## SPECIES OF GREATEST CONSERVATION NEED

*All of the information in this section is taken directly from the CFWCS (FWP 2006), Montana Field Guide (MNHP and FWP 2013a), the SOC list (MNHP and FWP 2013b), and recommendations from the SWAP Technical Teams (personal communications). Any additional citations are listed.*

There are 128 SGCN (Appendix N) identified in this SWAP which can be considered for SWG funding, but conservation actions only were developed for the 47 having a State Rank of S1 or S2. The latter includes five amphibians, 14 birds, 16 fish, eight mammals, one mussel, and three reptiles. While these 47 species were chosen to focus conservation efforts, it is not implied that projects that address other SGCN (i.e., species with a State Rank of S3) are excluded. Because the conservation actions identified in the Community Types of Greatest Conservation Need section take a landscape or habitat approach, many of the SGCN not addressed in this section likely will benefit from the actions identified in the aforementioned section. In addition, no conservation action identified in this section is more or less important than any other, as successful conservation of the species in greatest need will require addressing all of these concerns over time.

The maps in this section were developed from the Montana Field Guide (MNHP and FWP 2013a) and the Point Observation Database. Please note that some species may have no or few observations identified. This may not be a true representation of their distribution within Montana as the only available records may be from incidental observations. Structured surveys have not been conducted for all SGCN (see Species of Greatest Inventory Need) In addition, recent species observations (< 10 years) are displayed separately from older observations (> 10 years).

### INVERTEBRATES

The number of invertebrates in Montana is unknown, but likely to be in the thousands. Eighty-five are considered SOC (MNHP and FWP 2013b). This SWAP only reviewed two invertebrate species groups for inclusion consideration, crayfish and mussels. FWP and most of the partner agencies and organizations do not have the ability, capacity, or funding to properly address invertebrates and include them in this SWAP. Because many of the conservation actions identified use a landscape or habitat approach, many of the SOC invertebrates will benefit from actions taken. A list of invertebrate SOC can be found in Appendix O.

