Birds

Common Loon (*Gavia immer*)

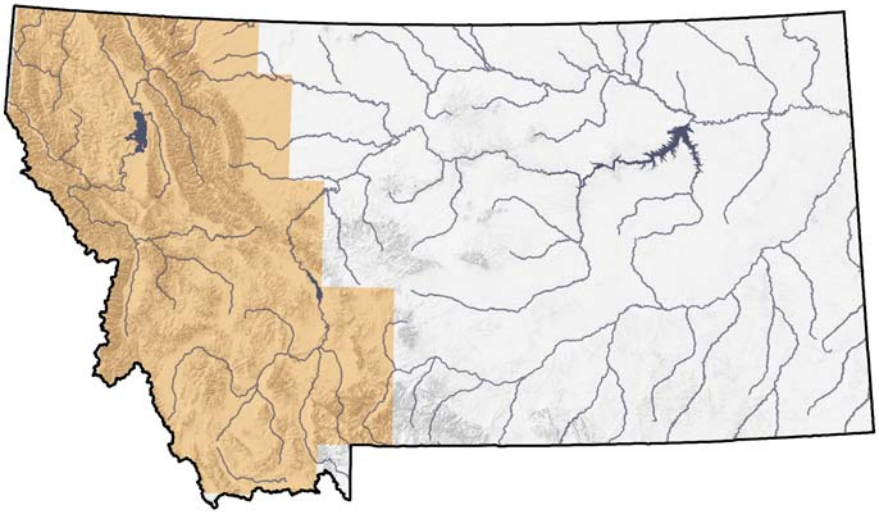

Figure 69. Distribution of the Common Loon
(Distribution reflects entire range and does not discriminate between breeding and nonbreeding areas)

Range

The global population of the common loon is considered “secure” (IUCN G5 Ranking); however, many local populations are small and isolated, and are vulnerable to extinction primarily due to habitat loss and human encroachment into key habitat (Kelly 1992; Evers 2004). Loons are considered imperiled (MT ranking S2) by the Montana Natural Heritage Program and are already listed as a “sensitive species” by the U.S. Forest Service (R-1) and a Species of Management Concern by the USFWS Region 6 (U.S. Fish and Wildlife Service 1995).

In Montana, the current breeding range for common loons is primarily restricted to lower elevation forested glacial lakes in the northwest corner of the state. Historically, common loons were believed to have nested throughout the western half of the state where suitable habitat was found. The primary nesting habitat currently used is restricted to lakes in the Blackfoot, Flathead, and Kootenai river drainages, with some breeding occurring on the east side of Glacier National Park and on the Blackfeet Indian Reservation. Loons also currently nest in Yellowstone National Park; historical records include lakes in southwest Montana. Common loons breeding in Canada migrate through the entire state during spring and fall. Rafts of more than 60 birds frequently have been observed on major lakes and reservoirs throughout the state. Nonbreeding common loons are occasionally observed during the summer in Montana, also on larger lakes or reservoirs. A pair of common loons once nested in central Montana at Nelson

Reservoir near Malta (F. Prellwitz, personal communication in Dolan 1994). Common loons have been recorded as breeding in 11 Montana counties: Lincoln, Flathead, Glacier, Sanders, Lake, Missoula, Powell, Lewis and Clark, Teton, Beaverhead, and Madison (Montana Bird Distribution 2003, MNHP 2002) (Montana Animal Field Guide 2004). The northwestern portion of Montana supports the highest density of nesting common loons in the lower 48 states west of the Mississippi River. Based on coordinated total counts of common loons in mid-July over the last six years, Montana supports an average of 62 (+/- 5) breeding pairs that successfully raise an average of 43 (+/- 8) chicks each year. In addition, surveyors counted an average of 48 single or nonbreeding adult loons. Total midsummer loon counts since 1999 have averaged 217 (range 201–230). Based on these data, the population appears to be stable (Bissell 2005).

Based on recoveries or reobservations of adult and juvenile banded common loons first captured on nesting lakes in northwestern Montana, these loons appear to winter along the west coast from Washington to the mid-California coast (Bissell 2005). Occasional overwintering also occurs in Montana. Common loons have been observed overwintering (December 15 through February 15) in Lincoln, Flathead, and Lake counties (Montana Bird Distribution 2003).

Habitat

In Montana, common loons will generally not nest on lakes less than about 13 acres in size or over 5,000 feet in elevation (Skaar 1990). If nesting on a small lake, they may use an adjacent lake for supplementary foraging (Montana Animal Field Guide 2004). Successful nesting requires both nesting sites and nursery areas sheltered from winds and disturbances. Small islands, coves, and bays are preferred general areas for nesting. Loons must nest adjacent to water, and they frequently nest on herbaceous shoreline areas but also logs, stumps, muskrat houses, floating vegetative mats, and gravel shorelines if that is all that is available. Nests usually consist of aquatic vegetation shaped into a shallow bowl located within a few inches of the water’s edge. Nursery areas are very often sheltered, shallow coves with abundant small fish and insects (Skaar 1990). Most Montana lakes inhabited by common loons are relatively oligotrophic and have not experienced significant siltation or other hydrological changes.

The quantity and quality of nesting habitat may limit the loon population of northwestern Montana. Skaar (1990) estimated the state’s “carrying capacity” at 185 potential nesting territories, based on the size and number of lakes within the species’ breeding distribution. He assumed 100 hectares of surface area per pair. Kelly (1992) documented a density of 72.2 hectares of surface water per adult loon for the Tobacco, Stillwater, Clearwater, and Swan river drainages.

Loons are a long-lived, slowly reproducing species that raise a maximum of only one to two young per year. It takes three years for loons to acquire adult plumage and an average of seven years before adults successfully occupy a territory and

raise young (Evers 2004). Adults may live to 20 years or more. Juvenile birds spend three winters in coastal waters before returning inland in adult plumage. Scientists studying common loons in other parts of their range estimate juvenile recruitment rates to the adult state (three years) to be about 40 percent (Evers 2004). Loons are also poor colonizers, with the young returning to within 5 to 20 kilometers of their natal area.This slow reproductive rate combined with limited dispersal distance and extreme territoriality presents some unique challenges to wildlife managers. Common loon habitat is relatively restricted in nature. Given their fierce territorial behavior to maintain successful occupation of a lake or portion of a lake, the occupation of all available habitats will inevitably lead to greater territorial conflicts. Repeated nest failures at Upper Thompson Lake in both 2004 and 2005 appear to be related to fighting, territorial switching, and general competition between two adjoining nesting pairs of loons and other territorial pairs in the drainage.

Management

Since 1999, management of common loons and their habitat in Montana is coordinated through the Common Loon Working Group (CLWG), an ad hoc advisory group consisting of representatives from state and federal agencies, tribes, nonprofit organizations such as the Montana Loon Society, and industry. This group coordinates surveys, research, and management programs and meets at least twice a year. The CLWG has helped solicit and fund the Loon Ranger Program as well as the recently started Loon Ecology Project using a State Wildlife Grant.

The current management program entails many activities focused on loon conservation including two coordinated annual population surveys: one in mid-May on accessible breeding lakes to determine territorial pair presence and possibly nesting, and a second survey in mid-July to count both adults and chicks of the year. The data are collected by the CLWG and housed in a centralized database maintained by the Montana Natural Heritage Program.

The management program also consists of implementing an annual outreach and education program using “Loon Rangers” at most breeding lakes that have high levels of recreational use. Through FWP’s summer internship program, three to four college students are hired each year to help with educational signs, floating buoys, surveys, and education programs at the busiest nesting lakes. The Loon Ranger Program was initiated in 2000. Funding is provided both by agencies and private donations. For many lakes, management includes the setting out of floating buoys around nest sites where conflicts with boaters has occurred, and the use of artificial loon platforms or nesting islands on lakes where nesting habitat has been reduced or lakes levels affected. Until recently, Glacier National Park participated only in annual surveys. This year, Glacier is initiating a citizen science program to more closely monitor nesting loons within the park. FWP has summarized the various CLWG activities over the last five years through periodic

annual reports available through the Wildlife Division or Region One headquarters. Preliminary evaluation of the education program indicates nesting success has been maintained or increased in the areas served by the program.

Other management options that have been occasionally implemented by lakeshore landowners such as FWP, DNRC, and the U.S. Forest Service include managing access to lakes through seasonal closures of trails or campsites, rerouting of roads or trails, strategic placement of educational signs, changing the design or upgrades of boat ramps, implementing no-wake rules, and providing input on proposed development projects. The members of the CLWG also work with homeowner associations to identify areas in need of conservation.

The new research efforts are focused on determining habitat factors associated with nesting success at various habitat scales; monitoring levels of methyl mercury and other contaminants in loon eggs and blood; estimating Montana's potential habitat capacity and the relationship between Montana's breeding population and adjoining populations to the west (Washington), north (Canada), or south (Wyoming); determining adult and juvenile survival and recruitment rates; and estimating overall population trends. The results will be used to update Montana's Common Loon Conservation Plan in 2008.

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Disturbances to loon nesting and foraging lakes and shorelines caused by human activities such as boating, angling, camping, or other activities during the nesting season	Need to implement a territorial ranking system to help identify priority nesting lakes or areas
Loss of nesting habitat including alternative nesting areas and nursery areas due to development, water level alterations, and recreation	Need to estimate total amount of available habitat and percent occupancy of that habitat based on historical and current habitat conditions
	Need to maintain the suitability of currently used nesting territories and create site-specific management plans that use a variety of tools to maintain loon nesting sites and nursery areas
Loss of connectivity within Montana's populations as well as between Montana's population and other western populations	Need for population demographic and trend information for Montana as well as increased knowledge of migratory routes and other factors affecting overwinter survival

	Need to identify areas of population sinks and sources
	Need to identify risks and potential threats outside Montana to Montana's breeding population and the consequences of those risks
Accumulation of contaminants over the life of individual birds, including lead (from fish sinkers) poisoning and methyl mercury (Evers 2004)	Need to continue to investigate known causes of mortality including the effect of human sources including methyl mercury and lead on breeding loons
Research opportunities	Need to keep current database up to date and available for interagency use
	Complete ongoing research efforts to revise loon conservation plan
	Provide for continued cooperative funding for education and other aspects of ongoing loon management plan

Management Plans

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Trumpeter Swan (*Cygnus buccinator*)

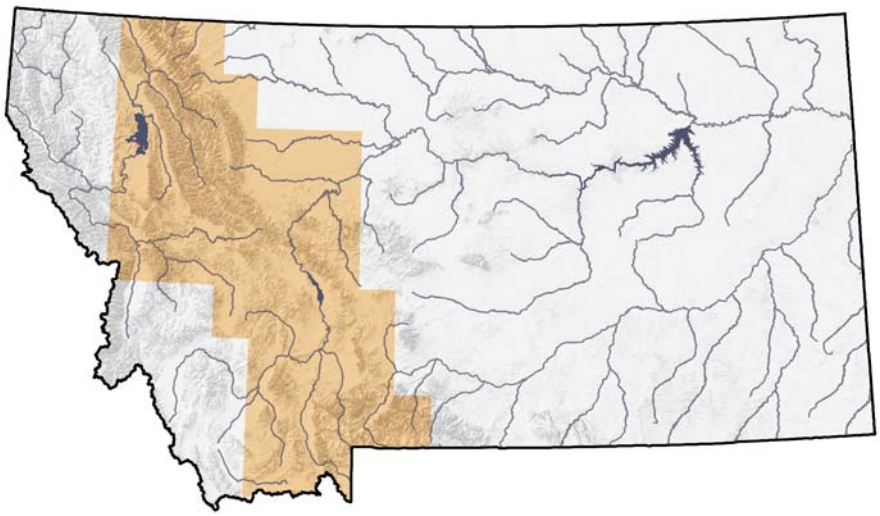

Figure 70. Distribution of the Trumpeter Swan
(Distribution reflects entire range and does not discriminate between breeding and nonbreeding areas)

Range

Trumpeter swans breeding in Montana are all part of the Rocky Mountain population, which occurs all along the Rocky Mountain range. The breeding range of these trumpeter swans in Montana is restricted to the extreme southwestern corner of the state (Beaverhead County) and along the Rocky Mountain Front (Lewis and Clark County) (Montana Natural Heritage Program 2003). In Beaverhead County, trumpeter swans breed in the Red Rock Lakes National Wildlife Refuge in the Centennial Valley, specifically the Lima Reservoir and the Upper and Lower Red Rock Lakes. In Lewis and Clark County they inhabit several small pothole lakes along the front range of the Rocky Mountains, most of which are west and southwest of Augusta. This is a very small subpopulation of the larger population breeding in the Centennial Valley (MNHP 2003). Reintroductions are currently ongoing on the Flathead Indian Reservation in northwestern Montana as well.

The nonbreeding range of trumpeter swans is also limited to several areas in the southwestern part of the state (Beaverhead, Gallatin, and Madison counties). Virtually all of the birds breeding in southwestern Montana also winter there. Birds summering in Canada migrate to the area in winter to join them. In Beaverhead County, the Red Rock Lakes area in the Centennial Valley is a major wintering ground for the species. In Madison County, trumpeter swans winter at Ennis Lake and the Madison River up to approximately 15 miles upstream. In Gallatin County, they winter on the south fork arms of Hebgen

Reservoir, as well as the river below Hebgen Dam and several other smaller lakes in the area (MNHP 2003).

