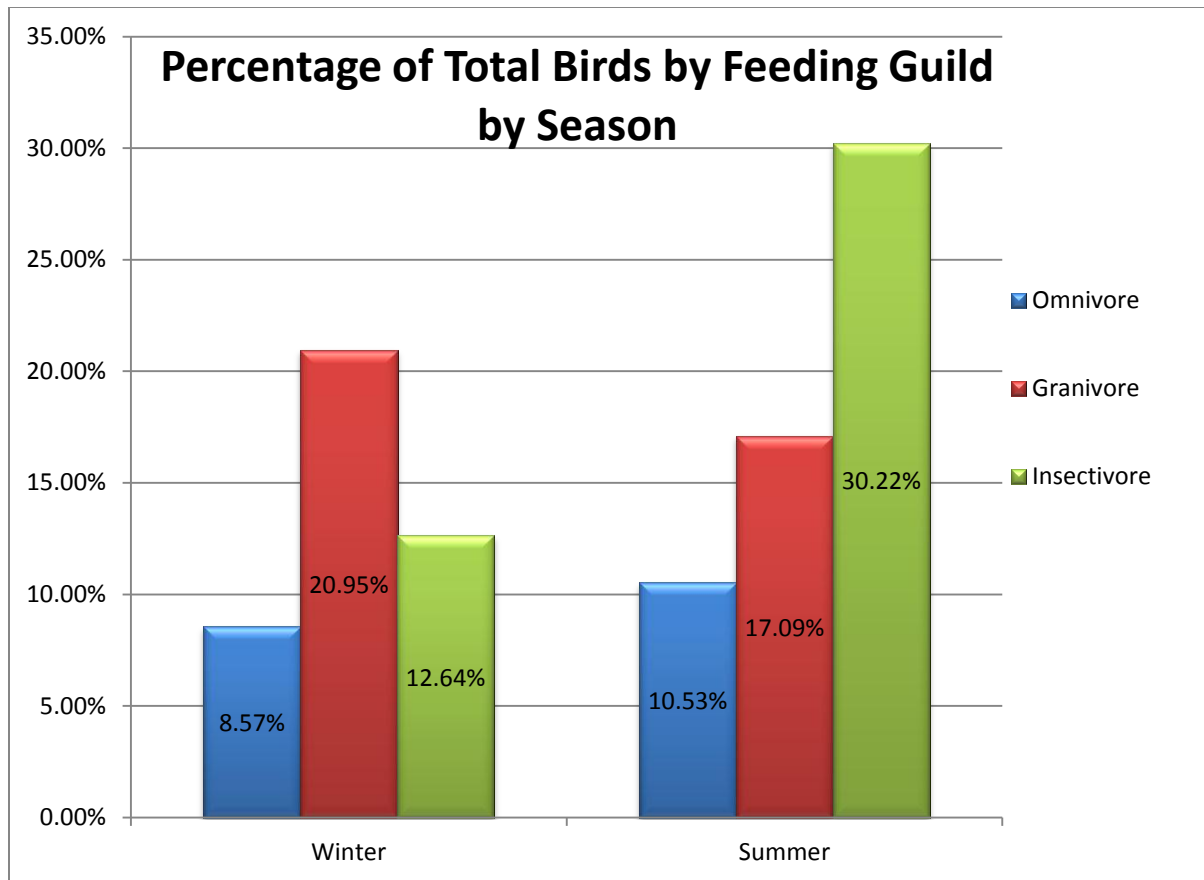


Figure 6. The Percentage of Total Birds for All Years in the Top Three Feeding Guilds by Season.

The Shannon diversity indices are detailed in Table 2. The mixed conifer transect showed the largest diversity of bird species in both the winter 2011 and summer 2012 surveys. The lowest species diversity in the winter 2011 and summer 2012 surveys was in the pinyon-juniper habitat. The Shannon's diversity indices showed a much larger diversity of birds in the summer months than in the winter months. This is expected because there are many more bird species that breed than over-winter in northern NM. The evenness of the bird communities was similar across seasons and habitats (Table 2).

Table 2. Shannon Values by Season and Transect.