**Mussels**

Western Pearlshell (*Margaritifera falcata*) State Rank: S2
Global Rank: G4G5

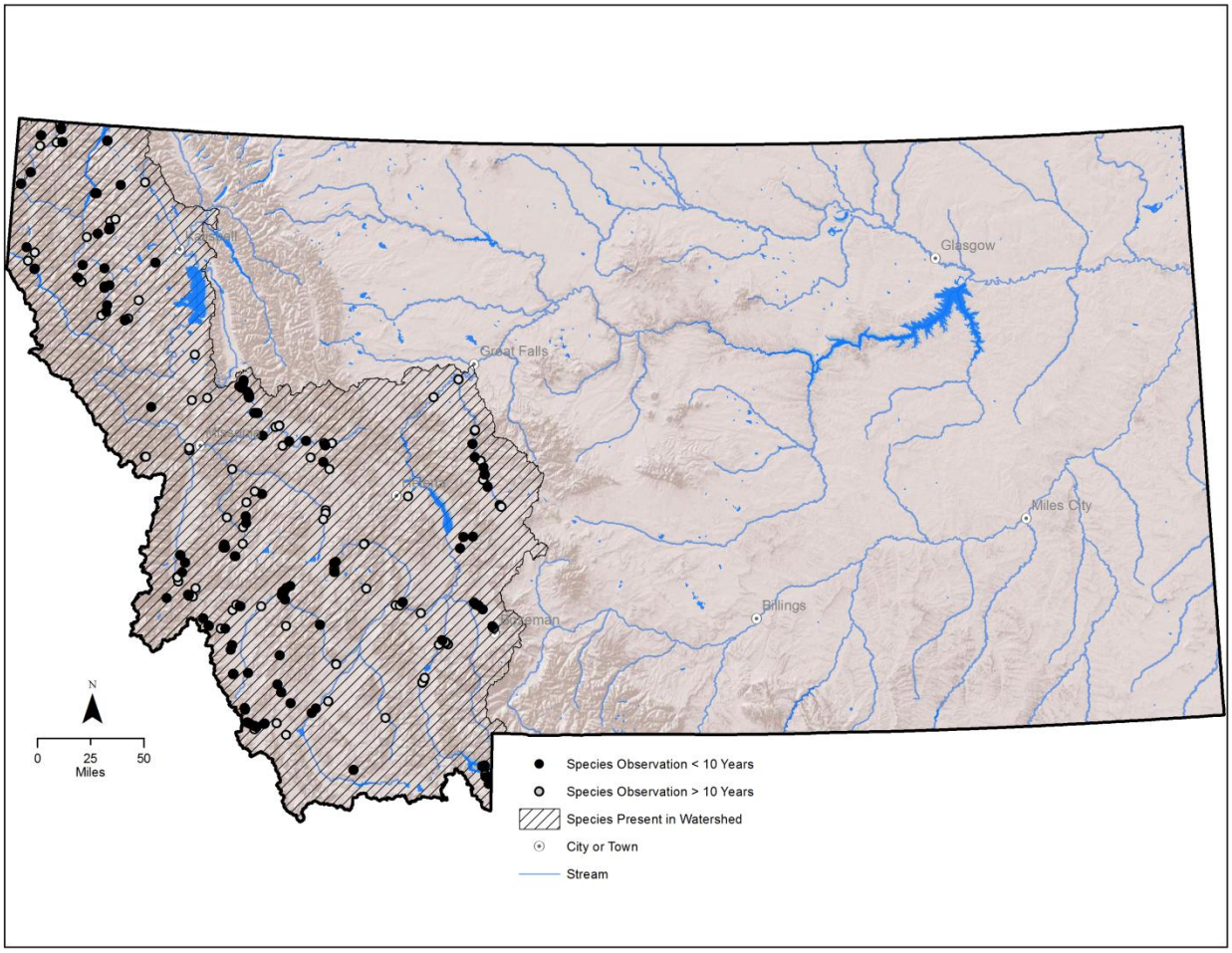


Figure 51. Montana range and observations of the western pearlshell

Habitat

The species is found in cool and cold running streams that generally have a low to moderate gradient and are wider than 6.6 feet; preferable habitat is stable sand or gravel substrates. It is found in hard as well as soft water. In large Idaho river systems (Salmon and Clearwater River Canyons), the western pearlshell attains maximum density and age in river reaches where large boulders structurally stabilize cobbles and interstitial gravels. Boulders tend to prevent significant bed scour during major floods, and these boulder-sheltered mussel beds, although rare, may be critical for population recruitment elsewhere within the river, especially after periodic flood scour of less protected mussel habitat. In Idaho's Salmon and Snake River canyon, where reaches are aggrading with sand and gravel, the western pearlshell is being replaced by *Gonidea angulata*.

The normal fish hosts in the area are probably the *Oncorhynchus* species (e.g., Chinook salmon, WCT, steelhead), but *Salmo* and *Salvelinus* and even *Rhinicthys* and *Catostomus* (dace and suckers) are reported to be suitable. The western pearlshell likely crossed the divide with the

WCT, which is the native salmonid of the upper Missouri River drainage. This species occurs in sand, gravel, and even between cobbles and boulders.

Management

The western pearlshell became a Sensitive Species for the USFS in 2010, and has been ranked at risk (S2) in Montana since 2008. Montana's populations have shown dramatic declines and were downgraded to S2 from S2S4 after more intensive sampling in 2007 and 2008 documented few viable populations in the state (Stagliano 2010). This species is widespread in geographic areas, but is declining in terms of area occupied and the number of sites with viable individuals; populations showing repeated reproduction (at least several age classes) are now the exception rather than the rule (Frest and Johannes 1995, Stagliano 2010). Individuals of this species can be quite long-lived and populations could exist undetected at low levels for many years without any reproduction.