Trumpeter swans breeding in Montana are nonmigrants. They spend both the breeding season and the winter in southern Montana's lakes, ponds, and streams of the Red Rock Lakes National Wildlife Refuge. The Canadian subpopulation breeding in parts of British Columbia, Alberta, the Yukon, and the Northwest Territories move south in late October to early November (Mitchell 1994).

Fall migration dates for the Bozeman area are from November 15 to December 15 and spring from February 25 to April 15 (Skaar 1969). They usually follow the Rocky Mountain Front, moving fsrther south as water freezes or food diminishes. They eventually arrive in southern Montana and winter along with the resident population. Canadian swans leave their wintering grounds in early March to early April, moving up the Rocky Mountain Front toward their breeding habitat farther north (Mitchell 1994).

Habitat

The breeding habitat for trumpeter swans in the Red Rock Lakes/Centennial Valley of Montana includes lakes and ponds and adjacent marshes containing sufficient vegetation and nesting locations. Along the Rocky Mountain Front the breeding habitat is small pothole lakes, generally with sufficient water to maintain emergent vegetation through the breeding season (MNHP 2003). However, due to recent drought conditions, this small breeding population has been severely impacted. In 2003 there was an attempt by swans to nest in the Upper Blackfoot drainage, and this area is targeted for future population augmentation or reintroduction of trumpeter swans. Habitat requirements for breeding include room to take off (about 100 meters), shallow, unpolluted water with sufficient emergent vegetation and invertebrates, appropriate nest sites (e.g., muskrat lodges), and areas with little human disturbance (Mitchell 1994).

Nonbreeding habitat for trumpter swans in Montana consists of many large and small lakes and ponds in extreme southern Montana, including the breeding area of the Red Rock Lakes/Centennial Valley. Swans also winter in the Ennis Lake and Madison River complex, as well as Hebgen Lake and the surrounding area. During winter appropriate habitat is areas where water does not freeze and food is plentiful and accessible. Swans will move out of one lake or pond to another if conditions become too severe.

Management

Management for trumpeter swans began in Montana in the early 1930s with the designation of the Red Rock Lakes National Wildlife Refuge (NWR). This refuge was specifically created for continued trumpeter swan presence and for active

management practices. These early management practices consisted of protection from shooting, winter-feeding stations, and relocation to other breeding locations (Mitchell 1994). Some of these management activities are still in practice today, along with others including habitat restoration, human recreation management, breeding, wintering habitat management, and winter translocation work (Mitchell 1994). Since 1988 trumpeter swans have been relocated from the Red Rock Lakes NWR in southern Montana to locations in Idaho, Oregon, Wyoming, and Utah to promote exploration of new wintering habitats and to remedy the increasing problem of overpopulation in the refuge during winter. The goal is to have less than 10 percent winter at any one site and no swans wintering at the Red Rock Lakes NWR (Baskin 1993). In 1993 winter feeding stations were terminated in the Red Rock Lakes NWR. It was believed these stations were reducing the winter range expansion work, as birds would not actively explore new wintering locations if food were made readily available in the refuge. Since then, trumpeter swans have indeed dispersed to new areas in the west, and the remaining population in the Red Rock Lakes NWR has stabilized. Other management techniques are described and supported by the North American Management Plan for Trumpeter Swans (1984). As noted in the distribution comments, the Confederated Salish and Kootenai Tribes in northwestern Montana are also reintroducing trumpeter swans on the Flathead Indian Reservation. Recently, a cooperative effort has developed between USFWS and FWP to reintroduce breeding trumpeter swans to the Blackfoot River. Trumpeter swans are a Species of Management Concern in Region 6 (U.S. Fish and Wildlife Service 1995).

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Isolation of breeding populations	Protect known nesting habitat and manage nesting habitat in a manner compatible with increasing swan production and connectivity between populations
Wetland degradation and destruction	Wetland restoration programs
Lack of information of breeding success	Continue surveys and monitoring of populations
Vulnerable to power line collisions	Relocate power lines underground in areas adjacent to nesting and brood rearing locations

Management Plans

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Harlequin Duck (*Histrionicus histrionicus*)

Figure 71. Distribution of the Harlequin Duck
(Distribution reflects entire range and does not discriminate between breeding and nonbreeding areas)

Range

The harlequin duck's range is small and fragmented and is found primarily in northwestern Montana and parts of the Greater Yellowstone ecotype.

Harlequin ducks breed in Alaska and western Canada, south to eastern Oregon and east-central California, Idaho, and Wyoming; they also breed in eastern Canada. They winter in the Aleutian and Pribilof Islands, south to central California and also in the Maritime Provinces south to Maryland (Karl 2000). In North America harlequin ducks winter along the north Pacific coast, then migrate inland to nest along swiftly flowing mountain streams (Bellrose 1980). Although still globally widespread, the Atlantic population may be reaching critically low levels, and the Pacific population has experienced substantial declines (NatureServe 2004).

Habitat

In Montana, most harlequin ducks inhabit fast-moving, low-gradient, clear mountain streams. Overstory in Montana does not appear to affect habitat use: In Glacier National Park, birds used primarily old-growth or mature forest (90 percent), and most birds in streams on the Rocky Mountain Front were seen in pole-sized timber (Diamond and Finnegan 1993). Banks are most often covered with a mosaic of trees and shrubs, but the only significant positive correlation is with overhanging vegetation (Diamond and Finnegan 1993; Ashley 1994).

Four habitat characteristics were noted at more than 50 percent of harlequin duck observations in the Tetons (Wallen 1987): 1) streamside perennial shrub vegetation, 2) meandering (braided) channel types, 3) more than three loafing sites per 10 meters, and 4) areas unused by humans. Wallen (1987) postulated that human activities might have a greater influence on breeding success than available habitat. Harlequins feed primarily on crustaceans, mollusks, insects, and a few small fishes (Karl 2000).

The strongest stream section factor in Montana appears to be for stream reaches with 2-plus loafing sites per 10 meters (Kuchel 1977; Diamond and Finnegan 1993; Ashley 1994). Broods may preferentially use backwater areas, especially shortly after hatching (Kuchel 1977), though this is not apparent in data from other studies (Ashley 1994). Stream width ranges from 3 to 35 meters in Montana. On stream gradients of 7 percent, occupied stream reaches ranged from 1.8 to 2.8 percent (Fairman and Miller 1990), while velocity at 42 harlequin observation points ranged from 0.8 to 4.1 meters per second (Diamond and Finnegan 1993). Harlequins in Glacier National Park used straight, curved, meandering, and braided stream reaches in proportion to their availability, as was the case for bottom types (Ashley 1994).

Harlequin ducks breed locally on mountain streams in the western part of the state (Reichel and Genter 1995), including the Kootenai, Flathead, Clark Fork, and Blackfoot river drainages. Scattered breeding also occurs along the Rocky Mountain Front and the northern edge of Yellowstone National Park (Montana Partners in Flight 2004). Harlequin ducks are known to occur in Bonner, Boundary, Clearwater, and Shoshone counties in Idaho. Harlequin ducks in Glacier National Park confine almost all activities to swiftly running waters (90 percent of area used), but also used cut-off side channels and other backwaters during periods of high water and as brood rearing habitat (Kuckel 1977). Females with broods avoided all areas frequented by humans. Occupied streams in northern Idaho were usually in mature/old-growth western red cedar/western hemlock or Engelmann spruce/subalpine fir stands. Cassirer and Groves (1991) suggested that the presence of mature/old-growth forest in northern Idaho might indicate streams with high-quality, low-sediment loads, intact riparian areas, and relative inaccessibility to humans. Stream sections most suitable for harlequin breeding had gradients less than 10 degrees and banks lined with dense perennial shrubs; breeding and brood rearing occurred on streams with a mean gradient less than 30 degrees. In Idaho hens nest in cliff cavities, tree cavities, and on the ground.

Management

There is no specific management for harlequins in Montana; however, continued survey and monitoring efforts by MNHP have identified migration areas used by harlequin ducks.

In 1990 the harlequin duck was identified as potentially imperiled in western Montana. By 1991 it was considered as a candidate for listing on the federal threatened or endangered species list. Considered a sensitive or indicator species, it is among the first species to reflect damage to the type of pristine environments where it remains (Street 1999). The Harlequin Duck Working Group (1993) has identified inventory needs for both the Atlantic and Pacific populations for wintering and breeding habitats.

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Range and forest management practices	Manage grazing to maintain riparian vegetation and streambank stability in excellent condition
	Continue survey efforts to find occupied streams throughout its range in the state, and to develop and track a statewide population estimate
Human disturbance by paddlers (especially in breeding season)	Decrease human disturbance such as boating, hiking, and camping during breeding season
Water pollution on headwater streams utilized for nesting, brood rearing, and prey base	Work with agencies, organizations and public to identify and reduce point source pollution in headwater streams
Destruction of watershed stability and stream flow regimes. High water during nesting and brood rearing can reduce or eliminate productivity. Low water will render feeding and brood rearing habitats unavailable	Avoid increasing peak flows during nesting season
	Avoid increasing sedimentation
Impoundments and diversions on breeding streams	Reduce streambank or channel alteration along breeding habitat

Management Plans

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Bald Eagle (*Haliaeetus leucocephalus*)

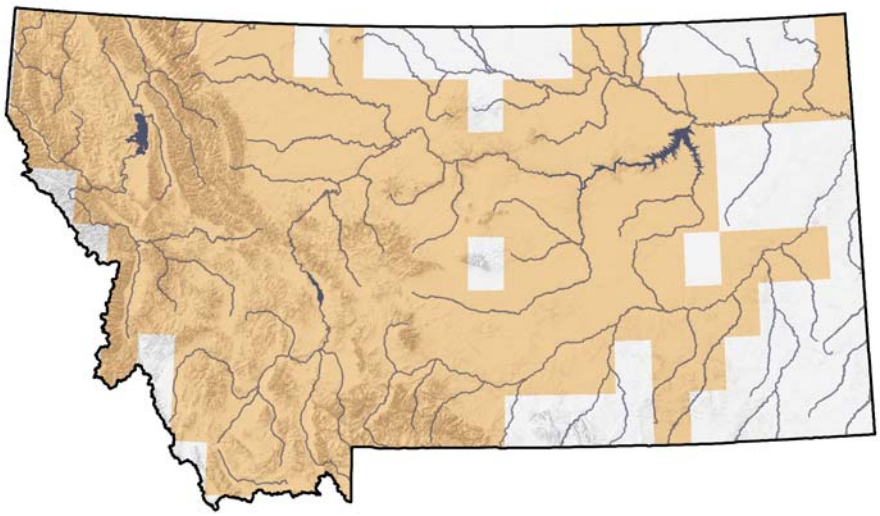

Figure 72. Distribution of the Bald Eagle
(Distribution reflects entire range and does not discriminate betweem breeding and nonbreeding areas)

Range

The majority of birds nesting in Montana are found in the western third of the state, although breeding pairs may be found along many of the major rivers and lakes in the central portion of the state and along the Yellowstone and Missouri rivers to the eastern prairie lands (Montana Bald Eagle Working Group 1994; MBD 2003). East of the Continental Divide, the presence of bald eagles may be somewhat more seasonally dependent than in the western part of the state because migrants from more northerly climes travel through Montana to reach their wintering grounds farther south.

In recent years, one of the largest fall (mid-October to mid-December) migration concentrations (200 to 300 birds at any one time, close to 1,000 individuals throughout the season) to take advantage of spawning salmon occurred at Canyon Ferry Reservoir on the Missouri River, near Helena. Formerly, migrating bald eagles were known to gather in large numbers in Glacier National Park where spawning kokanee salmon were abundant. No evidence exists, however, that the eagles on the Missouri River were those that formerly congregated in Glacier National Park (Montana Bald Eagle Working Group 1994). Subsequent shifting of fall congregations is expected as salmon populations peak and wane throughout the eagle's migration corridor. See the Montana Bald Eagle Management Plan for further details and descriptions of recovery zones (Montana Bald Eagle Working Group 1994).

Habitat

In Montana, as elsewhere, the bald eagle is primarily a species of riparian and lacustrine habitats (forested areas along rivers and lakes), especially during the breeding season. Important year-round habitat includes wetlands, major water bodies, spring spawning streams, ungulate winter ranges, and open water areas (Bureau of Land Management 1986). Wintering habitat may include upland sites. Nesting sites are generally located within larger forested areas near large lakes and rivers where nests are usually built in the tallest, oldest, largest diameter trees. Nesting site selection is dependent upon maximum local food availability and minimum disturbance from human activity (Montana Bald Eagle Working Group 1994). See the Montana Bald Eagle Management Plan (1994) for further details including home range sizes and habitat requirements of fledgling birds.

Management

General objectives of habitat management for bald eagles in Montana include maintaining prey bases; maintaining forest stands currently used or suitable for nesting, roosting, and foraging; planning for future potential nesting, roosting, and foraging habitat; and minimizing disturbances from human activities in nest territories, at communal roosts, and at important feeding sites, including water (MBEWG 1991). The Montana Bald Eagle Management Plan (MBEWG 1994) directs management of this species in the state. Specific objectives identified in the plan include a minimum of 800 nesting pairs in the seven-state recovery area, 99 of these in Montana; nesting success rate of 65 percent in occupied sites over a five-year period with annual average production of 1.0 fledged young per pair; population goals realized in at least 80 percent of management zones with nesting potential; and continued population increases for five consecutive years. See the Habitat Management Guide for Bald Eagles in Northwestern Montana (MBEWG 1991) and the Montana Bald Eagle Management Plan (MBEWG 1994) for further details on management guidelines and recovery objectives. The bald eagle is a good example of a success story—a species that has increased significanltly in population since its addition to the Endangered Species Act.