Survey	Transect Name	Diversity Index (H) 2010-11	Diversity Index (H) 2011-12		Equitability Index (E_H) 2010-11	Equitability Index (E_H) 2011-12
Winter	MC-1	2.32	2.29		0.82	0.81
Winter	MC-2	--	2.03		--	0.79
Winter	PIPO-1	1.96	1.63		0.79	0.78
Winter	PIPO-2	--	2.16		--	0.79
Winter	PJ-1	2.04	1.22		0.74	0.45
Winter	PJ-2	--	1.42		--	0.61

Winter	Rip/Wet-1	2.11	1.41		0.70	0.47
Winter	Rip/Wet-2	--	2.29		--	0.77
Summer	MC-1	3.38	3.29		0.87	0.89
Summer	MC-2	--	3.01		--	0.88
Summer	PIPO-1	3.09	3.16		0.82	0.88
Summer	PIPO-2	--	3.11		--	0.85
Summer	PJ-1	3.20	2.80		0.89	0.83
Summer	PJ-2	--	2.80		--	0.83
Summer	Rip/Wet-1	3.04	2.99		0.81	0.86
Summer	Rip/Wet-2	--	3.21		--	0.85

MC: Mixed Conifer Forest, PIPO: Ponderosa Pine Forest, PJ: Pinyon-Juniper Woodland, Rip/Wet: Riparian / Wetland.

Management Recommendations

Habitat loss is the largest impact to migratory birds across the United States (USFWS 1999) and continued winter and summer bird surveys will provide a long-term dataset on the ecological health of LANL's avifauna, contribute to meeting DOE's commitments under the MBTA and the MOU, and allow the Laboratory to contribute to national goals in avian conservation monitoring and research. Implementation of the BRMP and the MOU on migratory birds through continued winter and summer bird surveys is inexpensive and provides data that can be tracked annually. In addition to compliance drivers, LANL is beginning a Natural Resource Damage Assessment under the Comprehensive Environmental Response, Compensation, and Liability Act. The damage assessment will determine if any natural resources have been injured because of historical or current work at LANL and ecological data provided by annual bird surveys are an important tool in the damage assessment process.

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Appendix 1 Executive Order 13186

Presidential Documents

Executive Order 13186 -- Responsibilities of Federal Agencies To Protect Migratory Birds

January 10, 2001

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 in the agency-specific Memoranda of Understanding required by this Order. Actions delegated to or assumed by nonfederal entities, or carried out by nonfederal entities with Federal assistance, are not subject to this Order. Such actions, however, continue to be subject to the Migratory Bird Treaty Act.
- (i) "Species of concern" refers to those species listed in the periodic report "Migratory Nongame Birds of Management Concern in the United States," priority migratory bird species as

documented by established plans (such as Bird Conservation Regions in the North American Bird Conservation Initiative or Partners in Flight physiographic areas), and those species listed in 50 C.F.R. 17.11.

Sec. 3. Federal Agency Responsibilities. (a) Each Federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations is directed to develop and implement, within 2 years, a Memorandum of Understanding (MOU) with the Fish and Wildlife Service (Service) that shall promote the conservation of migratory bird populations.

(b) In coordination with affected Federal agencies, the Service shall develop a schedule for completion of the MOUs within 180 days of the date of this Order. The schedule shall give priority to completing the MOUs with agencies having the most substantive impacts on migratory birds.

(c) Each MOU shall establish protocols for implementation of the MOU and for reporting accomplishments. These protocols may be incorporated into existing actions; however, the MOU shall recognize that the agency may not be able to implement some elements of the MOU until such time as the agency has successfully included them in each agency's formal planning processes (such as revision of agency land management plans, land use compatibility guidelines, integrated resource management plans, and fishery management plans), including public participation and NEPA analysis, as appropriate. This Order and the MOUs to be developed by the agencies are intended to be implemented when new actions or renewal of contracts, permits, delegations, or other third party agreements are initiated as well as during the initiation of new, or revisions to, land management plans.

(d) Each MOU shall include an elevation process to resolve any dispute between the signatory agencies regarding a particular practice or activity.