Management Plan

None for western pearlshell, but documents with identified actions and strategies exist for host fish WCT, YCT, and bull trout. In addition, a *Montana Statewide Fisheries Management Plan* (FWP 2013a) was developed, and actions identified within could help western pearlshells persist.

**Western Pearlshell Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Habitat degradation and fragmentation (e.g., dams, stream channelization, diversions, dredging, and dewatering)<br><br>Stream deterioration because of high sediment loads | Habitat degradation and fragmentation (e.g., dams, stream channelization, diversions, dredging, and dewatering)<br><br>Stream deterioration because of high sediment loads | Support land use practices that encourage minimizing sedimentation from runoff (e.g., stream setbacks)<br><br>Restoration of stream channels, streambanks, riparian areas to a condition that simulates their natural form and function |
| No management plan | No management plan | Develop management plan or incorporate species recommendations into other plans |
| Point and nonpoint source pollution<br><br>Reduced dissolved oxygen content in water | Point and nonpoint source pollution<br><br>Reduced dissolved oxygen content in water | Enforcement of regulations that address the dumping of pollutants into waterways<br><br>Work with agencies, organizations and the public to identify point source pollution that reduces dissolved oxygen contents in water |
| Threats to host fish also jeopardize mussel survival | Threats to host fish also jeopardize mussel survival | Restore connectivity of habitat and manage for healthy populations of native fish including cutthroat trout and bull trout |

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| | Climate change altering habitat characteristics (e.g., air and water temperature, precipitation timing and amount) | Encourage forest management practices that maintain healthy canopy cover over streams to stabilize temperature<br><br>Continue to evaluate current climate science models and recommended actions<br><br>Monitor habitat changes and address climate impacts through adaptive management as necessary |
| | Invasive mussels, specifically zebra and quagga | Follow guidance in *Montana's Aquatic Nuisance Species Management Plan* (Montana ANS Technical Committee 2002) and updates or revisions to the plan |

## VERTEBRATES

There are 528 vertebrate species that have been documented in Montana, of which 485 are native. Of the native species, there are four that have been extirpated and 195 are migratory and do not live in Montana year round. One hundred and forty-five accidental or rare visitors to Montana (all birds) were not included in the above numbers.

As of 20 May 2014, 127 vertebrate SGCN were identified, and of those 46 have a state rank of S1 or S2. Conservation actions were developed only for those 46 SGCN. Conservation actions may be better focused outside of Montana for some SGCN, if the majority of their range exists outside of Montana's borders (e.g., blue-gray gnatcatcher, northern short-tailed shrew).

There are 10 species on the SGCN list that are considered to be SGIN as well. These species may be on the SGCN list because their Montana distribution, status, and threats are unknown. If a species below is identified as a SGIN, it is indicated under the common and scientific names.