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Maintaining forest stands currently used or suitable for nesting, roosting, and foraging	Continue periodic monitoring and surveying for breeding pairs and locations of nests
Sensitive to human disturbance particularly if activity occurs after nest initiation and prior to fledging	Minimize disturbance within and near nesting territories during the nesting season
	Development of and updated brochure on living with bald eagles

Water turbidity caused by human activity, rendering water unsuitable for foraging	Follow MBEWG guidelines of no more than 10 percent of shoreline be developed on lakes within occupied nesting territories
Contaminants (lead, residual pesticides)	Enforcement of regulations that address the dumping of pollutants into waterways

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Greater Sage-Grouse (*Centrocercus urophasianus*)

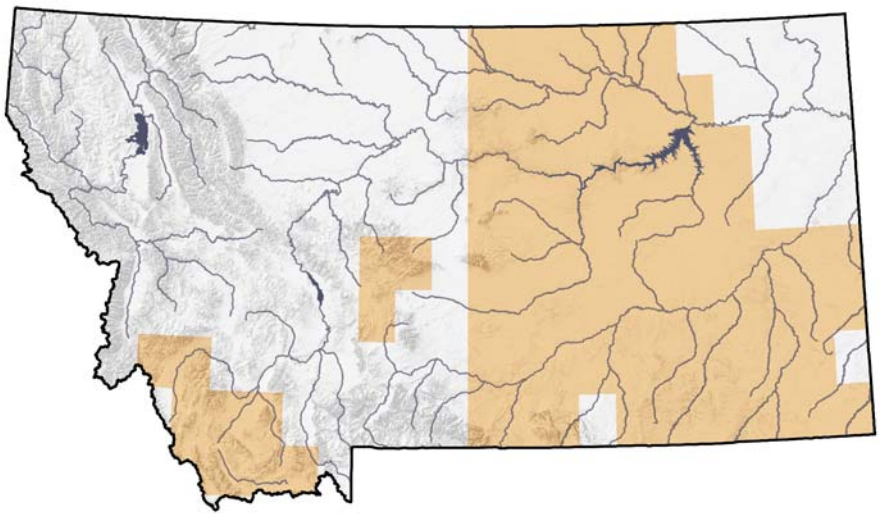

Figure 73. Distribution of the Greater Sage-Grouse
(Distribution reflects entire range and does not discriminate between breeding and nonbreeding areas)

Range

Greater sage-grouse are native to the sagebrush steppe of western North America, and their distribution closely follows that of sagebrush, primarily big sagebrush (*Artemisia tridentata*). Distribution of greater sage-grouse in Montana includes the eastern half and southwest corner of the state—roughly 27 million acres (11 million hectares) of sagebrush grassland in 39 counties. In eastern Montana, where close interspersion of wintering, nesting, and brood rearing habitat rarely require large seasonal movements, greater sage-grouse are essentially nonmigratory. Some greater sage-grouse in southwestern Montana are migratory, moving between separate summer and winter areas.

Historically, greater sage-grouse occupied the Bitterroot Valley in western Montana, southwestern Montana, most of eastern Montana, and far western North Dakota and South Dakota (Schroeder et al. 2004). One specimen was collected near Missoula, Montana, as late as 1900. Today, greater sage-grouse distribution is more restricted in Montana, South Dakota, and North Dakota and is found on two national forests—Custer and Beaverhead-Deerlodge.

Habitat

Healthy, properly functioning sagebrush communities support greater sage-grouse and a variety of other native wildlife. Sagebrush communities in each of the sagebrush ecotypes are influenced by a variety of environmental variables. Among these variables are soil texture, moisture regime, past fire activity, past

herbicide spraying, topography, grazing history, grazing accessibility, and recent weather pattern. The characteristics of vegetation at any particular site are the result of superimposed environmental variables. Close examination of a functional sagebrush community reveals these factors at work in the form of a patchwork of shrubs, grasses, and forbs of varying heights, canopy coverage, and species. Individual patches within the landscape can be measured at a microsite level, such as a nest site, or can be extended to include a broader scale, which might be used to describe greater sage-grouse wintering areas. Greater sage-grouse have adapted to and require this naturally occurring patchwork to meet yearlong survival and reproduction needs (Connelly et al. 2000b).

Greater sage-grouse select specific habitat characteristics in response to season and life stage. During the spring breeding season, males congregate on display areas to attract females. Leks, which usually consist of clearings surrounded by sagebrush, are revisited annually. About two-thirds of greater sage-grouse nests are located within 2 miles of a lek. Hens generally nest under stands of sagebrush 12 to 20 inches or more in height, seeking taller shrubs in a stand for nesting. Grasses and forbs provide additional nest concealment from predators. After eggs hatch, hens seek relatively open sagebrush stands with more than 15 percent grass and forb canopy cover. Insects and succulent forbs provide critical food for young broods. As summer progresses and upland forbs desiccate, hens will move broods to moist sites along drainages, ditches, or irrigated meadows/hay crops. In general, moist areas with standing herbaceous cover, for concealing broods from predators, interspersed with sagebrush grasslands provide high-quality brood habitat. Improvements in native grass and forb height and density generally translate into better nest success and brood survival. During late fall and winter, greater sage-grouse feed almost exclusively on sagebrush. Deep snow conditions force greater sage-grouse to move to areas of exposed sagebrush both for food and cover. Wintering greater sage-grouse prefer extensive stands of sagebrush with at least 20 percent canopy cover.

Contiguous large blocks of healthy sagebrush grassland are best suited for meeting yearlong needs of greater sage-grouse. Limited seasonal habitats (e.g., nesting cover, brood rearing habitat, winter habitat, etc.) may restrict the abundance, productivity, or occurrence of greater sage-grouse in a particular area.

Management

Greater sage-grouse are managed under state authority, including the statutory authority to regulate harvest. Legislative mandate designates the greater sage-grouse as an upland game bird (87-2-101, MCA).

FWP, in conjunction with federal land management agencies and conservation groups, monitors greater sage-grouse populations during spring through a

census of displaying males on leks. The post-harvest telephone survey provides an estimate of harvest for all upland bird species, trends in hunter numbers, and number of birds by species taken by hunters. FWP uses wings from harvested greater sage-grouse to estimate composition of the harvest by sex and age.

State-funded cooperative habitat projects have the potential to benefit greater sage-grouse. In 1987 the Montana legislature created a process and funding source for FWP to purchase conservation interests in important wildlife habitats through conservation easements and fee title acquisitions. The program generates funding from an earmarked portion of license revenue and provides an innovative tool to protect habitat at the state level. The Upland Game Bird Habitat Enhancement Program was developed through a series of Montana legislative sessions from 1987 to 2001. This program funds habitat enhancements on private and public lands such as vegetation plantings, grazing management systems, and leases. The program has recently helped fund (in combination with the USFWS Landowner Incentive Program) the Montana Sagebrush Initiative, which is a 30-year private land lease program designed to conserve high-priority sagebrush grasslands from prescribed fire, herbicide applications, plowing, and other practices intended to reduce or eliminate sagebrush and forbs.

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Conversion of native sagebrush grassland to cropland or non-native pasture	Promote conservation of intact sagebrush grassland landscapes through incentives and easements
	Guided by the Montana Greater Sage-Grouse Conservation Plan, utilize local working groups, organizations, and agency partnerships to promote and expand greater sage-grouse conservation
Rangeland treatments (e.g., prescribed fire and spraying)	Avoid use of rangeland herbicides and prescribed fire
Fragmentation of sagebrush grasslands (e.g., structural developments, roads, urban sprawl)	Develop and implement a habitat monitoring system to determine landscape-level trends in sagebrush grasslands
Range management practices	Support livestock grazing management that maintains or improves native rangeland integrity and provides standing herbaceous cover, important for nesting and brood rearing

Human disturbance	Quantify impacts of energy development and determine ways to reduce, eliminate, or mitigate negative effects
Noxious weeds	On a smaller scale, monitor trends in habitat condition (e.g., native rangeland integrity, habitat function, invasive weeds)
Vulnerability to West Nile virus	Continue funding and research on associations between West Nile virus and Greater Sage-grouse populations
Lek use and availability in association with other habitat uses	As needed, determine local greater sage-grouse habitat use and movements
	Develop and implement a lek monitoring strategy that will accurately measure trends in greater sage-grouse abundance and distribution across their range
	Continue to inventory greater sage-grouse leks and wintering areas

Management Plans

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Columbian Sharp-tailed Grouse (*Tympanuchus phasianellus columbianus*)

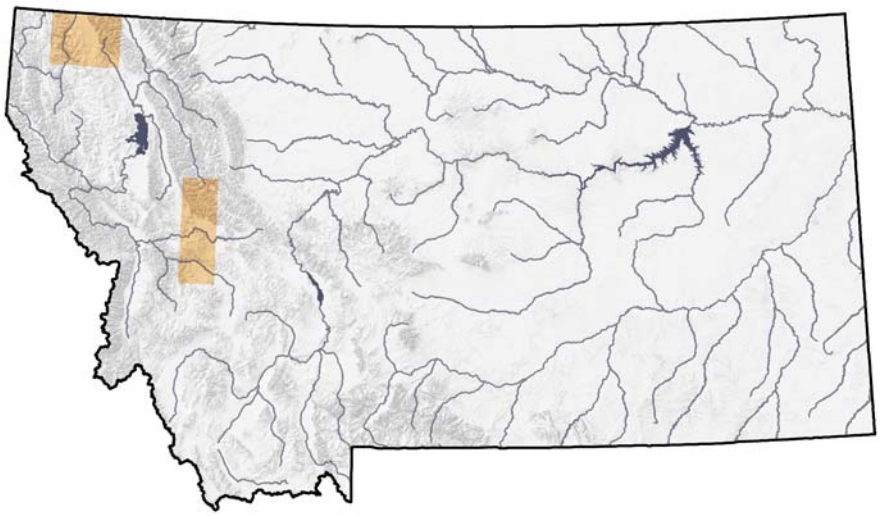

Figure 74. Distribution of the Columbian Sharp-tailed Grouse
(Distribution reflects entire range and does not discriminate between breeding and nonbreeding areas)

Range

The Columbian sharp-tailed grouse is one of six recognized subspecies of sharp-tailed grouse that occur in North America (AOU 1957). Historically, the Columbian subspecies ranged in suitable habitats from British Columbia south through eastern Oregon and Washington, Idaho, western Montana, Wyoming and Colorado, and northern Utah, Nevada, and California (Ulliman et al. 1998). There have been significant regional and local declines and extirpations; its geographic distribution has contracted by an estimated 90 percent (Aldrich 1963: Miller and Graul 1980). Currently, there are three meta-populations of Columbian sharp-tailed grouse: one in Colorado/Wyoming, one in Idaho/Utah, and one in central British Columbia. Smaller population centers are found in south-central Idaho/northeast Nevada, north-central Washington, and northeast Oregon (USFWS 1999).

Montana recently supported a very small population of Columbian sharp-tailed grouse in the Tobacco Valley near Eureka. Only one lek is known to exist in this area, which is located on land held by The Nature Conservancy. There has been no known use of the lek during the past three years (T. Their, personal communication). Counts of males on the lek varied from a high of 33 in 1971 to the recent low. This population was supplemented with birds from British Columbia on two occasions.

Flocks of sharp-tailed grouse also occur in the Helmville area of Powell County. These have traditionally been considered the Columbian subspecies. Given their

geographic nearness to the plains subspecies, however, there may be genetic interchange with plains birds. Although a genetics study has shown similarities between a very small sample of Helmville birds and sharp-tailed grouse from Washington (Warheit and Schroeder 2001), there does not appear to be conclusive evidence identifying the Helmville birds as the Columbian subspecies.

Habitat

Columbian sharp-tailed grouse are associated with intermountain shrub grassland habitats including sagebrush grasslands and deciduous riparian and foothill shrub habitats. Brood sites are similar to nest sites, but they are usually close to broad-leaved brush patches or shrubby riparian zones. Sharp-tailed grouse need habitat with moderate vegetative cover, high plant diversity, and high structural diversity (Montana Partners in Flight 2004). Tall broad-leaved mountain shrub and riparian cover types are critical components of winter habitat for sharp-tailed grouse (Saab and Marks 1992). They often move to higher elevations to get into moister sites that support greater amounts of these types of shrubs (Ulliman et al. 1998). Suitable winter sites need to be no more than 4 miles from leks to be useful to sharp-tails (Ulliman et al. 1998).

In Montana, Columbian sharp-tailed grouse persist only on native bunchgrass-shrub stands (Mussehl et al. 1971; Montana Natural Heritage Program 2004). In some areas, conversion of native habitats to cropland, range management, and/or herbicide use has resulted in loss of native grasses, forbs, and woody vegetation, which are habitat components necessary for providing shelter from winter weather, protection from predators, nesting cover, and food (Mussehl et al. 1971; Montana Natural Heritage Program 2004). Over the past 15 years, much of the historical Columbian sharp-tailed grouse habitat in western Montana has been subject to considerable urban development, resulting in further habitat fragmentation, likely increases in nest-predator abundance, and reduced habitat function. Self-sustaining populations of sharp-tailed grouse require thousands of acres of intact habitat; large blocks of cropland or urban developed habitat are not conducive for supporting sustainable populations (Ulliman et al. 1998). Sharp-tailed grouse habitats associated with the Helmville and Eureka areas are not considered sufficient to support viable populations over time (Montana Partners in Flight 2004).

