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Sensitive Species Best Management Practices Source Document, Revision 5

Los Alamos
NATIONAL LABORATORY
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Cover Photo: Female and male Evening Grosbeaks

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Introduction

The *Sensitive Species Best Management Practices Source Document* was written to bridge gaps for conservation and management of species at Los Alamos National Laboratory (LANL) not covered by the Endangered Species Act. At LANL, federally listed threatened or endangered species are managed under the *LANL Habitat Management Plan* (LANL 2017). Migratory birds are managed under the *Migratory Bird Best Management Practices Source Document* (LANL 2020), and some bird species overlap in coverage in this document. Since the last iteration of this document (Hathcock et al. 2015), changes in the classification and categorization of species have occurred at the federal and state levels. We describe the process and rationale for the selection of sensitive species that appear in this document.

The term "sensitive" can be defined in many ways, and it is not currently codified at the federal level. Generally, a species may be considered sensitive if populations are trending down, if they are a habitat specialist and their habitat is under threat, or if they have a very small or restricted range. In this effort, we researched various lists that exist for the state of New Mexico for species defined as sensitive. Sensitive species could progress to federal protection if negative trends continue. Sensitive species are listed at the state level under the New Mexico Wildlife Conservation Act, various federal agencies maintain their own sensitive species lists, and many non-government organizations maintain their own lists as well. After reviewing the various lists available for northern New Mexico, LANL biologists chose the most appropriate lists applicable to LANL. These lists included species recorded as threatened or endangered at the state level; species included in the New Mexico State Wildlife Action Plan (SWAP), the Natural Heritage New Mexico (NHNM) database, and the Partners in Flight watch list (PIF 2017); and finally, any species currently under review for federal protection.

Categories

We queried the sources listed above and determined which species occur or could occur in Los Alamos County. We used the Biota Information System of New Mexico database (BISON-M 2019) to identify state-listed species that occur in Los Alamos County. The New Mexico Department of Game and Fish is the state agency charged with the protection and conservation of all of the state's wildlife. They published the SWAP (NMDGF 2016) in 2016, which "serves as the blueprint for planning and implementation of the department's wildlife and habitat conservation initiatives through 2025." A key component of the SWAP was the development of actions necessary to conserve species of greatest conservation need (SGCN) and their habitats. To be considered an SGCN, a species had to meet one of the following conditions: declining, vulnerable, endemic, disjunct, or keystone. Furthermore, we binned species identified into one of these categories: immediate-priority species, specialized- or limited-habitat species, susceptible species, species with conservation data gaps, and federally listed species. The SWAP excluded arthropods and plants. From the SWAP, we selected species from only the categories of immediate priority and susceptible. Then we queried the NHNM database (NHNM 2019), which

maintains lists of sensitive species for the state. Their species list is based on State Natural Heritage Program ranks, which are broken into these categories: presumed extinct, possibly extinct, critically imperiled, imperiled, vulnerable, apparently secure, and secure. From these, we selected species from the rankings of critically imperiled (S1), imperiled (S2), and vulnerable (S3). We identified additional sensitive bird species using the Partners in Flight watch list (PIF 2017), comparing it with known bird species in the county. Lastly, we looked for any species currently being proposed for federal listing that might occur in the county.

From this list, LANL biological resources subject matter experts (SMEs) analyzed each species with regard to the degree of imperilment and the likelihood of the species to occur on LANL and included them in the final sensitive species list for LANL (Table 1).

Species Accounts and Best Management Practices

We developed a one-page species account that included common threats and best management practices (BMPs) to minimize impacts for each species listed in Table 1. To be brief but informative, we used a field-guide format to describe each species. In following a field-guide format, each species is detailed on a single page with a short physical description, its range, local occurrence, life history and habitat, threats, and finally a list of BMPs. The avian species accounts were developed largely from the Cornell Lab of Ornithology All About Birds website (CLO 2019).

In the LANL integrated project review process, LANL biological resources SMEs consider BMPs when providing recommendations to projects that have the potential to impact a sensitive species. By avoiding or minimizing the impact of operational activities on sensitive species, LANL can reduce or eliminate the risk.

We will update the species listed in this document as new research and documented beneficial practices become available. Additionally, as sensitive species change through conservation and monitoring endeavors, we will add or remove them from this document.

For questions, comments, or concerns, contact epc_biologists@lanl.gov.

Table 1. Species list used in this document.

Common name	Scientific name	NM State Status	SWAP Category	NHNM*	Other**
Mammals					
Pale Townsend's Big-eared Bat	*Corynorhinus townsendii pallescens*		Susceptible	S3	
Spotted Bat	*Euderma maculatum*	Threatened	Susceptible	S3	
Gunnison's prairie dog	*Cynomys gunnisoni*		Immediate priority	S2	
Birds					
Bald Eagle	*Haliaeetus leucocephalus*	Threatened		S1	
Peregrine Falcon	*Falco peregrinus*	Threatened		S3	
Northern Goshawk	*Accipiter gentilis*			S2, S3	
Flammulated Owl	*Psiloscops flammeolus*		Immediate priority	S3	PIFWL
Lewis's Woodpecker	*Melanerpes lewis*		Immediate priority	S3	PIFWL
Gray Vireo	*Vireo vicinior*	Threatened	Immediate priority	S3	PIFWL
Pinyon Jay	*Gymnorhinus cyanocephalus*		Immediate priority	S2, S3	PIFWL
Juniper Titmouse	*Baeolophus ridgwayi*		Immediate priority		
Evening Grosbeak	*Coccothraustes vespertinus*		Susceptible		PIFWL
Cassin's Finch	*Haemorhous cassinii*		Susceptible	S3	PIFWL
Black-chinned Sparrow	*Spizella atrogularis*		Immediate priority	S3	PIFWL
Virginia's Warbler	*Leiothlypis virginiae*		Immediate priority	S3	PIFWL
Grace's Warbler	*Setophaga graciae*		Immediate priority	S3	PIFWL
Black-throated Gray Warbler	*Setophaga nigrescens*		Immediate priority	S3	
Amphibians and Reptiles					
Smooth Green Snake	*Opheodrys vernalis*			S3	
Plants					
Mountain wood lily	*Lilium philidelphicum*	Endangered		S3	