## Amphibians

Idaho Giant Salamander (*Dicamptodon aterrimus*) State Rank: S2

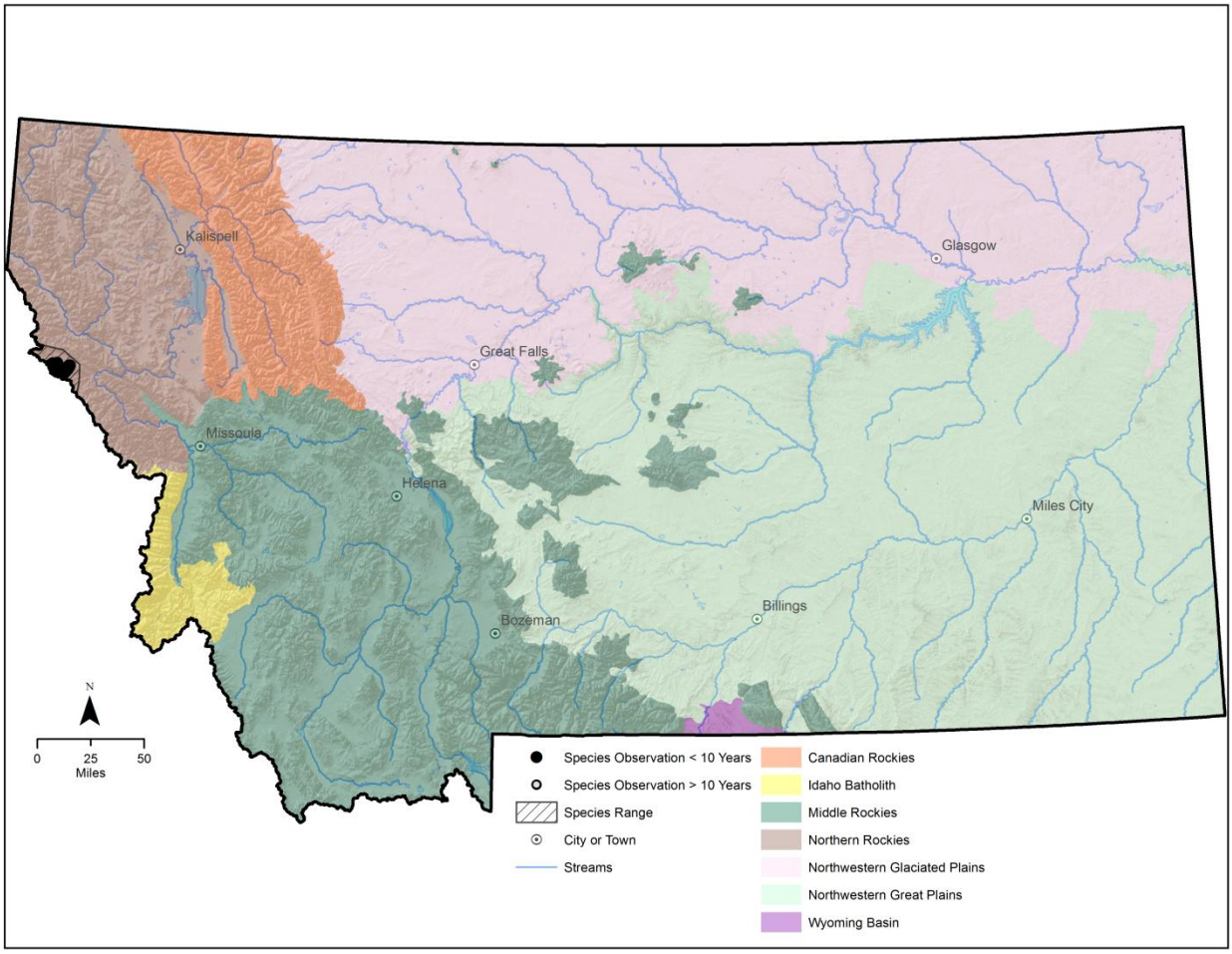


Figure 52. Montana range and observations of the Idaho giant salamander

Habitat

This species is known to occur up to 7,100 feet in elevation (Nussbaum et al. 1983). Transformed adults, although seldom seen, inhabit moist coniferous forests where they may be found under logs, bark, or rocks. They are most active on warm, rainy nights. Larvae are usually found in swift, cold mountain streams, but may occasionally be found in lakes or ponds (Reichel and Flath 1995).

Management

Potential threats for the species across its global range probably apply to Montana populations as well. Population declines or extinctions have not yet been documented, in part because the species was documented in Montana only once prior to 2005. All records are from headwater streams and lake outlets in Mineral County. The species range likely has been reduced during the last century from logging of mature and old-growth forest types, wildland fire, road building, and placer mining. Routine monitoring of known populations should be conducted to identify threats to each, as well as to determine their continued viability. Additional stream surveys are desirable

to determine connectivity with adjacent Idaho populations, especially between Thompson Falls and Lolo Pass (Maxell et al. 2009).