(e) Pursuant to its MOU, each agency shall, to the extent permitted by law and subject to the availability of appropriations and within Administration budgetary limits, and in harmony with agency missions:

(1) support the conservation intent of the migratory bird conventions by integrating bird conservation principles, measures, and practices into agency activities and by avoiding or minimizing, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions;

(2) restore and enhance the habitat of migratory birds, as practicable;

(3) prevent or abate the pollution or detrimental alteration of the Environment for the benefit of migratory birds, as practicable;

(4) design migratory bird habitat and population conservation principles, measures, and practices, into agency plans and planning processes (natural resource, land management, and environmental quality planning, including, but not limited to, forest and rangeland planning, coastal management planning, watershed planning, etc.) as practicable, and coordinate with other agencies and nonfederal partners in planning efforts;

(5) within established authorities and in conjunction with the adoption, amendment, or revision of agency management plans and guidance, ensure that agency plans and actions promote programs and recommendations of comprehensive migratory bird planning efforts such as Partners-in-Flight, U.S. National Shorebird Plan, North American Waterfowl Management Plan, North American Colonial Waterbird Plan, and other planning efforts, as well as guidance from other sources, including the Food and Agricultural Organization's International Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries;

(6) ensure that environmental analyses of Federal actions required by the NEPA or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern;

(7) provide notice to the Service in advance of conducting an action that is intended to take

migratory birds, or annually report to the Service on the number of individuals of each species of migratory birds intentionally taken during the conduct of any agency action, including but not limited to banding or marking, scientific collecting, taxidermy, and depredation control;

(8) minimize the intentional take of species of concern by: (i) delineating standards and procedures for such take; and (ii) developing procedures for the review and evaluation of take actions. With respect to intentional take, the MOU shall be consistent with the appropriate sections of 50 C.F.R. parts 10, 21, and 22;

(9) identify where unintentional take reasonably attributable to agency actions is having, or is likely to have, a measurable negative effect on migratory bird populations, focusing first on species of concern, priority habitats, and key risk factors. With respect to those actions so identified, the agency shall develop and use principles, standards, and practices that will lessen the amount of unintentional take, developing any such conservation efforts in cooperation with the Service. These principles, standards, and practices shall be regularly evaluated and revised to ensure that they are effective in lessening the detrimental effect of agency actions on migratory bird populations. The agency also shall inventory and monitor bird habitat and populations within the agency's capabilities and authorities to the extent feasible to facilitate decisions about the need for, and effectiveness of, conservation efforts;

(10) within the scope of its statutorily-designated authorities, control the import, export, and establishment in the wild of live exotic animals and plants that may be harmful to migratory bird resources;

(11) promote research and information exchange related to the conservation of migratory bird resources, including coordinated inventorying and monitoring and the collection and assessment of information on environmental contaminants and other physical or biological stressors having potential relevance to migratory bird conservation. Where such information is collected in the course of agency actions or supported through Federal financial assistance, reasonable efforts shall be made to share such information with the Service, the Biological Resources Division of the U.S. Geological Survey, and other appropriate repositories of such data (e.g., the Cornell Laboratory of Ornithology);

(12) provide training and information to appropriate employees on methods and means of avoiding or minimizing the take of migratory birds and conserving and restoring migratory bird habitat;

(13) promote migratory bird conservation in international activities and with other countries and international partners, in consultation with the Department of State, as appropriate or relevant to the agency's authorities;

(14) recognize and promote economic and recreational values of birds, as appropriate; and

(15) develop partnerships with non-Federal entities to further bird conservation.

(f) Notwithstanding the requirement to finalize an MOU within 2 years, each agency is encouraged to immediately begin implementing the conservation measures set forth above in subparagraphs (1) through (15) of this section, as appropriate and practicable.

(g) Each agency shall advise the public of the availability of its MOU through a notice published in the Federal Register.

Sec. 4. Council for the Conservation of Migratory Birds. (a) The Secretary of Interior shall establish an interagency Council for the Conservation of Migratory Birds (Council) to oversee the implementation of this Order. The Council's duties shall include the following: (1) sharing the latest resource information to assist in the conservation and management of migratory birds; (2) developing an annual report of accomplishments and recommendations related to this Order; (3) fostering partnerships to further the goals of this Order; and (4) selecting an annual recipient of a Presidential Migratory Bird Federal Stewardship Award for contributions to the protection of

migratory birds.