Springer's Blazingstar	*Mentzelia springeri*			S3	
Yellow Lady's Slipper	*Cypripedium parviflorum*	Endangered		S2	
Giant Helleborine Orchid	*Epipcactis gigantea*			S2	
Sapello canyon larkspur	*Delphinium sapellonis*			S3	
Invertebrates					
Monarch Butterfly	*Danaus plexippus*				Proposed

*Natural Heritage New Mexico state rankings of critically imperiled (S1), imperiled (S2), vulnerable (S3).

**PIFWL: Partners in Flight watch list; Proposed: Proposed for federal listing under the Endangered Species Act.

Pale Townsend's Big-eared Bat

Corynorhinus towsendii pallescens

Description

Weight 8–14 g; wingspan 30–32 cm. A bat with very large ears (38 mm in length). Large lump on either side of the snout. Pale brown to slate gray in color.

Distribution

Western Canada, the western United States to southern Mexico.

Occurrence in Los Alamos County

Known to occur in the county (BISON-M 2020, Bogan et al. 2016, Schoenberg 2014).

Life History and Habitat

Hibernates in caves, mines, and abandoned buildings 12°C or less. Hibernates near entrances that are well ventilated. Clusters in groups from a few to >100 individuals. During hibernation, large ears can be coiled. Maternity colonies locate in warmer parts of the cave. During maternity periods, males are assumed solitary; male whereabouts are unknown during the summer months. Long-distance migrations are unlikely; assumed to be year-round residents. Returns yearly to the same roost sites. Mating occurs from autumn into winter and entails an elaborate courtship behavior. Sperm is stored, and fertilization occurs shortly after arousal from hibernation. Females give birth to one large pup (~25% of mother's size). Pup can fly at 2.5–3 weeks, with weaning occurring by 6 weeks. Lifespan may be 16 years or more. Diet is believed to be primarily moths.

Threats

General: Loss of open cave access, open mine closure, urbanization, climate change, human development, natural system modifications, pollution, biological resource use

Specific: Disturbance of roosting habitat can result in bats leaving a site permanently. Disturbance of hibernation sites can result in death of individuals because of arousal and burning of energy reserves. Disturbance of maternity sites can result in direct death or abandonment of pups because of disturbance to mothers (CBWG 2019).

Best Management Practices

Do not disturb active bat roosts, including on buildings. Avoid removing standing dead trees in the summer months. Buildings and outside structures slated for demolition should be inspected by biologists before work is conducted.

Spotted Bat

Euderma maculatum

Description

Weight 16–20 g; wingspan 34–36 cm. A large, pink-eared bat. White-colored fur underneath, black fur on its back, and three distinct white spots.

Distribution

From south-central British Columbia to southern Mexico.

Occurrence in Los Alamos County

Known to occur in the county (BISON-M 2020, Bogan et al. 2016, Schoenberg 2014).

Life History and Habitat

Occurs in a many habitat types, from ponderosa pine (*Pinus ponderosa*) to scrub and open desert. Easily climbs horizontally and vertically to daytime roost locations. Little is known about long-range movements or potential migrations. Specimens and collection location data suggest a high degree of association to steep rocky cliffs and water sources. Individuals have a distinct echolocation call ("click") that is audible to the human ear. Breeding biology and maternity habitat are not well known; assumed to breed in late summer, with fertilization delayed until late spring. Single pups are born during the summer and lack the color pattern of adults. Caves or deep crevices are assumed potential hibernation sites. Diet consists primarily of moths, with foraging conducted in routine, time-sensitive routes.

Threats

General: Crevice disturbance, climate change, human development, natural system modifications, pollution, biological resource use

Specific: Disturbance of roosting habitat can result in bats leaving a site permanently. Disturbance of hibernation sites can result in death of individuals because of arousal and burning of energy reserves. Disturbance of maternity sites can result in direct death or abandonment of pups because of disturbance to mothers.

Best Management Practices

Do not disturb active bat roosts, including on buildings. Avoid removing standing dead trees in the summer months. Buildings and outside structures slated for demolition should be inspected by biologists before work is conducted. Because this species is so rare and not well understood, any sightings should be reported to biologists.

Gunnison's Prairie Dog

Cynomys gunnisoni

Description

Weight 460–1300 g; length 310–390 mm. Gray tail with white tip and border. Mostly sandy colored, with a white/lighter-colored belly.

Distribution

Central to northwest NM into the four corners region including AZ, UT, and CO (BISON-M 2020).

Occurrence in Los Alamos County

Occurred historically, but no known populations currently exist in the county. Occurs nearby in the Valles Caldera National Preserve.