Management

As there is only one, possibly two, small populations of Columbian sharp-tailed grouse in Montana, critical efforts must be maintained to encourage individuals to seek and use lek areas. Careful population counts must be made, as well as counts of nesting sites and breeding success. Counting individuals at leks is the easiest way to monitor population trends. Wildlife agencies monitor leks because their size and density provide an index to populations and indirectly reflect changes in habitat quality (Cannon and Knopf 1981; Giesen and Connelly 1993).

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Isolated and extremely small population	Increase abundance and distribution of Columbian sharp-tailed grouse with reintroduction program into northwest Montana that includes the development of a captive rearing facility
	Monitor existing populations to determine if management actions are adequate
	Identify validity of Blackfoot population as Columbian subspecies
Human disturbance to leks	Protect known lek areas and surrounding habitats within 2 kilometers, and search for new leks in areas with appropriate physiographic and vegetative characteristics
	Prohibit physical, mechanical, and audible disturbances within the breeding complex during the breeding season (March to June), if they might impact courtship activities and breeding during the daily display period (within three hours of sunrise and sunset)
	Avoid pesticide use on Columbian sharp-tailed grouse habitats
Conversion of native grassland and shrub/grass communities to agriculture and other unsuitable land uses	Solicit cooperation and communication between land managers and landowners in managing habitat
	Coordinate with British Columbia to manage suitable habitat in the Tobacco Plains area
Encroachment of conifers onto grassland habitat	Use prescribed fire to stimulate growth and vigor of deciduous shrubs in wintering areas, as long as a minimum of 10 percent of habitat will provide shrub cover during the recovery period of the burned area
Range management practices	Develop livestock management plans, which favor maintenance or enhancement of bunchgrass communities, forbs species diversity, and upland shrubs
	Develop appropriate grazing regimes in areas of known populations
	Fence areas of deciduous trees and shrubs (especially in riparian areas) to manage livestock

Invasion of non-native annual vegetation	Avoid manipulation or alteration of vegetation within the breeding complex (lek and nesting areas) during the nesting period (mid-April to June)
Predation on nests by ravens and other predators	Protect, maintain, and enhance winter, breeding, and nesting habitats near known populations

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Yellow Rail (*Coturnicops noveboracensis*)

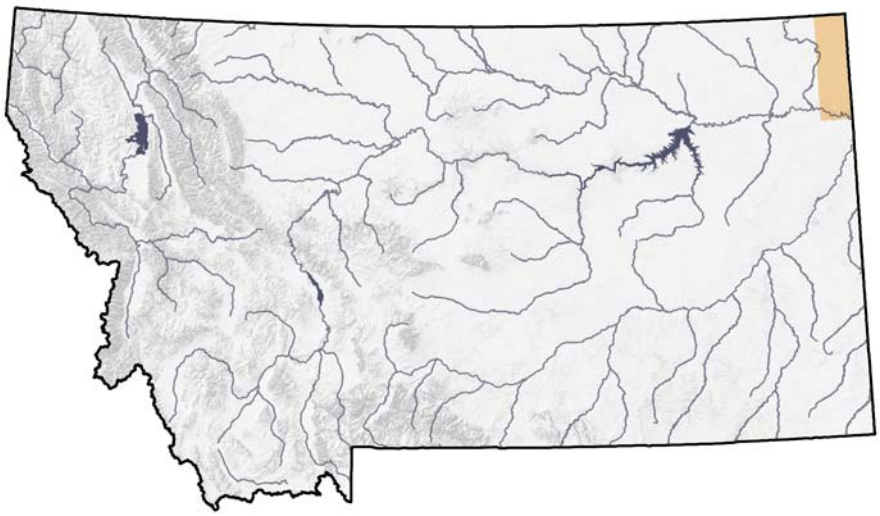

Figure 75. Distribution of the Yellow Rail
(Distribution reflects entire range and does not discriminate between breeding and nonbreeding areas)

Range

With fewer than 20 known observations in the state, this species is considered rare. Wright (1997) indicates that the yellow rail is known to occur regularly in the northeastern corner of the state and is rare elsewhere. The first recorded observation in the state was reported in Medicine Lake in 1943. Other sightings of the species have occurred across the state, with reports from the East Bay of Flathead Lake (the farthest west the species has been reported in the state), Red Rock Lakes, Huntley (Yellowstone County), the Bowdoin National Wildlife Refuge, and Westby (Montana Bird Distribution 2003).

Habitat

Breeding habitat selection is similar to that of other locations and consists of wet sedge (*Carex* spp.) meadows and other wetlands containing grasses, rushes (*Juncus* spp.), and bulrushes (*Scirpus* spp.) (Northern Prairie Wildlife Research Center 2003). Presence of the yellow rail is most commonly dictated by water depth, specifically one that fluctuates throughout the breeding season, i.e., wet in the early part of the breeding season and relatively dry (no standing water) by July or September (Northern Prairie Wildlife Research Center 2003).

Management

Outside of the national wildlife refuges, no management activities are known that specifically address conservation of yellow rails in Montana. Yellow rails are a

Species of Management Concern in USFWS Region 6 (U.S. Fish and Wildlife Service 1995).

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Little known information in Montana	Increased survey and monitoring projects
Human disturbance of wetland habitats	Conservation practices of wetlands
Water level manipulation at nesting locations	Manage reservoirs and dammed rivers in a manner that mimics more natural seasonal fluctuations

Management Plans

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Kushlan, James A., Melanie J. Steinkamp, Katherine C. Parsons, Jack Capp, Martin Acosta Cruz, Malcolm Coulter, Ian Davidson, Loney Dickson, Naomi Edelson, Richard Elliot, R. Michael Erwin, Scott Hatch, Stephen Kress, Robert Milko, Steve Miller, Kyra Mills, Richard Paul, Roberto Phillips, Jorge E. Saliva, Bill Sydeman, John Trapp, Jennifer Wheeler, and Kent Wohl. 2002. Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan, Version 1. Waterbird Conservation for the Americas, Washington, DC. 78 pp.

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Whooping Crane (*Grus americana*)

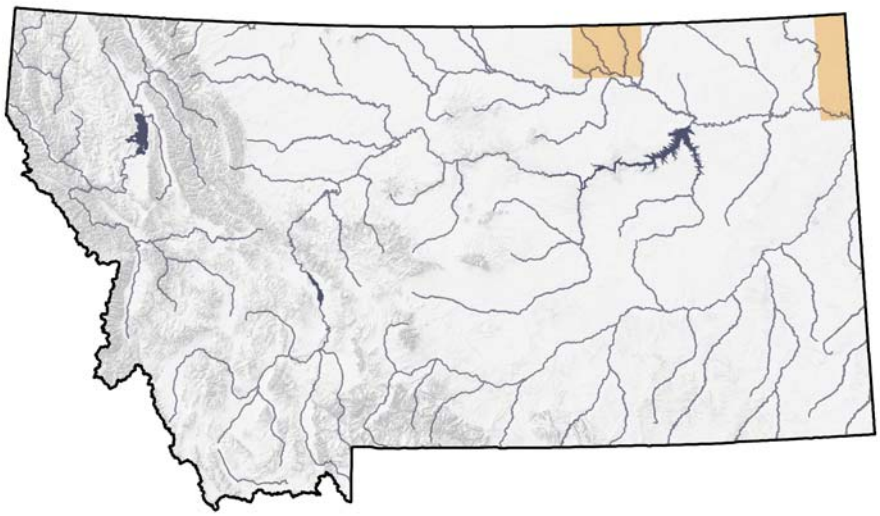

Figure 76. Distribution of the Whooping Crane
(Distribution reflects entire range and does not discriminate between breeding and nonbreeding areas)

Range

The earliest report of a whooping crane in the state is credited to Maximilian, Prince of Wied, for his observation of a flock of a few individuals above the mouth of the Musselshell River in September 1833 (Skaar, unpublished notes). Skaar (unpublished notes) also indicates that reports of this species for the next 90 years were scarce: singular reports exist for Big Sandy (1903), Terry (1904), and Billings (1918).

Individual, transient whooping cranes have been reported throughout the eastern portions of the state, with most of those records for Sheridan (Medicine Lake National Wildlife Refuge) and Roosevelt counties (MBD 2003). Historical observations of the species in the west-central portion of the state are also recorded; those reported the farthest west include observations in Gallatin County (west of Bozeman) in 1967 and Broadwater County (northwest of Townsend) in 1979 (Skaar, unpublished notes). For the past 20 years, observations have been restricted to the northeastern corner of the state, with limited sightings of individuals at Red Rock Lakes National Wildlife Refuge. Reports of the birds from Red Rock Lakes are the result of the reintroduction effort to establish a population at Grays Lake, Idaho, which was a nonreproducing flock. The last bird observed at Red Rocks was seen in 2002, and it is presumed that since the Grays Lake flock is no longer extant, whooping cranes will most likely not be seen at Red Rock Lakes until another regional population is established. The birds observed in the eastern corner of Montana

are occasional migrants traveling through from the Aransas population on their journey to breeding grounds in Alberta and the Northwest Territories.

Habitat

The whooping crane has been observed and breed at or within the marsh habitat present at Medicine Lake National Wildlife Refuge and Red Rock Lakes National Wildlife Refuge. Observations of individual birds in other areas of the state include grain and stubble fields as well as wet meadows, wet prairie habitat, and freshwater marshes that are usually shallow and broad with safe roosting sites and nearby foraging opportunities (MBD 2003).

Management

Efforts continue to protect and restore wetlands in the northeastern corner of Montana, in the area where whooping cranes have migrated in the past. There are also continued efforts to educate crane and waterfowl hunters on the identification of whooping cranes in an effort to avoid accidental harvest.

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Habitat degradation and fragmentation of native prairies	Habitat conservation in northeast Montana (outside Medicine Lake NWR)
Human disturbance to nesting locations	Prohibition of public access to breeding locations, including aircraft
	Periodic census to evaluate productivity
Potential petroleum spills in the wintering areas of Port Aransas	Work with other states to continue conservation efforts for Whooping crane
Human misidentification as sandhill cranes during hunting season	Hunter education

Management Plans

Kushlan, James A., Melanie J. Steinkamp, Katherine C. Parsons, Jack Capp, Martin Acosta Cruz, Malcolm Coulter, Ian Davidson, Loney Dickson, Naomi Edelson, Richard Elliot, R. Michael Erwin, Scott Hatch, Stephen Kress, Robert Milko, Steve Miller, Kyra Mills, Richard Paul, Roberto Phillips, Jorge E. Saliva, Bill Sydeman, John Trapp, Jennifer Wheeler, and Kent Wohl. 2002. Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan, Version 1. Waterbird Conservation for the Americas, Washington, DC. 78 pp.

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Piping Plover (*Charadrius melodus*)

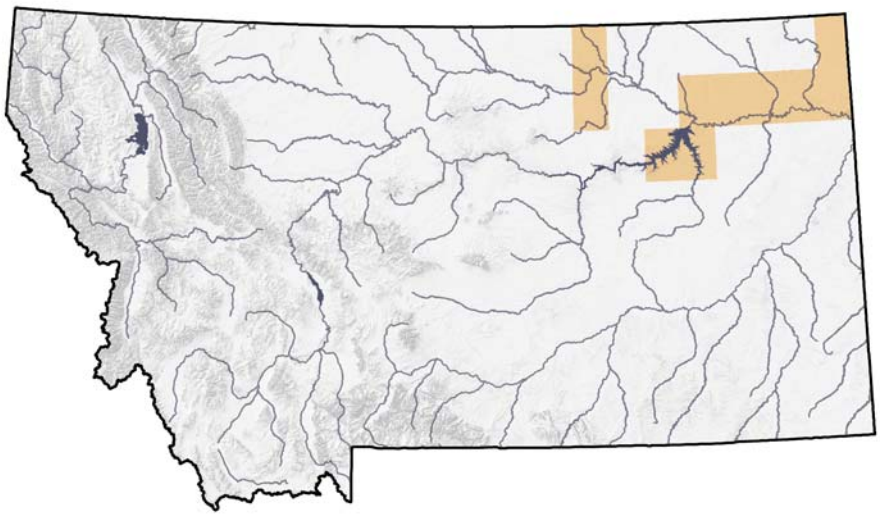

Figure 77. Distribution of the Piping Plover
(Distribution reflects entire range and does not discriminate between breeding and nonbreeding areas)

Range

Piping plovers are limited to the open shorelines of freshwater or alkaline lakes, reservoirs, rivers, or wetlands. The piping plover is generally a species of northern and northeastern Montana. This species is known to breed in Medicine Lake National Wildlife Refuge, Sheridan County, the Missouri River below Fort Peck Dam, Fort Peck Reservoir, Nelson Reservoir, Bowdoin National Wildlife Refuge (occasionally), and Alkali Lake (Montana Piping Plover Recovery Committee (MPPRC) 1994; Montana Bird Distribution 2003).