(b) The Council shall include representation, at the bureau director/administrator level, from the Departments of the Interior, State, Commerce, Agriculture, Transportation, Energy, Defense, and the Environmental Protection Agency and from such other agencies as appropriate.

Sec. 5. Application and Judicial Review. (a) This Order and the MOU to be developed by the agencies do not require changes to current contracts, permits, or other third party agreements.

(b) This Order is intended only to improve the internal management of the Executive branch and does not create any right or benefit, substantive or procedural, separately enforceable at law or equity by a party against the United States, its agencies or instrumentalities, its officers or employees, or any other person.

William J. Clinton
The White House,
January 10, 2001.

Appendix 2. Memorandum of Understanding

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

“Responsibilities of Federal Agencies to Protect Migratory Birds”

This Memorandum of Understanding (MOU) is entered into by and between the United States Department of Energy (DOE) and the United States Department of the Interior, Fish and Wildlife Service (FWS), herein collectively referred to as the Parties.

A. Purpose

This MOU meets the requirements under Section 3 of Executive Order 13186, (66 FR 3853, January 17, 2001), concerning the responsibilities of Federal agencies to protect migratory birds. The Executive Order directs executive departments and agencies to take certain actions to protect and conserve migratory birds. The purpose of this MOU is to strengthen migratory bird conservation through enhanced collaboration between DOE and the FWS, in coordination with state, tribal, and local governments. This MOU does not remove the Parties’ legal requirements under the Migratory Bird Treaty Act and does not authorize the take of migratory birds. This MOU identifies specific areas in which cooperation between the Parties will substantially contribute to the conservation and management of migratory birds and their habitats.

B. Authority

This MOU is entered under the provisions of the following laws and other authorities available to the Parties:

Migratory Bird Treaty Act (16 U.S.C. §§ 703-711)

Bald and Golden Eagle Protection Acts (16 U.S.C. §§ 668-668d)

Fish and Wildlife Coordination Act (16 U.S.C. §§ 661-666c)

The National Environmental Policy Act of 1969 (42 U.S.C. §§ 4321-4347)

The Endangered Species Act of 1973 (16 U.S.C. §§ 1531-1544)

Executive Order 13186 (66 FR 3853)

C. Missions of Both Parties

DOE

The mission of DOE is to enhance national security through fostering domestic energy production, energy efficiency, and the development of alternative energy sources; ensuring the safety and integrity of the Nation’s nuclear weapons; advancing nuclear non-proliferation; cleaning up the environmental legacy of the Cold War and permanently disposing of radioactive waste; and leading in the physical sciences and advancing the biological, environmental, and computational sciences.

FWS

The mission of the FWS is to work with others to conserve, protect, manage, and enhance fish, wildlife, plants, and their habitats for the continuing benefit of the American people.

The FWS Migratory Bird Program serves as a focal point in the United States for policy development and strategic planning, program implementation, and evaluation of actions designed to conserve migratory birds and their habitats.

The FWS is legally mandated to implement the conservation provisions of the Migratory Bird Treaty Act (16 U.S.C. § 703 et seq.), which includes responsibilities for migratory bird population management (*e.g.*, monitoring), habitat protection (*e.g.*, acquisition, enhancement, and modification), international coordination, and regulations development and enforcement.

D. Statement of Mutual Interest and Benefit

DOE manages approximately 2.28 million acres of land, of which a substantial amount is undeveloped and includes wetlands, deserts, and forested mountain areas that provide habitat for a variety of wildlife, including many