Life History and Habitat

Smallest of the burrow-dwelling prairie dog species, with smaller and less-organized colonies and less-specialized mound construction. Polygamous mating system, with breeding occurring during March and April. Females give birth to 2–6 pups. Primarily herbivorous; feeds on grasses and sedges; also consumes insects at times. Considered a keystone species capable of creating habitat for a wide array of other wildlife species (Kays and Wilson 2009).

Threats

General: Land-use practices that convert large portions of habitat, habitat and vegetation shifts in response to climate change (NMDGF 2016)

Specific: Highly susceptible to poisoning, sylvatic plague, landscape development, and drought.

Best Management Practices

Survey known locations before development.

Bald Eagle

Haliaeetus leucocephalus

Description

Weight 3000–6300 g; wingspan 204 cm. Adults have white heads and tails, with dark-brown bodies. Immature birds have dark-brown heads and tails, with white mottling in their wings and bodies. Adult plumage typically is attained in 5 years.

Distribution

Year-round resident or long-distance migrant depending on location. Found throughout Canada and United States down to northern Mexico.

Occurrence in Los Alamos County

Commonly seen in the winter near the Rio Grande.

Life History and Habitat

These carnivores primarily eat fish. Carrion is also a major food item. Inhabits timbered areas adjacent to bodies of water. Prefers mature coniferous or deciduous trees for a wide view of surroundings. Nests in tall trees, snags, or cliffs. Average clutch size is 2 eggs, with an incubation period of 35 days. A pair will use the same nest year after year.

Threats

General: Habitat destruction, climate change, pollution, and natural system modifications

Specific: Pesticides and organic chemicals from agriculture and farming. Wind turbines and mining. Fragmentation by development of roads and infrastructure.

Best Management Practices

In Bald Eagle habitat on LANL's eastern boundary along the Rio Grande, new power lines should comply with the suggested practices adopted by the electrical industry (APLIC 2006).

Peregrine Falcon

Falco peregrinus

Description

Weight 530–1600 g; wingspan 100–110 cm. Blue-gray back and wings, dark head, and barred breast and underwing. Juveniles have more vertical streaking than horizontal bars. Males are smaller than females.

Distribution

A widespread species found throughout North America. Can be found year-round in much of New Mexico, as residents or migrants.

Occurrence in Los Alamos County

Locally uncommon but known to breed in the county (Travis 1992).

Life History and Habitat

Carnivorous, mainly preying on birds and bats. Occupies a large range; can be found in various forest types such as mixed conifer or pinyon (*Pinus edulis*)-juniper (*Juniperus* spp.) forests. Grasslands, desert scrub, riparian woodlands, and shrub-steppe are also known habitats. Nests on cliffs in forested areas or abandoned raptor nests. Average clutch size is 3–4 eggs, with an incubation period of 29–32 days. Reported to be the fastest bird when diving for prey, reaching up to 383 kph.

Threats

General: Climate change, pollution, human development

Specific: Pesticide and organic chemicals used in agriculture and farming. Habitat loss caused by development of roads and infrastructure.

Best Management Practices

Avoid disturbing cliff structure in the canyons between March 1 and May 15 without having a Biological Resources SME survey the cliffs for peregrine nests. Limit human activity within 400 m of a nest site.

Northern Goshawk

Accipiter gentilis


Photo: George Chiu

Description

Weight 631–1364 g; wingspan 103–117 cm. Adults are dark slate gray, with a light barred underside. Juveniles are brown and streaked. Distinct white stripe over the eye. Females are larger than males.

Distribution

Year-round resident of much of Canada and the western United States. Also occurs in Mexico. Short-distance migrant.

Occurrence in Los Alamos County

Historically is known to nest in the county (Sinton and Kennedy 1994).

Life History and Habitat

Carnivorous diet, with a wide range of prey that includes birds, mammals, and occasionally insects. Nesting begins as early as March and occurs in forested areas in large mixed conifer trees anywhere from 6–30 m high. Nests are often reused. Clutch size is 2–4 eggs, with an incubation period of 28–38 days. Habitat is mature coniferous and mixed forests with more than 60% canopy cover. Hunts in forests, riparian corridors, and open areas.

Threats

General: Habitat destruction, climate change, habitat fragmentation, human disturbance, poaching

Specific: Loss of habitat because of fire events. Decline in prey population densities. Timber harvesting of larger trees. Fragmentation by development of roads and infrastructure. Poaching and pesticide use.

Best Management Practices

Avoid large tree removal in mixed conifer habitat from April through June. If tree removals are necessary during this time, contact a Biological Resources SME to survey trees before removal. No logging within 800 m of active nests or within established post-fledging areas (Reynolds et al. 1992).

Flammulated Owl

Psiloscops flammeolus

Description

Weight 43–63 g; wingspan 40.5–41 cm. A small owl with short-feathered ear tufts often held flat, a short tail, and dark eyes. Gray, brown, rust, and white, with dark vertical streaking on the chest and belly. A variety of plumage colors between the gray morph and the red morph.

Distribution

A neotropical migrant that migrates from their wintering grounds in Mexico and Central America to their breeding grounds in northern Mexico, the western United States, and southwestern Canada.

Occurrence in Los Alamos County

Locally uncommon but known to breed in the county (Travis 1992).

Life History and Habitat

Primarily inhabits mid-elevation montane forests, in particular ponderosa pine and other large coniferous tree habitats. Nests in natural cavities or cavities excavated by woodpeckers. Female usually lays 2–3 eggs directly on the bottom of the cavity chamber. Incubation period is 21–24 days. Little is known about their overwintering habitat; it is assumed that they winter in Mexican pine forests similar to their breeding habitat (SSRC 2012). Primarily insectivores; hunts at night from a perch. During breeding, occasionally feeds on small birds and mammals to nestlings.