Observations of nonbreeding individuals have been recorded at Freezeout Lake Wildlife Management Area, the south end of Canyon Ferry Reservoir, and Park County (MPPRC 1994; Montana Bird Distribution 2003), though it is presumed the species uses other appropriate habitat in the state during migration.

The piping plover usually arrives in Montana in early May and leaves the state by late August. The earliest reported observation dates for the species are April 28, Fort Peck Reservoir (MPPRC 1994) and April 28, Upper Goose Lake, Sheridan County (Montana Bird Distribution 2003). Most of the observations reported in the state are for breeding individuals or for activity that suggests breeding.

Reports of piping plovers during migration are not common, but do occur just east of the Rocky Mountains (Montana Bird Distribution Committee 1996). Although they were known to breed at Bowdoin National Wildlife Refuge and Fort Peck Reservoir, little attention was paid to the species prior to its listing in 1985.

As a result, few observations are recorded prior to 1985 (Montana Bird Distribution 2003).

Habitat

Piping plovers primarily select unvegetated sand or pebble beaches on shorelines or islands in freshwater and saline wetlands. Vegetation, if present at all, consists of sparse, scattered clumps (Casey 2000). Open shorelines and sandbars of rivers and large reservoirs in the eastern and north-central portions of the state provide prime breeding habitat (MFWP 2003). In Montana and throughout the species' range, nesting may occur on a variety of habitat types. If conditions are right, alkali wetlands, lakes, reservoirs, and rivers can all provide the essential features required for nesting. The alkali wetlands and lakes found in the northeastern corner of the state generally contain wide, unvegetated, gravelly, salt-encrusted beaches. Rivers that flood adequately can supply open sandbars or gravelly beaches, as can large reservoirs, with their shoreline beaches, peninsulas, and islands of gravel or sand (USFWS 2003).

Sites with gravel substrate provide the most suitable sites for nesting (MPPRC 1994). One of the most limiting factors to nesting site selection is vegetation encroachment; piping plovers avoid areas where vegetation provides cover for potential predators. Fine-textured soils are easier to treat mechanically than rocky or gravelly soils when vegetation is determined as a limiting factor in an area's ability to provide suitable nesting habitat, but fine soils are not typically a preferred nesting substrate (MPPRC 1994). Another, and more important, limiting factor in nest site selection is the location of nesting sites in relation to surrounding water levels. Nests are often inundated because water levels are kept unnaturally high throughout the breeding season (and high winds can cause nests to be flooded), or nesting sites are not available, either because of encroaching vegetation or because water levels are so high that beaches are underwater during the early part of, and possibly throughout, the nesting season (MPPRC 1994). Nests are simple scrapes dug into the nest substrate, which may or may not be lined with pebbles (MPPRC 1994, 1995; Haig 1992).

Management

Four specific geographic areas recognized as providing critically important habitat and identified as essential for the conservation of the species have been designated as "Critical Habitat Units" in Montana by USFWS. The designation of critical habitat may require federal agencies to develop special management actions affecting these sites. The four units include prairie alkali wetlands and surrounding shoreline; river channels and associated sandbars and islands; and reservoirs and inland lakes with associated shorelines, peninsulas, and islands (USFWS 2003). Piping plovers rely on these places for courtship, nesting, foraging, and brood rearing. The first, Unit 1, contains alkali lake and wetland habitat found in Sheridan County. Unit 2 is identified as riverine habitat and

includes the Missouri River just south of Wolf Point to the state line, encompassing habitat provided by the sparsely vegetated sandbars and sandy or gravelly beaches along this stretch of the river. Reservoirs, which include similar sandbars and sandy or gravelly beach habitat, define both Units 3 and 4. Unit 3 includes Fort Peck Reservoir, from south of the dam to and including approximately 26 miles (north to south distance) of the length of Dry Arm. Portions of the Bowdoin National Wildlife Refuge, the majority of Lake Bowdoin, and the western portion of Dry Lake, were designated as Unit 4. Piping plovers nest at Nelson Reservoir north of the Bowdoin National Wildlife Refuge, but are not contained within any of the Critical Habitat Units in the state. This reservoir was excluded from the critical habitat designation because of a memorandum of understanding between the Bureau of Reclamation, the U.S. Fish and Wildlife Service, and the local irrigation districts. The memorandum, in combination with a biological opinion from the USFWS, guides management actions at this location (USFWS 2003).

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Destruction and degradation of summer and winter habitat	Protection of as much existing native prairie as feasible, primarily by conservation easements
	Conservation practices, including education, for nest locations which includes nest movement to safer areas
Shoreline erosion	Restoration of drained wetlands
Loss of nesting sites by high water levels	Timing spring flow releases from Fort Peck Dam to more closely mimic the natural seasonal flows of the river
Human disturbances of nesting and foraging birds	Avoid oil and gas development near wetlands
Predation	Direct predator management

Management Plans

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Montana Bird Distribution Online Database. 2001. Helena, MT. April–September 2003. http://MNHP.nris.state.mt.us/mbd/.

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Montana Piping Plover Recovery Committee. 1995. 1994 surveys for piping plover (*Charadrius melodus*) and least tern (*Sterna antillarum*) in Montana. 117 pp. + appendices.

Montana Piping Plover Recovery Committee. 1994. 1993 surveys for piping plover (*Charadrius melodus*) and least tern (*Sterna antillarum*) in Montana. Unpublished report. 116 pp. plus appendices.

U.S. Fish and Wildlife Service. 2003. Online informational search on piping plover in Montana. http://mountain-prairie.fws.gov/pipingplover/Piping_Plover_Q&A_Sept5.htm.

Mountain Plover (*Charadrius montanus*)

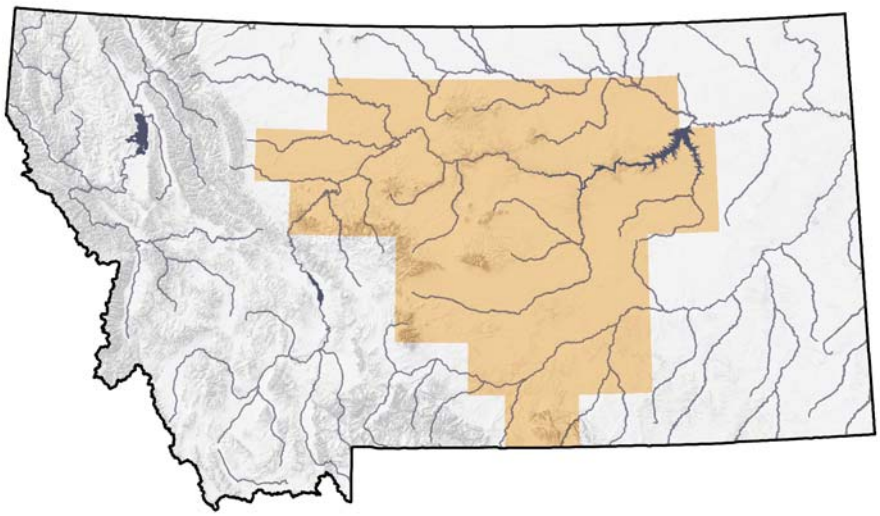

Figure 78. Distribution of the Mountain Plover
(Distribution reflects entire range and does not discriminate between breeding and nonbreeding areas)

Range

Primary breeding habitat of the mountain plover is found in the north-central portion of the state in Phillips, Blaine, and northern Fergus and Petroleum counties (FaunaWest 1995). This area contains the largest population of mountain plovers in Montana, with additional breeding areas in the state in Valley County (Little Beaver Creek) in the northeastern portion of the state; in Wheatland, Golden, and Musselshell counties near the Little Belt, Big Snowy, and Little Snowy mountains in central Montana; and in Jefferson, Madison, and Broadwater counties in the southwestern portion of the state (FaunaWest 1995). Additionally, surveys in 2003 revealed mountain plovers in Big Horn, Carbon, Fergus, Hill, Petroleum, Rosebud, and Treasure counties (Federal Register 68).

Mountain plovers arrive in April and may remain in the state as late as early October (Johngard 1986; Dinsomore 2001; Grensten 2005). The species is a rare migrant west of the Continental Divide, but is a breeding resident of the prairie lands to the east.

Habitat

Habitat use in Montana appears similar to other areas within the species' global breeding range, i.e., use of prairie dog colonies are primarily used in Montana; however, other short-grass prairie sites are confirmed as preferred breeding habitat. Records indicate the species utilizes towns of both white-tailed (*Cynomys leucurus*) and black-tailed prairie dogs (*Cynomys ludoviscianus*) (MBD

2003). Prairie dog towns provide greater horizontal visibility, a higher percentage of bare ground, refugia for consumption, and a higher diversity of forbs than adjacent areas (Olsen 1985). Mountain plovers will use towns as small as 3 hectares (Knowles et al. 1982); the average in one study was 57.5 hectares (Knowles and Knowles 1984), from 6 to 50 hectares in another study (Olson-Edge and Edge 1987), and from 2 to more than 150 hectares in another (Dinsmore 2001).

Primary habitat use in Montana during the breeding season includes heavily grazed, short-grass prairie sites. Habitat in Phillips and Blaine counties, the area containing the largest known populations of mountain plover in the state, is dominated by the native plant species *Bouteloua gracilis* and *Koeleria cristata.* This area also contains *Stipa comata*, *Agropyron smithii*, *Carex* spp., *Artemisia frigida*, *Opuntia polyacantha*, and *Gutierrezia sarothrae* (FaunaWest 1991). Knowles (1993) determined that in the northeastern portion of the state, mountain plover also selected sites associated with habitat dominated by *Atriplex gardneri* and *Eriogonum multiceps*, while use in the central and southwestern areas of the state was associated with *Bouteloua gracilis* and *Stipa comata*. Strong preference was also given to sites with slopes less than 5 percent and grass height of less than 6 centimeters (3 inches) (Knowles, Maj, and Hinckley 1995). Knowles (1993) indicates that sites selected within these habitat types were restricted to areas intensively grazed by prairie dogs, sheep, and/or cattle, especially those of the *Stipa comata* and *Bouteloua gracilis* habitat type (Knowles and Knowles 1997).

Management

Only the Bureau of Land Management (BLM) has some management activities specific to mountain plover; increased coordinated management activities in Montana are needed. However, the unifying habitat features desirable to mountain plovers are extremely short vegetation, a high percentage of bare soil, and an extensive area (0.5 to 1 kilometer in diameter) of nearly level terrain (Knowles and Knowles 1997). Management practices should emulate these parameters to ensure that these populations persist. Several studies have suggested specific conservation actions that could be taken to benefit mountain plover habitat (Wershler 1989; FaunaWest Wildlife Consultants 1991; Knopf 1991; Carter and Barker 1993; U.S. Fish and Wildlife Service 1995; Dinsmore 2001).

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Loss of livestock grazing (increase in vegetation height above 4 inches or 30 percent cover)	Cooperate with resource users in order to support sustainable domestic livestock practices that promote mountain plover habitat

Invasive non-native plant species	Shrub and noxious weed encroachment should be controlled at known and potential breeding sites
Habitat loss of short-grass prairies due to conversion to cropland	Existing native grassland should be protected from conversion to cropland
Decrease in prairie dog colonies	Continued management and potential enhancement to prairie dog colonies

Management Plans

Brown, S., C. Hickey, B. Harrington, and R. Gill, eds. 2001. The U.S. Shorebird Conservation Plan, 2nd ed. Manomet Center for Conservation Sciences, Manomet, MA.

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Knopf, F. L. 1991. Status and conservation of mountain plovers: the evolving regional effort. Report of research activities, USFWS National Ecology Research Center, Fort Collins, CO, 9 pp.

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Long-billed Curlew (*Numenius americanus*)

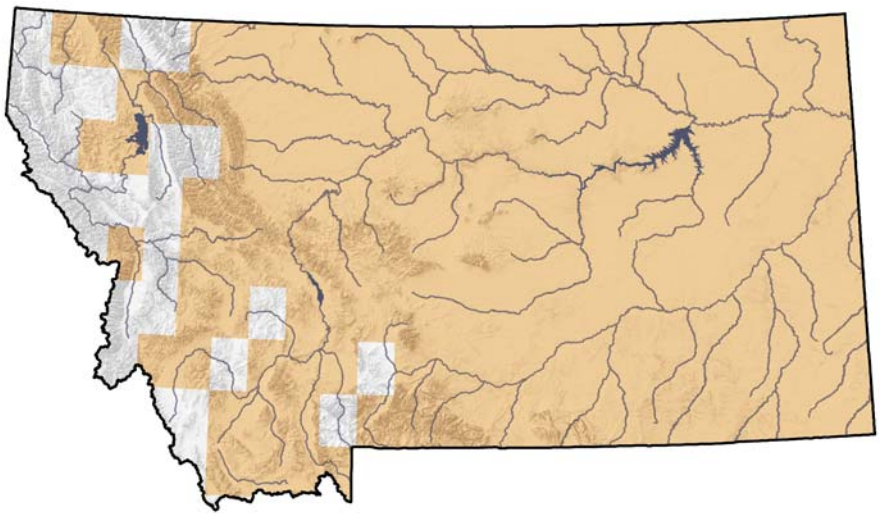

Figure 79. Distribution of the Long-billed Curlew
(Distribution reflects entire range and does not discriminate between breeding and nonbreeding areas)

Range

The long-billed curlew breeds widely throughout the state, although it is more common east of the Rocky Mountains. Long-billed curlews do not overwinter in Montana.