Management Plan

Maxell, B. A. 2000. Management of Montana's Amphibians: A Review of Factors that may Present a Risk to Population Viability and Accounts on the Identification, Distribution, Taxonomy, Habitat Use, Natural History and the Status and Conservation of Individual Species. U.S. Forest Service, Missoula, Montana. 161 pp.

**Idaho Giant Salamander Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Disease and parasites | Disease and parasites | Implement and promote measures to prevent the spread of chytrid fungus (Maxell et al. 2004) |
| Incompatible forest management practices | Incompatible forest management practices | Work with landowners and land management agencies to limit activities that may be detrimental to this species |
| Pollution | Pollution | Minimize pesticide use upstream from occupied areas<br><br>Regulate chemical application (e.g., herbicides, pesticides, fertilizers) within 300 feet of water bodies or wetlands |
| Restricted mobility coupled with increasing habitat fragmentation makes this species susceptible to local extirpation | Restricted mobility coupled with increasing habitat fragmentation makes this species susceptible to local extirpation | Conduct surveys of potential habitats for the Idaho giant salamander<br><br>Replace culverts with bridges when possible<br><br>Work with Idaho to maintain connectivity with populations across the state line<br><br>Work with private landowners and land management agencies to conserve habitat through proper management of development, logging, and chemical applications |

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Road construction | Road construction | Minimize road construction upstream or within 300 feet of known salamander sites<br><br>Survey drainages for salamanders or habitat prior to new road construction |
| | Climate change altering habitat characteristics (e.g., air and water temperature, precipitation timing and amount) | Continue to evaluate current climate science models and recommended actions<br><br>Monitor habitat changes and address climate impacts through adaptive management as necessary<br><br>Routinely monitor known populations |
| | Mining | Keep new mining tailings out of drainages<br><br>Reclaim streams impacted by dredge mining<br><br>Work with companies to minimize mining impacts in occupied streams |
| | Non-native species | Coordinate closely with fisheries conservation efforts in these areas<br><br>Monitor streams for non-native species, and install barriers if feasible to prevent spread into headwater areas |

Coeur d'Alene Salamander (*Plethodon idahoensis*) State Rank: S2
Species of Greatest Inventory Need