Threats

General: Insect declines from pesticide use, habitat loss on breeding and nonbreeding grounds from logging and severe wildfire, low reproductive rate

Specific: Destruction of suitable nesting locations.

Best Management Practices

Avoid tree and snag removal in mixed conifer habitat from April through June. If tree or snag removals are necessary during this time, contact a Biological Resources SME to survey the trees before removal.

Lewis's Woodpecker

Melanerpes lewis

Description

Weight 88–138 g; wingspan 49–52 cm. A medium-sized woodpecker with an elongated body, long wings, and a long tail. Pink undersides, green back, gray collar, dark red face. At far distances and in bad lighting, can appear all dark.

Distribution

Breeds across the western United States and southwestern Canada. Considered a resident or a short-distance migrant. Birds in the northern portion of their range tend to migrate south for the winter; those farther south are residents that move only short distances to where resources are plentiful.

Occurrence in Los Alamos County

Locally uncommon but known to breed in the county (Travis 1992).

Life History and Habitat

Favors open forests, ranging in altitude from low-elevation riparian areas to higher-elevation burns and pine forests during the breeding season. Often nests in existing cavities in partially decayed trees and rarely excavate their own hollows. Female usually lays 5–9 eggs on top of wood chips inside the cavity. Incubation period is 12–16 days; nestling period is 28–34 days. During breeding season, they are primarily insectivores but also will eat nuts, grains, and fruit. Unlike other woodpeckers, they perch and catch insects in midair similar to flycatchers. During the winter, they eat nuts and grains that they have stored in tree crevices.

Threats

General: Insect declines from pesticide use, habitat loss from changing forest conditions and because of fire suppression, logging, and climate change. These forest impacts often result in higher densities of single-age trees and fewer standing dead/decaying trees available for nesting.
Specific: Lack of insects for food. Destruction of suitable nesting locations.

Best Management Practices

During vegetation-removal operations, active nests with eggs or nestlings could get destroyed. The best management practice to protect these nests is to schedule tree and shrub removal outside of the peak bird-nesting season, May 15–July 15. During this time, EPC-ES biologists can survey trees and shrubs immediately before removal. If active nests are discovered outside of the breeding season, then work will be paused, and EPC-ES biologists must be notified. Active nests built within structures or equipment are also protected.

Gray Vireo

Vireo vicinior

Description

Weight 12–15 g; wingspan 21 cm. Plain gray overall appearance, thin white eye ring, faint white wing bars. Long tail is often raised and flicked. Heavy bill and legs.

Distribution

Breeds from southwestern TX to southern NV and central-eastern CA. Migrates short distances southward into neighboring states and Mexico.

Occurrence in Los Alamos County

Documented at LANL near the Rio Grande (unpublished LANL data).

Life History and Habitat

Insectivore that gleans prey from in and around shrubs and forages along the ground. Breeds in open woodland/shrublands, favoring junipers. Known to have an attraction to hot areas that have steep and rocky components. Constructs open-cup nests in the forks of tree branches, favoring the north or western side of the tree. Nests are made of vegetation, spider webs, and cocoons; located 0.7–2.4 m above the ground. Male and females alternate brooding clutches that average 4 eggs.

Threats

General: Habitat destruction, climate change, habitat fragmentation, limited population/range, and parasitism

Specific: Large-scale change in habitat cover from juniper-dominant to grass-dominant. Fragmentation by development of roads and infrastructure. Conversion of pinyon-juniper woodlands to rangelands. Brood parasitism by Brown-headed Cowbirds (*Molothrus ater*).

Best Management Practices

During vegetation-removal operations, active nests with eggs or nestlings could get destroyed. The best management practice to protect these nests is to schedule tree and shrub removal outside of the peak bird-nesting season, May 15–July 15. During this time, EPC-ES biologists can survey trees and shrubs immediately before removal. If active nests are discovered outside of the breeding season, then work will be paused, and EPC-ES biologists must be notified. Active nests built within structures or equipment are also protected.

Pinyon Jay

Gymnorhinus cyanocephalus

Description

Weight 90–120 g; wingspan 46 cm. Light- to dusty-blue-colored jay. Long dagger-like bill with short tail.

Distribution

Year-round resident within the southwestern United States, concentrated in the four corners to NV and UT.

Occurrence in Los Alamos County

Documented at LANL in pinyon-juniper habitat (Hathcock et al. 2020).

Life History and Habitat

Omnivorous with partiality for seeds, nuts, and berries. Flocks and forages in great numbers throughout spring and winter. Nesting can begin as early as February. Known to nest colonially. Nesting success tied closely to pinyon pine seed production. Nests are located 0.9–5.4 m above ground in pinyon pines and 1.5–23 m above ground in ponderosa trees. Clutch size is 3–6 eggs, with an incubation of 16–17 days. Life span is approximately 6 years. Flocks cache large numbers of seeds for use during poor crop years. Individuals can carry up to 50 seeds in their expandable esophagus. Caching behavior disperses tree seeds to suitable microsites.

Threats

General: Habitat destruction, climate change, habitat fragmentation, erratic weather events, variable seed production, and limited population/range

Specific: Fragmentation by development of roads and infrastructure. Loss of large, mature (heavy seed producing) pinyon pine trees. Conversion of pinyon-juniper woodlands to rangelands. Heavy spring snow events. Low seed-producing periods.