Habitat

Long-billed curlews have four essential nesting habitat requirements in the northwestern United States: short grass (less than 30 centimeters, or 11.8 inches tall), bare ground components, shade, and abundant invertebrate prey. Long-billed curlews prefer native prairies but also occupy grazed mixed-grass communities and scrub prairies. Long-billed curlews probably select sites because of shortness of vegetation and the spacing of grass clumps. Because they rely on camouflage for protection of their eggs and themselves during incubation, the short grass presumably allows for better visibility of approaching danger, and the irregular pattern of grass clumps complements their cryptic coloration. They typically prefer areas with well-drained, gravelly soils and low, rolling terrain. Proximity to water may be another important factor in breeding habitat.

Management

Long-billed curlews are closely associated with grassland and shrub grassland habitats. Management should therefore be directed at protection and

enhancement of those habitats. Habitat areas need to be more than three times as large as a long-billed curlew's territory, which averages about 14 hectares (34.6 acres), in order for curlews to use them.

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Habitat loss (e.g., sodbusting, weed invasion, general conversion of prairie lands to other uses)	Prevent sodbusting, subdivision, and conversion of prairie lands to other land uses
Breeding habitat within state is either fragmented, unprotected, or mismanaged	Provide large blocks of suitable habitat
	Management activities and grazing should be delayed until after the breeding season (approximately July 15)
Human-directed disturbance to grassland habitats (disturbance includes impacts of cattle grazing, roads, and adjacent land activities, and may include pesticide application and draining of wetlands)	Maintain vertical structure through appropriate management techniques such as light grazing, haying, and occasional prescribed burning during nonbreeding season

Management Plans

Brown, S., C. Hickey, B. Harrington, and R. Gill, eds. 2001. The U.S. Shorebird Conservation Plan, 2nd ed. Manomet Center for Conservation Sciences, Manomet, MA.

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Interior Least Tern (*Sterna antillarum athalassos*)

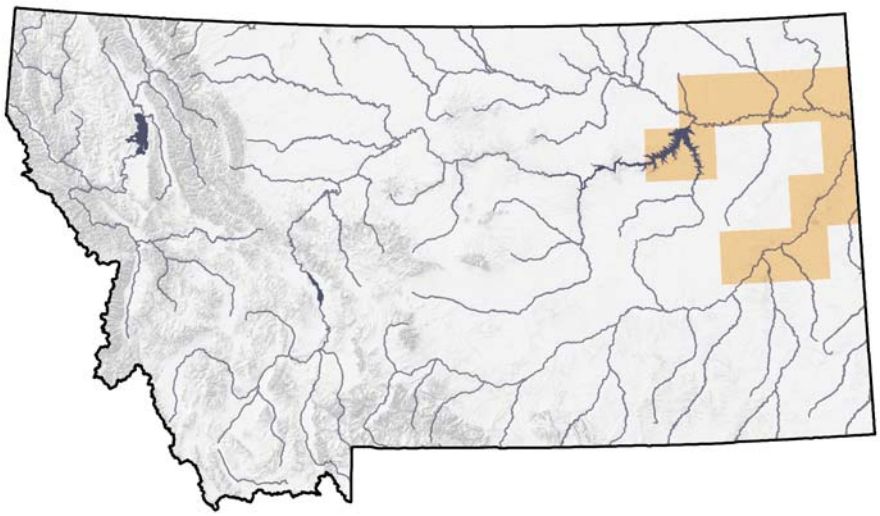

Figure 80. Distribution of the Interior Least Tern
(Distribution reflects entire range and does not discriminate between breeding and nonbreeding areas)

Range

Montana defines the western portion of the interior least tern's range. The species breeds along the lower portions of the Missouri River below Fort Peck Dam, on the beaches of Fort Peck Reservoir, and on the Yellowstone River below Glendive. Records of transient individuals are few and are limited primarily to these same areas (Montana Bird Distribution 2003).

Habitat

Interior least terns nest on unvegetated sand-pebble beaches and islands of large reservoirs and rivers in northeastern and southeastern Montana, specifically the Yellowstone and Missouri river systems (Christopherson et al. 1992). These wide-open river channels and lake and pothole shorelines provide the preferred characteristics for nesting terns. Sites with a gravel substrate provide the most suitable sites for nesting (Montana Piping Plover Recovery Committee (MPPRC) 1994). One of the most limiting factors to nesting site selection is vegetation encroachment; terns avoid areas where relatively thick vegetation provides cover for potential predators. Fine-textured soils are easier to treat mechanically than rocky or gravelly soils when vegetation is determined as a limiting factor in an area’s ability to provide suitable nesting habitat, but fine soils are not typically a preferred nesting substrate (MPPRC 1994).

In Montana, as in other areas, another and more important limiting factor in nest site selection is the location of nesting sites in relation to surrounding water

levels. Nests are often inundated because water levels are kept unnaturally high throughout the breeding season (and high winds can cause nests to be flooded) or nesting sites are not available, either because of encroaching vegetation or because water levels are so high that beaches are underwater during the early part of, and possibly throughout, the nesting season (MPPRC 1994).

Management

As identified in the recovery plan for the interior least tern, delisting can be considered when four censuses confirm that the interior population has reached 7,000 and remains stable for at least ten years. The goal for the Missouri River system is 2,100 birds (census numbers in 2003 revealed 735 birds for the Missouri River in total) (Pavelka, personal communication 2003). Appropriate water management, which includes natural seasonal flows, is identified as the major consideration for interior least tern conservation in Montana, because the greatest threat to breeding pairs, in some years, is the loss of existing nesting sites from inundation by high water during the breeding season (MPPRC 1994).

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Human use and predation on adults, eggs, and young by birds (e.g., kestrels, night-herons, crows, northern harriers, gulls) and mammals (e.g., foxes, skunks, weasels, opossum, rats, feral hogs, and domestic cats and dogs)	Predator control
	Control access of nest locations to humans
Chemical spills and pesticide or heavy metal pollution	Decrease point and nonpoint inputs of pesticides and heavy metals into rivers and floodplains
Human modification of river flow (e.g., reduction of spring floods by dams) and bank stabilization and channelization, resulting in reduced availability of bare island/sandbar nesting habitat	Decrease human modifications of flows on larger rivers and Fort Peck Reservoir
	Conservation of riparian areas in northeast Montana, decreasing human impacts
Loss of aquatic habitat diversity and resulting changes in fish species composition and abundance	Work with agencies, organization and public to support native species conservation

Unsustainable irrigation may be a threat by lowering water levels/flows and reducing river areas when terns are breeding	Beach enhancement

Management Plans

Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana Version 1.0. Montana Partners in Flight. Kalispell, MT.

Kushlan, James A., Melanie J. Steinkamp, Katherine C. Parsons, Jack Capp, Martin Acosta Cruz, Malcolm Coulter, Ian Davidson, Loney Dickson, Naomi Edelson, Richard Elliot, R. Michael Erwin, Scott Hatch, Stephen Kress, Robert Milko, Steve Miller, Kyra Mills, Richard Paul, Roberto Phillips, Jorge E. Saliva, Bill Sydeman, John Trapp, Jennifer Wheeler, and Kent Wohl. 2002. Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan, Version 1. Waterbird Conservation for the Americas, Washington, D.C. U.S.A., 78 pp.

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Black Tern (*Chlidonias niger*)

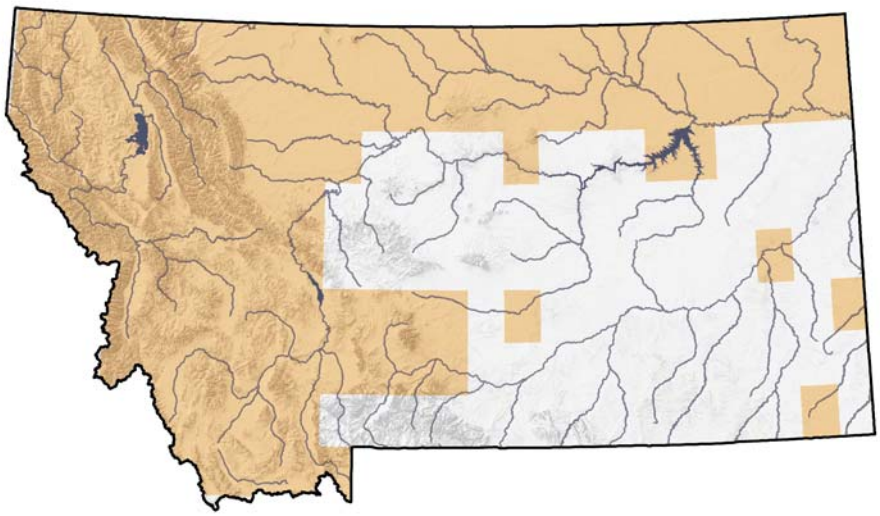

Figure 81. Distribution of the Black Tern
(Distribution reflects entire range and does not discriminate between breeding and nonbreeding areas)

Range

Black terns have been documented breeding in 12 Montana counties, most located in the northern half of the state. From east to west they include Sheridan, Phillips, Blaine, Cascade, Teton, Ponderosa, Glacier, Powell, Flathead, and Lake counties. Breeding records also exist for Beaverhead County in southwest Montana and Carter County in the southeast corner of the state.

Unconfirmed breeding also has been recorded in at least five more counties (Montana Bird Distribution 2003; MNHP 2003). Even though breeding black tern colonies are located throughout many areas of Montana, this apparently wide-ranging distribution is misleading. Black terns are limited to breeding locations with appropriate habitat, size, and vegetative composition. These limitations likely account for their widely scattered distribution. Black terns can nest wherever appropriate habitat exists, but appropriate habitat in Montana is patchy at best.

Little information is known about black tern migratory patterns in Montana. They are more likely to move north from wintering locations in the interior of the United States (Dunn and Argo 1995), so early sightings should occur in southern portions of the state. Migrating black terns have been observed just north of Dillon as early as April. However, the majority of spring migration observations have been in May and June. Black terns have been observed in transit in July and August albeit fewer observations, probably due to peak breeding. The latest recorded observation was in September near Medicine Lake National Wildlife Refuge in Sheridan County (Montana Bird Distribution 2003). Migration in fall is

less concentrated through the interior of the country because the birds also move to coastal areas (Dunn and Argo 1995).

Habitat

Black tern breeding habitat in Montana is mostly wetlands, marshes, prairie potholes, and small ponds. However, several locations are on man-made islands or islands in man-made reservoirs. Across all Montana sites where black terns are present, approximately 30 to 50 percent of the wetland complex is emergent vegetation. Vegetation within known breeding colonies includes alkali bulrushes, canary reed-grass, cattail spp., sedge spp., rush spp., reed spp., grass spp., *Polygonum* spp., *Juncus* spp., and *Potamogeton* spp., indicating that a wide variety of potential habitats are usable by black terns. Water levels in known breeding localities range from about 0.5 meters to greater than 2.0 meters, with most having depths between 0.5 and 1.0 meters (MNHP 2003).

Management

Active management for black terns in Montana is currently limited to continued population monitoring and water level fluctuation control. Several black tern colonies are under federal or state control, and population monitoring at those locations is completed annually. This monitoring can range from basic observation counts to nest location surveys. At some sites, federal or state agencies also monitor and regulate water levels during the breeding season for black terns, as well as other wetland species and waterfowl.

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Loss or degradation of wetlands for breeding and migration	Incorporate black tern habitats (known and potential) into any wetland restoration programs
	Undertake continued management actions at waterfowl management areas to reduce salinity and selenium concentrations
	Continued water level regulation on impounded rivers and reservoirs at nesting locations
Human disturbance in nesting colonies	Implement a public education and sighting program, similar to the program for common loon nesting sites
Lack of information	Continue monitoring at breeding locations

Pesticide reduction of favored insect foods	Reduce nutrient loading from runoff at known black tern nesting sites

Management Plans

Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana Version 1.0. Montana Partners in Flight. Kalispell, MT.

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Flammulated Owl (*Otus flameolus*)

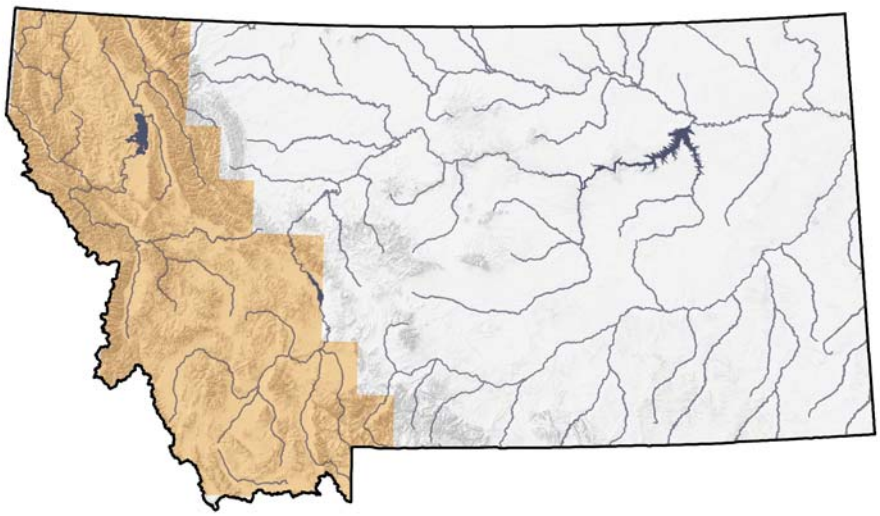

Figure 82. Distribution of the Flamulated Owl
(Distribution reflects entire range and does not discriminate between breeding and nonbreeding areas)

Range

The range of flammulated owls in Montana is restricted to the western portion of the state, which includes areas east of the Continental Divide. Montana Bird Distribution notes eight observation records since 1996, with confirmed breeding in the Bitterroot Valley (Lenard et al. 2003). Additional breeding occurrences are confirmed in the Helena, Missoula, and Bozeman areas (Montana Bird Distribution Online Database 2001). Other areas of suspected breeding occur throughout western Montana. Low-elevation, old-growth ponderosa pine areas are especially important for flammulated owls.