species of migratory birds. DOE takes its environmental stewardship role seriously and advocates a proactive management stance toward the natural environment. Migratory birds are a part of the natural and man-made environment at many DOE sites, and proper management of migratory birds on DOE lands fosters vigorous and diverse species. DOE recognizes that some of its activities have the potential to impact migratory birds (e.g., transmission lines, power poles, waste treatment settling and evaporation ponds, invasive weeds and various construction activities). To lessen the impacts on migratory birds, whenever appropriate and feasible, DOE sites utilize avian-friendly transmission lines and power poles that are designed to minimize bird collisions and electrocutions; sponsor avian workshops with federal and private entities on minimizing electrocutions and collisions on electric utility structures; monitor waste water retention and evaporation ponds and when necessary utilize netting or noise devices to discourage migratory bird use; utilize invasive weed eradication practices that pose minimal risks to migratory birds; reseed areas with desirable plant species to encourage migratory bird use; monitor construction projects and when feasible schedule construction activities after nesting seasons; have developed habitat management plans for various bird species including bald eagle, Mexican spotted owl, wood stork and southwestern flycatcher. In addition, DOE routinely utilizes the National Environmental Policy Act (NEPA) process to evaluate the potentially significant environmental impact of proposed actions, including impacts to migratory birds, and to examine alternatives to those actions.

Both Parties have interests and responsibilities in the conservation and management of America's natural heritage and natural resources. The Parties agree that migratory birds are important components of biological diversity; and that their conservation and management will help to sustain ecological integrity, and will serve the growing public demand for outdoor recreation, conservation education, wildlife viewing, and hunting opportunities.

This MOU is necessarily general due to the diversity of programs throughout the DOE site complex.

In consideration of these premises, the Parties agree as follows:

E. Obligations of Both Parties

To the extent allowed by law, subject to the availability of appropriations and within Administration budgetary limits, and in harmony with DOE and FWS missions and capabilities, both Parties shall:

1. Protect, restore, enhance and manage habitats of migratory birds, to the fullest extent practicable. This includes:
 - a. Implementing management practices that minimize or avoid adverse impact on migratory bird populations, and their nesting, migration, or over-wintering habitats.
 - b. Working collaboratively with Federal and State agencies to identify, protect, restore, enhance, monitor and manage important migratory bird areas.
 - c. Preventing or abating the pollution or detrimental alteration of the environment of migratory birds.
2. Promote collaborative inventorying, monitoring, management studies, research, and information exchange related to the conservation of migratory birds and management of their habitats. This includes:
 - a. Sharing inventory, monitoring, research and study data for breeding, migrating and wintering populations and habitats in a timely fashion with national repositories (such as BBIRD and MAPS), other Federal and State agencies as appropriate, and among DOE offices, as practicable.
 - b. Collaborating, as practicable, in management studies and research to identify the habitat conditions needed by migratory bird species, to sustain populations of coexisting species and understand the effects of management activities on them.
 - c. Developing partnerships with other agencies and non-Federal entities to further bird conservation, as practicable.
3. Identify and pursue training opportunities for appropriate employees in methods of monitoring bird populations for the purposes of inventorying, measuring demographic parameters and evaluating the effects of land management activities; and implementing land use practices that promote bird conservation.
4. Provide representation on the Council for the Conservation of Migratory Birds.
5. Periodically evaluate the measures taken under this MOU to protect, restore, and enhance migratory bird resources, including avoiding or minimizing take of migratory birds and, if necessary, suggesting revisions to the

FWS to ensure that the most effective conservation measures are employed. These efforts will be coordinated through the FWS's Division of Migratory Birds.

F. Obligations of the DOE

To the extent allowed by law, subject to the availability of appropriations and within Administration budgetary limits, and in harmony with the Department's missions and capabilities, the DOE shall:

1. Integrate migratory bird conservation principles, measures, and practices into agency activities. Avoid or minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions, in compliance with, and supporting the purposes of the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Act, the Endangered Species Act, NEPA, and other applicable statutes.
2. Protect, restore, enhance, and manage habitats of migratory birds, to the fullest extent practicable. This includes:
 - a. Reviewing FWS migratory bird lists and/or conducting field surveys to determine which species occur or are likely to occur on DOE properties;
 - b. Developing habitat management plans to benefit migratory birds and other species consistent with individual DOE site programs;
 - c. Restoring and enhancing migratory bird and other species' habitat consistent with individual DOE site programs. This may include restoring wetland habitat, controlling invasive species (both plant and animal), reseeding with desirable plant species, etc.; and
 - d. Preventing and abating the pollution or detrimental alteration of migratory bird habitat by:
 - i. Properly managing hazardous wastes associated with site activities by containerizing, storing or transporting, or burying wastes in accordance with applicable regulations and guidelines;
 - ii. Timely remediation of areas that have been contaminated with hazardous materials/wastes;
 - iii. Using controlled burning to manage invasive weeds; and
 - iv. Using physical, mechanical and/or herbicidal treatments that pose minimal risks to migratory birds to control invasive weeds.
 - e. Ensuring that migratory bird protection and conservation is considered in NEPA project reviews by:
 - i. Identifying and evaluating the effects of proposed projects (actions) on migratory birds;
 - ii. Minimizing adverse impacts on migratory birds by evaluating all reasonable alternatives of a proposed action; and
 - iii. Providing reasonable measures within a proposed action to eliminate or minimize adverse effects on migratory bird species. If DOE determines that significant adverse effects to migratory birds cannot be avoided or minimized, the DOE site will notify the FWS prior to the start of the proposed action.
3. Incorporate migratory bird habitat and population management objectives and recommendations into planning processes, including DOE site planning documents, as appropriate, in cooperation with federal, state, and tribal agencies.
4. Promote appropriate programs and recommendations of comprehensive migratory bird planning efforts such as Partners in Flight, United States Shorebird Conservation Plan, North American Waterfowl Management Plan, North American Colonial Waterbird Conservation Plan, and other planning efforts, within established authorities and in conjunction with the adoption, amendment, or revision of agency management plans and guidance.
5. Obtain permits from the applicable FWS Regional Migratory Bird Permit Offices for the take of migratory birds pursuant to requirements of 50 CFR §§ 10, 13, 21, and 22. In doing so, this shall serve as advance notice to the FWS of conducting an action that is likely to result in the take of migratory birds.
6. Identify where take reasonably attributable to DOE actions, other than permitted activities referenced in paragraph 5 above, could affect migratory bird populations or habitats, focusing first on species of concern, their habitats, and key risk factors associated with DOE activities (*e.g.*, installation of power poles and transmission lines, construction projects, invasive weed species eradication and waste treatment which utilizes settling and evaporation ponds).

- a. With respect to those actions so identified, and where appropriate and feasible, DOE shall develop and use principles, standards, and practices that lessen the amount of takings. This includes:
 - i. Utilizing avian-friendly transmission lines and power poles;
 - ii. Scheduling construction activities around migratory bird nesting seasons;
 - iii. Utilizing netting covers on waste water retention and evaporation ponds;
 - iv. Sponsoring avian workshops on minimizing electrocutions and collisions on electric utility structures; and
 - v. Following the recommendations and suggested practices in wind turbine and powerline guidelines published by FWS and the Avian Power Line Interaction Committee, respectively, to minimize impacts from existing facilities and in the construction of new utility and energy systems and associated infrastructure.
- b. DOE shall inventory and monitor bird populations and habitats, as appropriate and feasible, to facilitate decisions about the need for, and effectiveness of, conservation efforts.
7. Recognize and promote the ecological, economic and recreational values of migratory birds into outreach and educational materials and activities.
8. Advise the public of this MOU through a notice published in the *Federal Register*.

G. Obligations of the FWS

Unless otherwise specified, the following activities will be coordinated through the Regional Migratory Bird Program.

To the extent permitted by law and subject to the availability of appropriations and Administration budgetary limits, and to the extent that the following obligations are in harmony with agency missions and capabilities, the FWS shall:

1. Work to identify special migratory bird habitats (*e.g.*, migration corridors, stopover habitats, nesting habitats) under the stewardship of DOE.
2. Improve cooperation and coordination with DOE and other Federal agencies, State agencies, universities, and independent nongovernmental organizations involved in monitoring and research efforts that provide reliable information on the status and trends of migratory bird populations.
3. Provide assistance, at the request of DOE, to identify particular species and habitats that would benefit most from particular agency land management decisions.
4. Initiate new or provide greater support for long-term research and monitoring programs of birds on DOE and adjacent lands.
5. The Division of Migratory Birds shall keep DOE informed of the latest directions in bird conservation that might affect DOE activities, lands, or policies, by providing information on:
 - a. Changes to the Migratory Bird Treaty Act and its regulations and procedures, or other acts and their regulations affecting migratory birds;
 - b. Population trends of species that might be affected by activities on DOE lands;
 - c. Changes to the list of Birds of Conservation Concern;
 - d. Changes in, updates to or additions to national and regional bird conservation plans (*e.g.*, Partners in Flight bird conservation plans, United States Shorebird Conservation Plan, North American Waterbird Conservation Plan, and the North American Waterfowl Management Plan); and
 - e. Updated protection measures for reducing human-caused bird mortality as new information becomes available.
6. Encourage widespread use of the best available scientific information in the management of migratory bird populations.
7. Conduct informational and educational programs for DOE oriented toward migratory bird conservation.