Best Management Practices

During vegetation-removal operations, active nests with eggs or nestlings could get destroyed. The best management practice to protect these nests is to schedule tree and shrub removal outside of the peak bird-nesting season, May 15–July 15. During this time, EPC-ES biologists can survey trees and shrubs immediately before removal. If active nests are discovered outside of the breeding season, then work will be paused, and EPC-ES biologists must be notified. Active nests built within structures or equipment are also protected.

Juniper Titmouse

Baeolophus ridgwayi

Description

Weight 10–20 g; wingspan 22 cm. Plain gray to dusty colored, with paler gray- to cream-colored throat and underparts. Small stout bill and conspicuous crest on the head.

Distribution

Year-round resident of the southwestern United States except CA. Short-distance migrant between breeding habitat and winter habitat.

Occurrence in Los Alamos County

Locally common and known to breed in the county (Hathcock et al. 2020, Travis 1992).

Life History and Habitat

Omnivorous, with partiality for seeds, nuts, and berries, especially during fall and winter months. Inhabits pinyon-juniper woodlands. Strong dependence on juniper and pinyon pine trees for fruit and seed. Known to consume terrestrial invertebrates and feed them to young before fledging. Uses natural cavities as nesting sites, primarily woodpecker holes. Breeding pairs establish and defend territories. Average clutch size is 6 eggs, with an incubation period of 14–16 days. Perches at high points on the canopy for singing. Able to hang upside down to glean vegetation.

Threats

General: Habitat destruction, climate change, habitat fragmentation, and variable seed production

Specific: Fragmentation by development of roads and infrastructure. Loss of large, mature (heavy seed-producing) pinyon and juniper trees. Conversion of pinyon-juniper woodlands to rangelands. Low seed-producing years.

Best Management Practices

During vegetation-removal operations, active nests with eggs or nestlings could get destroyed. The best management practice to protect these nests is to schedule tree and shrub removal outside of the peak bird-nesting season, May 15–July 15. During this time, EPC-ES biologists can survey trees and shrubs immediately before removal. If active nests are discovered outside of the breeding season, then work will be paused, and EPC-ES biologists must be notified. Active nests built within structures or equipment are also protected.

Evening Grosbeak

Coccothraustes vespertinus

Description

Weight 53–74 g; wingspan 35 cm. Large, stocky finch with heavy bill. Males are yellow and black with a large white wing patch and a bright yellow stripe over the eye. Females and immatures are gray overall, with black and white wings. Bills are pale ivory to greenish-yellow color.

Distribution

Throughout North America.

Occurrence in Los Alamos County

Locally common and known to breed in the county (Hathcock et al 2020, Travis 1992).

Life History and Habitat

Irregular migrant that can occur irruptively into southern extents of range during times when food resources are low. Inhabits mature and second growth coniferous forests. Also known to occupy deciduous woodlands outside of breeding season. Omnivorous, with a high partiality to seeds, buds, fruits; eats insects only opportunistically during the summer. Pairs are monogamous for a single season and court quietly without elaborate song or display. Clutches of 2–5 eggs are laid in nests made high in trees; incubation period is 12–14 days. Males usually do not defend territory but occasionally chase some species away. Forages in large flocks during the winter and then breaks off into smaller breeding pairs/groups.

Threats

General: Habitat destruction, climate change, habitat fragmentation, human development

Specific: Fragmentation by development of roads and infrastructure. Lack of suitable habitat from forestry practices. Lack of food resources in light of pesticide use.

Best Management Practices

During vegetation-removal operations, active nests with eggs or nestlings could get destroyed. The best management practice to protect these nests is to schedule tree and shrub removal outside of the peak bird-nesting season, May 15–July 15. During this time, EPC-ES biologists can survey trees and shrubs immediately before removal. If active nests are discovered outside of the breeding season, then work will be paused, and EPC-ES biologists must be notified. Active nests built within structures or equipment are also protected.

Cassin's Finch

Carpodacus cassinii


Photo: Milton

Description

Weight 24–34 g; wingspan 29 cm. Males are rosy-pink overall, with vibrant red on the crown. Females and immature birds are brown and white, with crisp dark streaks. Both have a very thin, white eye ring, large chunky head, and conical bill.

Distribution

Central Mexico northward along the Rocky Mountains into southern British Columbia and westward into the western United States. Absent from the Mojave Desert.

Occurrence in Los Alamos County

Locally uncommon and not known to breed in the county.

Life History and Habitat

Inhabits conifer woodlands during breeding and will migrate to lower elevations during winter. Forested areas with adjacent open areas are important for foraging. Omnivorous diet, but primarily feeds on seeds and fruits. During summer, will feed opportunistically on insects. Outside of the breeding season, gathers with species such as Red Crossbills (*Loxia curvirostra*), Pine Siskins (*Spinus pinus*), and Evening Grosbeaks to form foraging groups. During breeding, pairs form, establish, and defend nesting sites. Once incubation begins, will tolerate additional nesting pairs in close proximity. Clutches of 3–6 eggs are incubated for 12 days in nests located in the tops conifer trees or at least 4.5 m above ground away from the trunk.

Threats

General: Habitat destruction, climate change, habitat fragmentation, human development

Specific: Fragmentation by development of roads and infrastructure. Lack of suitable habitat from wildfire suppression.