Habitat

Information on breeding habitat in Montana is limited to one study in the Bitterroot Valley (Wright 2000). In Montana flammulated owls are associated with mature and old-growth xeric ponderosa pine/Douglas-fir stands (Holt and Hillis 1987; Wright et al. 1997) and in landscapes with higher proportions of suitable forest and forest with low to moderate canopy closure (Wright et al. 1997). They are absent from warm and humid pine forests and mesic ponderosa pine/Douglas-fir stands (McCallum 1994a; Wright et al. 1997). Information gathered from other studies throughout their range suggest the breeding habitat of flammulated owls is montane forest, usually open conifer forests containing pine with some brush or saplings (typical of the physiognomy of pre-European settlement ponderosa pine forests). The species shows a strong preference for ponderosa pine (*Pinus ponderosa*) and Jeffrey pine (*P. jeffreyi*) throughout its

range (McCallum 1994b). They prefer mature growth with open canopy and avoid dense young stands. Flammulated owls are found in a cooler, semiarid climate, with a high abundance of nocturnal arthropod prey and some dense foliage for roosting (McCallum 1994a). Most often they are found on ridges and upper slopes (Bull et al. 1990; Groves et al. 1997). The species may focus foraging in a few “intensive foraging areas” within the home range, averaging 1 hectare per range (Linkhart 1984, cited in McCallum 1994b).

In British Columbia, flammulated owls use dry interior Douglas-fir (*Pseudotsuga menziesii*) where ponderosa pine may be a codominant but pure ponderosa pine is avoided. A study in the Kamloops area testing a habitat model in Douglas-fir/ponderosa pine found three variables to be significant predictors for occupied habitat: elevation (between 850 and 1,150 meters), age class (older stands), and canopy closure (40 to 50 percent) (Christie and van Woudenberg 1997).

In Idaho they are found mostly in mature stands of ponderosa pine, Douglas-fir, or mixtures of the two with relatively open canopies (Atkinson and Atkinson 1990) and occasionally in stands of pure Douglas-fir or aspen where ponderosa pine is absent. In northeastern Oregon, nest trees were located in stands of old-growth ponderosa pine or mixed conifers near small clearings (Bull and Anderson 1978). In Colorado they show strong preference for old-growth ponderosa pine and Douglas-fir, using older trees for foraging and singing (Reynolds and Linkhart 1992; Linkhart and Reynolds 1997).

Territories consistently occupied by breeding pairs were those containing the largest portion (more than 75 percent) of old-growth (200 to 400 years), whereas territories occupied by unpaired males and rarely by breeding pairs contained 27 to 68 percent old-growth (Linkhart and Reynolds 1997). Aspen (*Populus tremuloides*) is often a component of nesting habitat in Colorado and Nevada (Reynolds and Linkhart 1987b; McCallum 1994b). In northern Utah the species has successfully nested in nest boxes in montane deciduous forests dominated by aspen with some scattered firs (Marti 1997).

Flammulated owls roost in dense vegetation and thickets that provide shade and protection from predators. They often roost close to the trunks of fir or pine trees, or in cavities (McCallum 1994b; USDA Forest Service 1994). In Oregon they use mixed coniferous forest rather than pure ponderosa pine (Goggans 1986, cited in McCallum 1994a). In Colorado large Douglas-firs or pines with a spreading form are used (Linkhart 1984, cited in McCallum 1994a). Flammulated owls roost close to nests (20 to 25 meters) during the nestling stage and just before fledging, and farther away before and after (McCallum 1994a). In British Columbia, they roost in regenerating thickets of Douglas-fir (Howie and Ritcey 1987). Migration habitat is in wooded and open areas in lowlands and mountains, including riparian areas and breeding habitat (McCallum 1994a).

Wright (1996) in the Bitterroot and Sapphire mountains in west-central Montana found flammulated owls in the breeding season related to the presence of snags and large trees near a nest area, openings at the territory scale, and the presence of low or moderate canopy closure in stands of ponderosa pine or Douglas-fir with a mosaic of grass/shrubs and forest edge.

McCallum (1994a) and Hayward and Verner (1994) provide substantive reviews of flammulated owl habitat, behavior, and general ecology. The preferred breeding habitat hosts a high diversity or abundance of nocturnal arthropods (primarily insects). Prey availability appears to be the primary factor for migration, and patterns in migration and winter habitat requirements are poorly known.

Management

No specific management activities for flammulated owls are currently occurring in Montana; however, management for old-growth ponderosa pine habitats is ongoing by a number of land management agencies, including the U.S. Forest Service (USFS). Management for this habitat type will be beneficial for flammulated owls in Montana. The USFS Region 1 designates the flammulated owl as a sensitive species.

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Loss of old-growth forests	Conservation of old-growth forests
Inadequate monitoring efforts	Continue monitoring efforts, to include night monitoring
Found in cluster distributions so that one catastrophic event could lead to loss of population	Evaluate the quality and quantity of suitable but unoccupied habitat or habitat that would be suitable with restoration
Fire suppression	Consider use of prescribed fire near mature forest stands to reduce understory stocking and enhance the shrub component
Use of herbicides or insecticides near nests	Do not use insecticides near nest sites

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Burrowing Owl (*Speotyto cunicularia*)

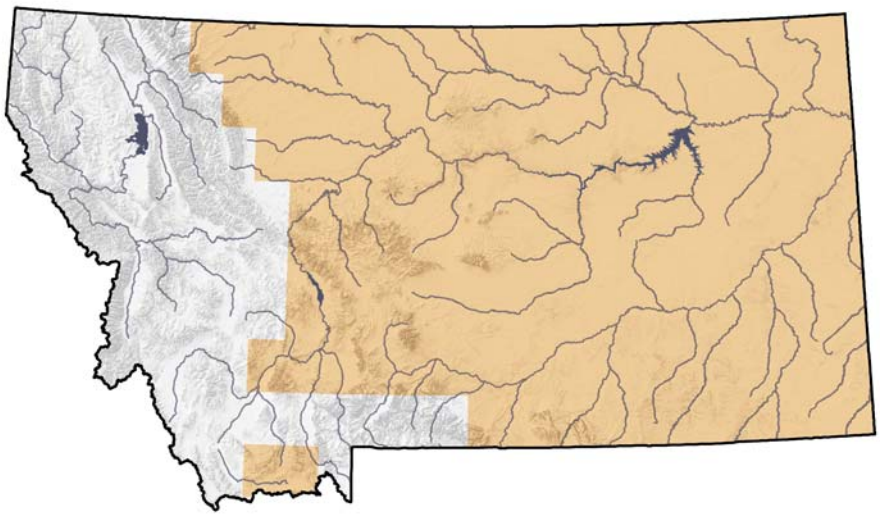

Figure 83. Distribution of the Burrowing Owl
(Distribution reflects entire range and does not discriminate between breeding and nonbreeding areas)

Range

Burrowing owls continue to be widely distributed in appropriate habitat east of the Continental Divide (Lenard et al. 2002).

Habitat

The burrowing owl breeds in habitats ranging from open grasslands (Orth and Kennedy 2001) to savanna and in some areas of human habitation (e.g., airports, golf courses, road rights-of-way) (Jones and Bock 2002). Areas used for breeding are often associated with burrows created by small mammals (e.g., prairie dogs, badgers, yellow-bellied marmots, and others) (Haug et al. 1993).

The presence of burrows is a critical habitat requirement and are often found abandoned by mammals in open grasslands. In Montana, black-tailed prairie dog (*Cynomys ludoviscianus*) and Richardson's ground squirrel (*Spermophilus richardsonii*) colonies provide the primary and secondary habitats for burrowing owls (Klute et al. 2003). The burrows may be enlarged or modified, making them more suitable. Burrowing owls spend much of their time on the ground or on low perches such as fence posts or dirt mounds.

Management

Wildlife managers outside of Montana have tried conservation actions such as the creation of artificial burrows and perches for burrowing owls and the regulation/protection of burrowing mammals. Successful approaches should be considered.

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Elimination of burrowing mammals that provide critical habitat	Continued maintenance, monitoring, and surveying of burrowing mammals and their colonies
Habitat loss and fragmentation due to agricultural and urban development	Conservation easements and other conservation practices that recover or protect native prairie grassland areas
Petroleum exploration and development	Research the impacts such as road building and water retention pond construction as they relate gas and oil development activities
Residual effects of pesticide use	Continue monitoring residual levels of contaminants
Nest site disturbance	Increased education and information to increase awareness of importance of nesting sites and reducing disturbance

Management Plans

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Black-backed Woodpecker (*Picoides arcticus*)

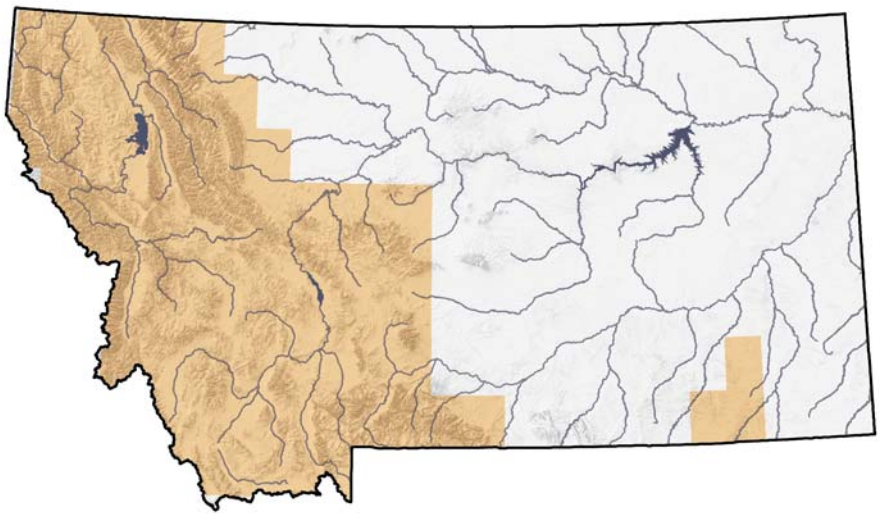

Figure 84. Distribution of the Black-backed Woodpecker
(Distribution reflects entire range and does not discriminate between breeding and non-breeding areas)

Range

The range of the black-backed woodpecker in Montana is primarily confined to the western portion of the state. The Montana Bird Distribution (2003) and the Montana Natural Heritage Program (2003) have approximately 16 confirmed breeding records for the species. Except for a single record from the south-central area of the state (southern Park County), all the breeding records are located in northwestern counties (Lincoln, Sanders, Flathead, Missoula, Lewis and Clark, and Powell) (MBD 2003). Unconfirmed but potential breeding records also exist for black-backed woodpeckers and would expand their range to most counties in the western part of the state, including areas in southwestern Montana, the Big and Little Belt mountains area, and the Bridger Range (MBD 2003). Several unconfirmed breeding records also exist for a small area in southeast Montana (Custer National Forest) (MBD 2003).

The black-backed woodpecker breeds from central Alaska and northern Canada south to the mountainous regions of California, Wyoming, the Black Hills, the upper Great Lakes, the New England states, and into Newfoundland. Like most woodpeckers, they feed on insects living in dead or diseased trees and hunt for wood-boring insects by peeling away patches of dead bark.

Habitat

The habitat of black-backed woodpeckers in Montana is early successional burned forest of mixed conifer, lodgepole pine, Douglas-fir, and spruce-fir (Hutto

1995a, 1995b), although they are more numerous in lower elevation Douglas-fir and pine forest habitats than in higher elevation subalpine spruce forest habitats (Bock and Bock 1974). This is supported by Harris (1982), who found black-backed woodpeckers in two recently burned forests composed of 73 percent and 77 percent Douglas-fir, respectively. They appear to concentrate in recently burned forests and remain for several years (three to five) before leaving due to prey source decline (Harris 1982). In northwestern Montana, black-backed woodpeckers nested in areas of western larch (*Larix occidentalis*)/Douglas-fir forest with a major component of old growth (McClelland et al. 1979). Harris (1982) found black-backed woodpeckers nesting within western larch even though the stand was predominately Douglas-fir. McClelland et al. (1979) determined that the decay of heartwood within a hard outer shell of western larch creates an ideal nesting site for black-backed woodpeckers to excavate.

The black-backed woodpecker is thought to be sedentary during the winter months. Black-backed nests have been monitored in Idaho (burned ponderosa pine forests), Wyoming (burned lodgepole pine forests), Oregon (unburned mixed-pine forest with bark-beetle outbreaks), and Montana (patchily burned mixed-conifer forests) (Dixon and Saab 2000). Bent (1939) found that more than 75 percent of the black-backed woodpecker's diet was composed of cerambycids (flatheaded wood borers) and buprestids (round-headed woodborers). It is believed the black-backed is able to more effectively extract wood-boring insect larva than other woodpeckers (Kirby 1980).