H. Termination of MOU; Miscellaneous Provisions

It is mutually agreed and understood that:

This MOU in no way alters or diminishes any Party's obligations or responsibilities under any statute or other legal authority.

1. Either Party may terminate this MOU, in whole or in part, at any time before the date of expiration by providing the other Party 30 day's written notice to that effect.
2. Changes to this MOU shall be made by means of written modification(s) bilaterally executed by the Parties. This instrument in no way alters a Party's obligations to conduct environmental analyses, including compliance with NEPA requirements.
3. This MOU in no way restricts either Party from participating in similar activities with other public or private agencies, governments, organizations, or individuals.
4. Documents furnished to a Party under this MOU may be subject to the Freedom of Information Act (FOIA, 5 U.S.C. § 552). A Party shall not release documents originating in the other Party to a FOIA requester. Rather, the Party shall forward such document(s) to the originating Party for review, determination and response directly to the requester.
5. Modification of this MOU may be made by the issuance of a written amendment(s), signed and dated by all Parties.
6. This is not a binding contract but is an MOU, which broadly states basic understandings between the Parties hereto of the tasks and methods for performing the tasks, described herein. The details of the levels of support to be furnished one organization by the other with respect to funding shall be developed in specific interagency agreements or other agreements, subject to the availability of funds. This MOU shall not be used to obligate or commit funds or as the basis for the transfer of funds. This instrument does not establish authority for noncompetitive award of any contract or other agreement. Any contract or agreement for training or other service must fully comply with all applicable requirements for competition.
7. Any press releases that reference this MOU, or the relationship established between the Parties of this MOU, shall have prior approval of both Parties.
8. Periodic meetings of the Parties shall be scheduled to review progress and identify opportunities for advancing the understandings in this MOU. Collaboration under this MOU shall be in accordance with the applicable statutes and regulations governing the respective Parties.
9. In the event that a dispute arises between the Parties, whether programmatic or procedural, that could have clear, identifiable negative impacts for migratory birds covered by this MOU, the DOE site representative(s) responsible for administering this MOU and their FWS counterpart(s) shall contact DOE's Office of Dispute Resolution and/or FWS's Bureau Dispute Resolution Specialist, who will advise the Parties in determining whether a dispute resolution process, such as convening a mediation with a skilled, experienced mediator, would be appropriate. If resolution can not be reached at the local level, either Party can elevate the issue to the appropriate officials at DOE and FWS Regional offices. In the event that there is no resolution at the Regional levels, the Parties may elect to elevate the dispute to the Washington, D.C. office of each agency.
10. This MOU does not require changes to current contracts, permits, or other third party agreements. The MOU recognizes that DOE may not be able to implement some elements of the MOU until such time as DOE has successfully included them in formal planning processes.
11. This MOU is intended only to improve the internal management of the Executive Branch of the Federal Government and does not create any right or benefit, substantive or procedural, separately enforceable at law or equity by a party against the United States, its agencies or instrumentalities, its officers or employees, or any other person.
12. The principal contacts for this MOU are as follows:
Leroy Banicki Brian Millsap, Chief
Office of Air, Water and Radiation Division of Migratory Bird Management
Protection Policy and Guidance U.S. Fish and Wildlife Service
U.S. Department of Energy U.S. Department of the Interior
Room 3G-089 4401 N. Fairfax Drive,
1000 Independence Ave., SW MS 4107
Washington, D.C. 20585 Arlington, VA 22203