Best Management Practices

During vegetation-removal operations, active nests with eggs or nestlings could get destroyed. The best management practice to protect these nests is to schedule tree and shrub removal outside of the peak bird-nesting season, May 15–July 15. During this time, EPC-ES biologists can survey trees and shrubs immediately before removal. If active nests are discovered outside of the breeding season, then work will be paused, and EPC-ES biologists must be notified. Active nests built within structures or equipment are also protected.

Black-chinned Sparrow

Spizella atrogularis

Description

Weight 9–14.8 g; wingspan 19.6 cm. Overall gray body with long tail. Wings and back are mostly brown with streaks of black. Stout, light-brown-to-pink bill. Breeding males have the namesake "black-chin"; females are gray throughout face.

Distribution

Migratory species that breeds in the southwest United States and winters as far a central Mexico.

Occurrence in Los Alamos County

Locally uncommon and not known to breed in the county.

Life History and Habitat

Omnivorous; feeds primarily on invertebrates during the breeding season and relies on seeds during the fall and winter. Breeding habitat consists of dry brushlands with arid, rocky hillsides. Favors multiple species of shrub, such as sagebrush (*Artemisia* spp.) and rabbitbrush (*Chrysothamnus* spp.), but also uses dense, early-stage pinyon-juniper woodlands with abundant grasses and forbs interspersed. Builds open, cup-shaped nests ~0.6 m above ground in the middle and top of a dense shrub. Clutches average 2–5 eggs, with an incubation period of 12–13 days. Pairs are formed for one season, then tend to be solitary. These secretive foragers are known for quickly flying in between and around vegetation. During the breeding season, males will call from exposed perches to defend their territory.

Threats

General: Habitat destruction, climate change, habitat fragmentation, and human activities

Specific: Fragmentation by development of roads and infrastructure. Development of habitat for human development. Fire suppression or fire mitigation measures. Overgrazing and drought can cause a loss of forb and grass species. Shrub removal as a method of fuel management.

Best Management Practices

During vegetation-removal operations, active nests with eggs or nestlings could get destroyed. The best management practice to protect these nests is to schedule tree and shrub removal outside of the peak bird-nesting season, May 15–July 15. During this time, EPC-ES biologists can survey trees and shrubs immediately before removal. If active nests are discovered outside of the breeding season, then work will be paused, and EPC-ES biologists must be notified. Active nests built within structures or equipment are also protected.

Virginia's Warbler

Leiothlypis virginiae

Description

Weight 6–10.5 g; wingspan 19 cm. Overall gray bird; portions of chest and below rump have yellow patches. Distinct white eye ring. Males tend to have brighter and more-pronounced yellow areas than females and juveniles.

Distribution

Central Mexico northward to southern WY and west to the NV-CA border.

Occurrence in Los Alamos County

Locally common and known to breed in the county (Hathcock et al. 2020, Travis 1992).

Life History and Habitat

Migratory warbler that inhabits dry montane woodlands during breeding season. Favors brushy, steep, or rocky components adjacent to coniferous woodlands. Also breeds in montane riparian systems. Insectivorous, feeding on a many different species during the breeding season. Forages on the ground and occasionally takes prey on the wing. Uses its bill to glean and probe in and around vegetation. Lays clutches of 3–5 eggs in nests made on the ground near or among vegetation such as grass or New Mexico locust shrubs. Incubation period is 11–14 days. Pairs are usually monogamous for a single season. Males defend territory by singing from prominent perches. Individuals wag tails up and down while foraging. During migration, forms mixed-species flocks with other warblers en route to wintering grounds. Nests can be subject to parasitism by Brown-headed Cowbirds.

Threats

General: Habitat destruction, climate change, habitat fragmentation, human development

Specific: Fragmentation by development of roads and infrastructure. Lack of suitable habitat from wildfire suppression. Lack of food resources because of pesticide use.

Best Management Practices

During vegetation-removal operations, active nests with eggs or nestlings could get destroyed. The best management practice to protect these nests is to schedule tree and shrub removal outside of the peak bird-nesting season, May 15–July 15. During this time, EPC-ES biologists can survey trees and shrubs immediately before removal. If active nests are discovered outside of the breeding season, then work will be paused, and EPC-ES biologists must be notified. Active nests built within structures or equipment are also protected.

Grace's Warbler

Setophaga graciae

Description

Weight 7–9 g; wingspan 20 cm. Gray back with a yellow throat and face. White belly with black stripes on flanks and two white wingbars.

Distribution

Short-distance migrants breed in the southwestern United States. Migrants and year-round residents are found in Mexico and Central America.

Occurrence in Los Alamos County

Locally common and known to breed in the county (Hathcock et al. 2020, Travis 1992).

Life History and Habitat

Insectivorous diets. Foraging occurs in the upper forest. Breeding season is May–July. Nesting occurs in pines. Clutch size is 3–4 eggs. Habitat is mature pine and pine-oak (*Quercus* spp.) forests. Spends time in pairs during breeding, and joins mixed-species flocks during migration and overwintering. Nests can be subject to parasitism by Brown-headed Cowbirds.

Threats

General: Climate change, development, biological resource use, pollution

Specific: Loss of mature forests because of logging, human development, and climate change. Use of insecticides.

Best Management Practices

During vegetation-removal operations, active nests with eggs or nestlings could get destroyed. The best management practice to protect these nests is to schedule tree and shrub removal outside of the peak bird-nesting season, May 15–July 15. During this time, EPC-ES biologists can survey trees and shrubs immediately before removal. If active nests are discovered outside of the breeding season, then work will be paused, and EPC-ES biologists must be notified. Active nests built within structures or equipment are also protected.