The value in long-term observations is evident in understanding wildlife habitat relationships (Sergio and Newton 2003). Information from the Montana Heritage Program (through May 2003) and the Idaho Data Conservation Center (through January 2003) show most black-backed woodpecker nests (n = 14) in Idaho are near (within 1,000 meters) or within insect outbreaks. In Montana, nest site information is lacking, but most observations are in or near insect outbreaks or recently burned areas. More detailed information of black-backed nest sites, foraging, and general behavior and ecology in the breeding season is found in recently published reviews (Dixon and Saab 2000) and peer-reviewed literature (McIver and Starr 2001; Hoyt and Hannon 2002).

Management

No known active management is ongoing for black-backed woodpeckers in the state. Studies by the U.S. Forest Service in the Rocky Mountains with locations in Montana has been underway in the last few years to provide more information about black-backed woodpecker habitat needs and ecology.

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Increased timber harvest	Work with agencies and companies that work in forest management to promote conservation practices
Fire suppression	Decrease fire suppression to allow natural occurrences in isolated areas
Removal of fire-killed or insect-infested trees	Manage “salvage” logging techniques in order to provide sufficient snags
	Leave parts of fire areas unsalvaged, in blocks as large as practicable
Conversion of mature and old-growth forests to young stands with few decayed trees	Ensure that fire, insects, and wind are allowed to regularly disturb habitat throughout space and time
Human disturbance near nest sites	Avoid human-related factors that may impact behavior

Management Plan

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Olive-Sided Flycatcher (*Contopus cooperi*)

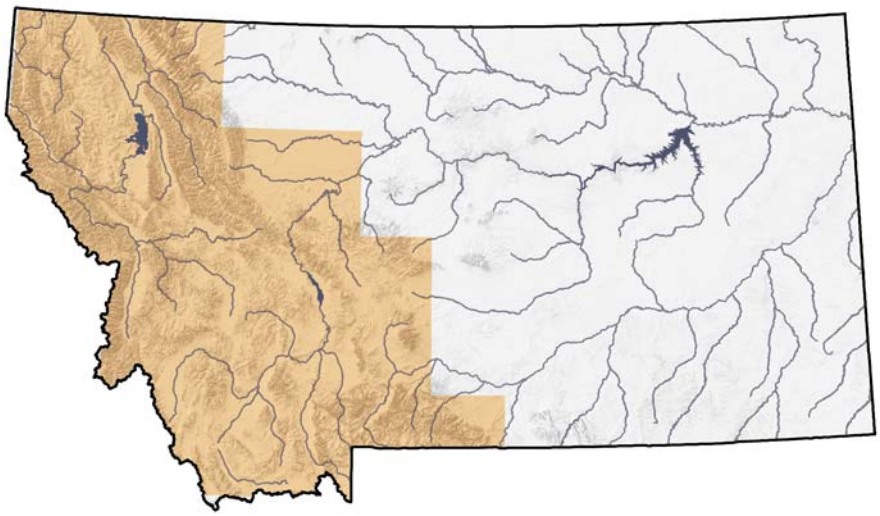

Figure 85. Distribution of the Olive-Sided Flycatcher
(Distribution reflects entire range and does not discriminate between breeding and nonbreeding areas)

Range

The olive-sided flycatcher breeds throughout mountainous areas of the western portion of the state with unconfirmed reports of breeding in the central region of Montana (Casey 2000; Montana Bird Distribution 2003). The species; propensity for higher elevations, usually from 920 to 2,130 meters, explains the transient nature of individuals reported at locations north and east of Billings (Montana Bird Distribution 2003).

Habitat

A species that generally breeds in the montane and boreal forests in the mountains of western North America, olive-sided flycatchers are highly adapted to the dynamics of a landscape frequently altered by fire. They are more often associated with post-fire habitat than any other major habitat type, but may also be found in other forest openings (clear-cuts and other disturbed forested habitat), open forests with a low percentage of canopy cover, and forest edges near natural meadows, wetlands, or canyons (Hutto and Young 1999; Altman and Sallabanks 2000). Their affinity for forested edges near water may be because of a higher presence of flying insects in these areas (Altman and Sallabanks 2000). The species forages on flying insects aerially from high, exposed perches atop tall trees or snags. They are a species common in spruce and aspen (*Populus tremuloides*), but uncommon in mixed-conifer, ponderosa pine (*Pinus ponderosa*), pine-oak (*Pinus-Quercus*), and cedar-hemlock

(*Cupressaceae-Tsuga*) forests and rarely present in lodgepole pine (*Pinus contorta*) or pinyon-juniper (Hejl et. al. 1995, as cited in Casey 2000).

The olive-sided flycatcher is a contrast species, which used a mosaic of coniferous old forests for nesting and either openings or gaps in old forests for foraging (Altman and Sallabanks 2000). Current habitat conditions are likely inferior in quantity and quality to historical conditions because of changes in historical fire regimes, but the magnitude of the change is unknown (Wisdom et al. 2000). The species is the only common species detected more often at forest edges than in forest interiors.

Management

Management actions in Montana are currently limited by lack of conclusive information about the specific relationship between the species' habitat use and reproductive success. It is yet to be determined if stand-replacing fire regimes or fires of less magnitude provide more appropriate habitat for successful reproduction (Casey 2000). The olive-sided flycatcher is a Species of Management Concern in USFWS Region 6 (U.S. Fish and Wildlife Service 1995).

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Fire suppression management	Use prescribed fire, timber harvest, and thinning to change forest composition and structure to restore old open forest conditions
	Identify occupied habitat and evaluate the quality and quantity of unoccupied habitat or habitat that would be suitable with restoration with fire or other action
Decreased post-fire snags and large trees	Selective logging practices
	Retain, maintain, and/or restore stands of open-canopy mature and older ponderosa pine and cottonwood and actively manage to promote long-term sustainability
Conversion of forest to urban and residential areas	Retention of forested edge habitat around riparian and wetland features

Management Plans

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Sedge Wren (*Cistothorus plantensis*)

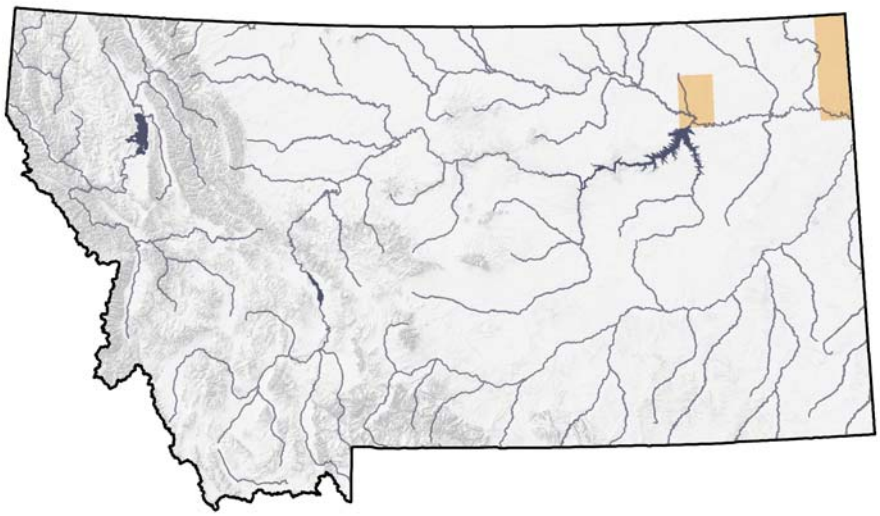

Figure 86. Distribution of the Sedge Wren
(Distribution reflects entire range and does not discriminate between breeding and nonbreeding areas)

Range

The migratory pattern of this species in Montana is poorly known, and few records exist for the state. The earliest recorded date for the sedge wren in Montana occurred in April 1909 in Gallatin County. Two recent records for Westby and Fort Peck indicate the presence of individuals in May (Montana Bird Distribution 2003).

Habitat

No specific information exists, but appropriate wetland habitat is present in the areas of the state in which the species has been recorded.

Management

No known active management is ongoing for sedge wren in the state. Sedge wrens are a Species of Management Concern in USFWS Region 6 (U.S. Fish and Wildlife Service 1995).

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Lack of information	Determine breeding status and identify breeding locations

	Increased survey, inventory, and monitoring projects
Human-directed disturbance to wetland habitats (e.g., disturbance can/does include impacts of cattle grazing, draining, vegetation manipulation, invasion of non-native plant and animal species, etc.)	Appropriate conservation management of wetland habitats of known use by sedge wrens

Management Plan

Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana Version 1.0. Montana Partners in Flight. Kalispell, MT.

Citations

Montana Bird Distribution Online Database. 2001. Helena, MT. April–September 2003. http://MNHP.nris.state.mt.us/mbd/.

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Nelson's Sharp-tailed Sparrow (*Ammodramus nelsoni*)

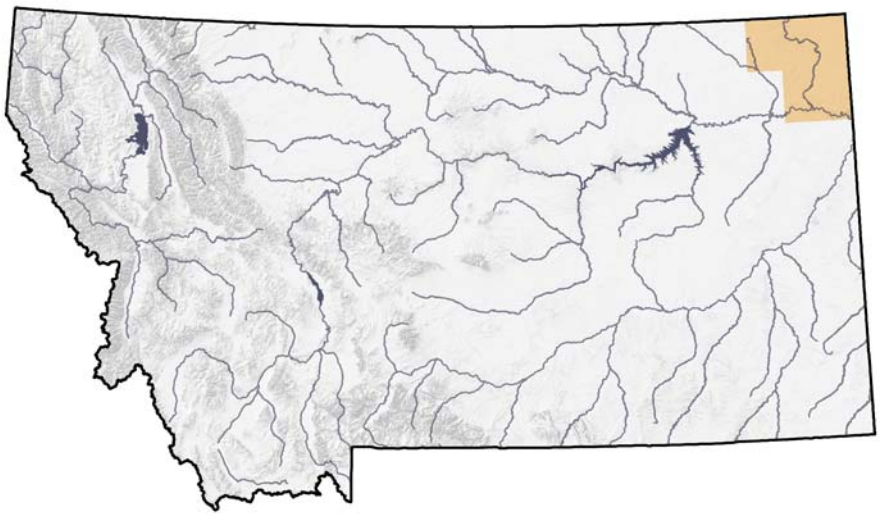

Figure 87. Distribution of the Nelson's Sharp-tailed Sparrow
(Distribution reflects entire range and does not discriminate between breeding and nonbreeding areas)

Range

The Nelson's sharp-tailed sparrow has an extremely limited range in Montana. The species has only been observed in eastern Sheridan and northeastern Roosevelt counties. About a dozen observations for this species have been made, and only a single breeding occurrence has been documented (Montana Bird Distribution 2003; MNHP 2003).

Habitat

There is very little information about the habitat for this species in Montana; however, it is assumed that the habitat is similar to that used in other portions of the species' range. This species prefers freshwater wetlands with dense, emergent vegetation or damp areas with dense grasses (Bownan 1904; Murray 1969; Stewart 1975; Krapu and Green 1978; Knapton 1979; Williams and Zimmer 1992; Berkey et al. 1993). In North Dakota, Nelson's sharp-tailed sparrows were common in prairie cordgrass (*Spartina pectinata*) stands, occurred at the edges of common reed (*Phragmites australis*) stands, and nested in sprangletop (Murray 1969). In northeastern North Dakota, they nested in thin, sparse grass on a wet alkali flat (Rolfe 1899; Hill 1968).

Nests usually are found in stands of grasses with litter that is persistent from year to year (Greenlaw 1993) and are built on or slightly above the ground in damp areas among emergent vegetation (Murray 1969; Stewart 1975). In North Dakota, Nelson's sharp-tailed sparrows are more abundant in dry years than in

wet years (Stewart 1975). In dry years, they nest in the shallow-marsh and deep-marsh zones of wetlands. In wet years, they nest in cordgrass (*Spartina* spp.) within wet-meadow zones.

Management

No known active management is ongoing for Nelson's sharp-tailed sparrows in the state. Conservation Reserve Program practices may provide large blocks of suitable habitat for this species in northeastern Montana.

Conservation Concerns & Strategies

Conservation Concerns	Conservation Strategies
Not adequately monitored or understood	Increased monitoring and survey efforts, especially breeding sites
Due to small occupied area, risk of extirpation from the state is high	Protection of areas where species is found
Wetland destruction	Wetland restoration and protection
	Increased management of grazing regimes that promote healthy habitat
Parasitism by brown-headed cowbird	Support research to better understand natural relationship between host and parasite

Management Plans

Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana Version 1.0. Montana Partners in Flight. Kalispell, MT.

Rich, T. D., C. J. Beardmore, H. Berlanga, P. J. Blancher, M. S. W. Bradstreet, G. S. Butcher, D. W. Demarest, E. H. Dunn, W. C. Hunter, E. E. Inigo-Elias, J. A. Kennedy, A. M. Martell, A. O. Panjabi, D. N. Pashley, K. V. Rosenberg, C. M. Rustay, J. S. Wendt, and T. C. Will. 2004. Partners in Flight North American Landbird Conservation Plan. Cornell Lab of Ornithology. Ithaca, NY.

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