Black-throated Gray Warbler

Setophaga nigrescens

Description

Weight 7–10 g; wingspan 19 cm. Black, gray, and white, with a yellow spot between eye and bill. Black-and-white head. Black streaking on sides, with a white underside.

Distribution

Breeds in the western United States; concentrated in the southwest. Overwinters in central Mexico.

Occurrence in Los Alamos County

Locally uncommon but likely breeds in the county (Hathcock et al. 2020).

Life History and Habitat

Insectivorous diets. Foraging occurs in the low and middle forest. Breeding season is May–July. Nesting occurs in firs, oaks, or pinyon pines 0.9–3 m above ground. Clutch size is 3–5 eggs. Habitat is open forest, pine-oak woodlands, and pinyon-juniper forest. Spends time in pairs during breeding, and joins mixed-species flocks during migration and overwintering. Nests can be subject to parasitism by Brown-headed Cowbirds.

Threats

General: Habitat destruction and fragmentation, climate change, human impacts, livestock grazing

Specific: Livestock grazing increases potential for brood parasitism. Commercial harvesting in pinyon-juniper forests. Mining and oil extraction. Insecticide use.

Best Management Practices

During vegetation-removal operations, active nests with eggs or nestlings could get destroyed. The best management practice to protect these nests is to schedule tree and shrub removal outside of the peak bird-nesting season, May 15–July 15. During this time, EPC-ES biologists can survey trees and shrubs immediately before removal. If active nests are discovered outside of the breeding season, then work will be paused, and EPC-ES biologists must be notified. Active nests built within structures or equipment are also protected.

Smooth Greensnake

Opheodrys vernalis

Description

Length 30–61 cm; hatchlings are 8–17 cm. Small, slender green snake with smooth appearance.

Distribution

Northeastern Canada southward into the northeastern United States and westward into MT, WY, CO, UT, and NM. Distribution is highly discontinuous in western half of range.

Occurrence in Los Alamos County

Known to occur in the county (Foxx et al. 1998, LANL 2018).

Life History and Habitat

Occurs in habitats ranging from conifer woodlands and meadow edges to scrubland and chaparral. Often found under debris such as logs or brush. Highly insectivorous, primarily feeding on crickets, caterpillars, grasshoppers, and spiders. Breeds May–June, with clutches of 3–11 eggs laid in nests under cover of grass clumps, rocks, rotting logs, or cavities in soil. Known to use communal nests and to hibernate communally in some instances (Degenhardt et al. 1996).

Threats

General: Habitat destruction, climate change, fragmentation, human activities, fire

Specific: Fragmentation by development of roads and infrastructure. Conversion of habitat. Pesticide use that decreases prey base. Fire that burns available cover objects.

Best Management Practices

Survey sites with suitable habitat before development.

Mountain Wood Lily

Lilium philadelphicum

Description

Height 30–90 cm. Perennial with 1–5 funnel-shaped flowers, red-orange with purple-brown spots. Flowers are located at the tops of stems and have sets of long, narrow, whorled leaves below.

Distribution

Once common along the Rocky Mountains, into prairies in the Midwest and into the Northeastern portions of the United States (FONAEC 1993).

Occurrence in Los Alamos County

Historically rarely found in the county (Foxx and Tierney 1985).

Life History and Habitat

Widest-ranging member of the "true lilies" in North America. Grows in dry, well-drained, humus-rich soils. Requires sun and partial shade. Associated with low, grassy mountain meadows. Flowers July–August, and produces large fruits that contain seeds. Attracts hummingbirds and butterflies. Requires cross-pollination to produce viable seed. Pollination is performed primarily by swallowtail (*Papilio* spp.) butterflies (SCW 2020).

Threats

General: Climate change, habitat fragmentation, low seed production, and predation

Specific: Habitat shifts to drier, less shady and grassy conditions. Habitat destruction/conversion by human development. Direct collection for their appearance.

Best Management Practices

Survey sites with suitable habitat before development.

Santa Fe Blazingstar

Mentzelia springeri

Description

Height 30–50 cm. Perennial with multiple slender stems and numerous branches (bushy). Flowers are bright yellow and 10–15 mm long. Leaves at base are lanceolate to linear with a few shallow teeth, upper leaves (closer to flowers) are shorter and lack teeth. Flowers open in late afternoons during July and August.

Distribution

Native to the state of NM.

Occurrence in Los Alamos County

Los Alamos, northeastern Sandoval, and northwestern Santa Fe counties; Jemez Mountains (NMRPTC 1999).

Life History and Habitat

Endemic species that grows in the loose volcanic pumice and unconsolidated pyroclastic ash substrates of the Jemez Mountains. Associated with pinyon-juniper woodlands and lower montane areas. Commonly found along roads that cut through the substrate described above.

Threats

General: High endemism, habitat destruction, and misidentification

Specific: Under-conserved throughout the distribution area. Misidentification as other, more common, *Mentzelia* spp. Habitat conversion to other soil/substrate type.

Best Management Practices

Survey sites with suitable habitat before development.

Yellow Lady's Slipper

Cypripedium parviflorum var. *pubescens*

Description

Height 23–70 cm. Perennial with greenish-yellow sepals and a large bulbous yellow lip or "slipper" with reddish-brown splotches along the inside. Flowers June–July.

Distribution

Found throughout the eastern United States and into Canada, with disjunct varieties extending southward along the Rocky Mountain range into NM (FONAEC 1993, SCW 2020).

Occurrence in Los Alamos County

Known to occur in Frijoles Canyon, which is just outside the Los Alamos County boundary, so could occur in Los Alamos County (Foxx et al. 2018).

Life History and Habitat

Member of the orchid family. Grows in a variety of habitats, from boggy areas that have humus-rich soils to rocky mesic hillslopes. Can be found buried amongst grasses/sedges and other vegetation or in pine duff amongst rocks. Difficult to find unless the yellow flower, which is said to have a very specific sweet, rose-like aroma, is visible. Like all orchids, a very specific mycorrhizae fungal community is associated with the plant's success. Pollinator relationships are also very specific; the flower's fragrance can attract a variety of pollinators, but the flower can be pollinated by only one specific species. Parts of the plant are considered poisonous.

Threats

General: Climate change, disturbance, and illegal collection

Specific: Habitat shifts to drier conditions. Habitat destruction/conversion by human development. Direct collection for their appearance.

Best Management Practices

Survey sites with suitable habitat before development.

Giant Helleborine Orchid

Epicactis gigantea

Description

Height 30–100 cm. Perennial with one or more slender stems that are hairless until reaching the flower. Rhizomatous with ~10 alternate leaves that are 5–11 cm wide and 25 cm long. Produces 3–12 greenish-yellow flowers with purple veining. Flowers April–August (FONAEC 1993, SCW 2020).

Distribution

Western North America, from British Columbia southward to Mexico and eastward toward western edges of the Rocky Mountains.

Occurrence in Los Alamos County

Historically found in the county in White Rock Canyon (Foxx and Tierney 1985).

Life History and Habitat

The only orchid species within the *Epicactis* genus native to North America. Can occur in a wide variety of habitats from arid to boreal, but must have two components: high nutrients and a constant supply of water. Commonly found near springs (especially geothermal hot springs), seeps, and stream banks. Like all orchids, a very specific mycorrhizae fungal community is associated with the plant's success.

Threats

General: Climate change, human-related activities, habitat destruction

Specific: Habitat shifts from moist to dry conditions, human recreation around hot springs. Trampling and direct consumption by herbivores. Water catchment/development at springs and seeps. Exotic vegetation that outcompetes native species for water sources at springs/seeps.

Best Management Practices

Survey sites with suitable habitat before development.

Sapello Canyon Larkspur

Delphinium sapellonis

Description

Height 50–220 cm. Perennial with green-to-reddish lower stems. Leaves are palmately divided into five lobes and then further split into teeth. Produces 20–100 flowers along stem. Flowers are brownish or yellowish-purple and fade as they age. Flowers also have a "stubby" spur when compared with other larkspurs. Flowers from July–September (FONAEC 1993, NMRPTC 1999).

Distribution

Native to NM in the Sandia, Manzano, Jemez, and southern Sangre de Cristo mountains.

Occurrence in Los Alamos County

Known to occur in the county (Foxx et al. 2018).

Life History and Habitat

A very tall plant that stands out in appearance because of large leaves and small flowers. Common in the Sandia Mountains but infrequent elsewhere. Occurs in canyon bottoms, aspen (*Populus* spp.) groves, open montane meadows, spruce (*Picea* spp.) forests, and limestone soils. Life history traits not well understood or studied.

Threats

General: Climate change, human-related activities, habitat destruction

Specific: Habitat shifts from moist to dry conditions. Trampling and direct consumption by herbivores. Unknown extent and population viability parameters.

Best Management Practices

Survey sites with suitable habitat before development.

Monarch Butterfly

Danaus plexippus plexippus

Description

Wingspan 8.9–10.2 cm. Reddish-orange wings, with black veins and margins; two series of small white spots in the margins. Caterpillar is black, white, and yellow striped.

Distribution

All of North America. Range expands and contracts depending on the season; range differs between breeding areas, migration routes, and winter roosts.

Occurrence in Los Alamos County

Known to occur in the county. Breeds July–October.

Life History and Habitat

Migrate from their wintering grounds, along the coast of California and Mexico, to their breeding grounds in North America and back again over 3–5 generations. Monarch caterpillars eat only milkweed plants (*Asclepias* spp.). Milkweed emerges in early May, and monarch butterflies lay their eggs from late July through August. Adult monarchs depend on early-season and late-season flowering plants for nectar.

Threats

General: Monarch butterflies have declined by an estimated 80% over the past 20 years, primarily because of habitat conversion, insecticide and herbicide application, and host plant species loss (Brower et al. 2012, Pelton et al. 2019).

Specific: Milkweed removal. Milkweed mowing during the breeding season. Lack of floral food resources for adults.

Best Management Practices

Prioritize mowing before July 1. Do not mow from July 1–October 15 (Table 2). If mowing is necessary during that period, biologists should check the milkweed patches for eggs, caterpillars, and pupae before mowing. During the early breeding season (May–June), perform light mowing at a minimum height of 30–40 cm and/or mow milkweed in patches (USDA and USDOI 2015). Preserve some milkweed patches during the breeding season. Plant native milkweed and wildflower seeds where possible for mitigation, restoration, and/or to enhance existing habitat (USDA and USDOI 2015).

Table 2: Recommendations for integrated roadside vegetation management for monarch butterflies at LANL based on data collected in 2018 and 2019.

Vegetation Management	Dates	Life stage impacted
No mowing recommended	July 1–October 15	Eggs, caterpillars, pupae
Light mowing	May 1–June 30	Early eggs
Priority mowing	October 16–April 30	None

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