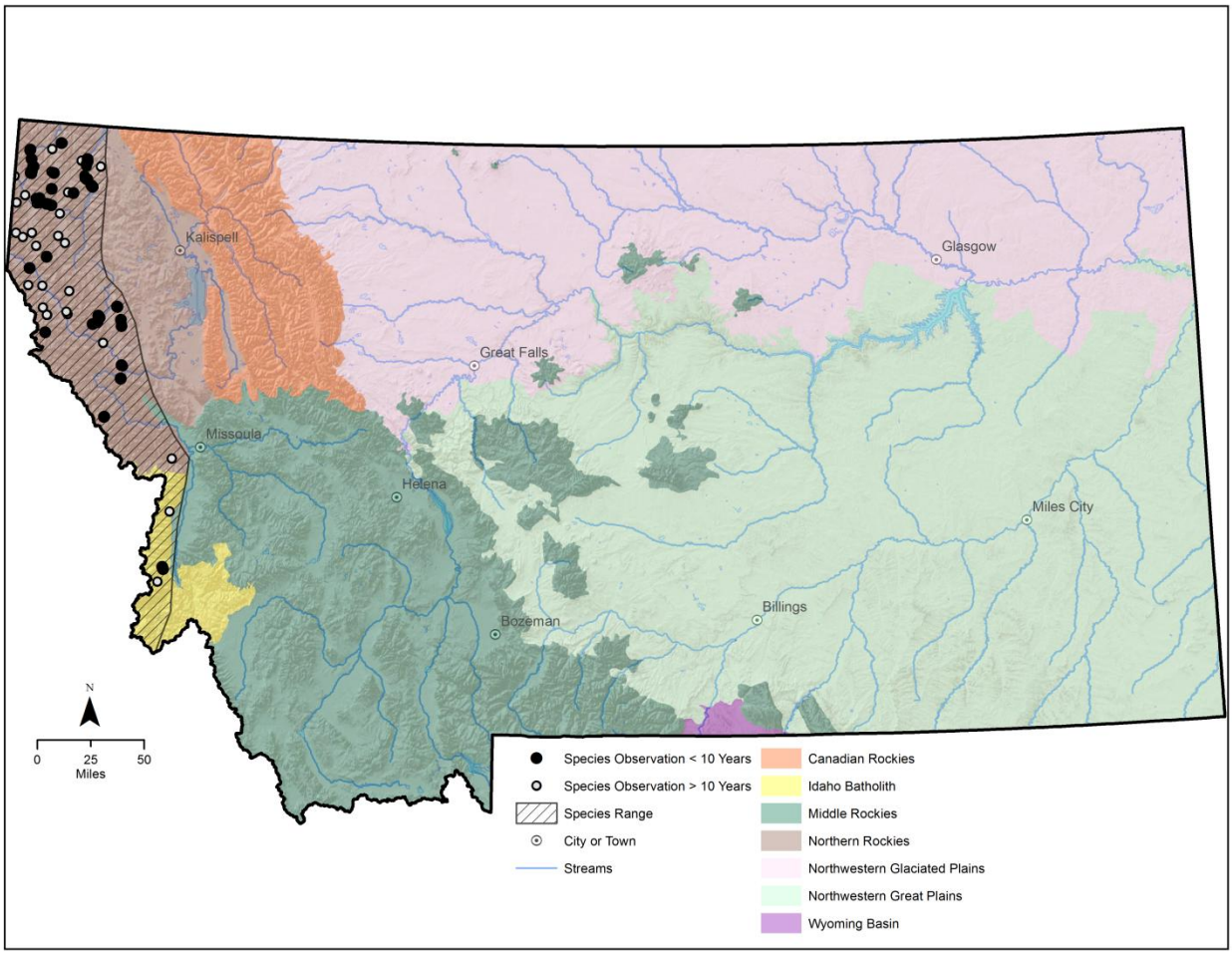


Figure 53. Montana range and observations of the Coeur d'Alene salamander

Habitat

The habitat for Coeur d'Alene salamanders includes the three major habitat categories: springs and seeps, waterfall spray zones, and stream edges (Wilson et al. 1988; Werner and Reichel 1994; Boundy 2001; Maxell 2002). Specific primary habitats are seeps and streamside talus, but they also inhabit talus far from free water (deep talus mixed with moist soil on well-shaded north-facing slopes). Coeur d'Alene salamander occurrences are generally located in coniferous forests, but are not restricted to a particular overstory species or aspect (Groves 1988, Groves et al. 1996). In wet weather, they are also found in leaf litter and under bark and logs in coniferous forests.

All plethodontid salamanders respire through their skin; terrestrial species lose water to the environment through evaporation and are therefore restricted to cool, damp environments. Coeur d'Alene salamanders are closely tied to water and are considered among the most aquatic plethodontids (Brodie and Storm 1970). Because they may live in the harshest climate of any northwestern plethodontid (Nussbaum et al. 1983), they are highly dependent on the thermal and hydrologic stability provided by wet habitats in otherwise inhospitable surroundings.

Sites occupied by Coeur d'Alene salamanders in Montana have fractured rock formations present, and nearby habitats are typically forested (Reichel and Flath 1995). Foraging areas include seepage areas and splash zones with high humidity, high substrate moisture, and relatively high temperatures (Wilson and Larsen 1988). Shelter is provided by deep bedrock fractures or in talus habitat (Wilson and Larsen 1988). Montana populations are found primarily in talus areas along splash zones of creeks, or with seeps running through (Teberg 1963, 1965; Wilson and Larsen 1988). Idaho and Montana populations breed in both spring and fall, although most eggs usually are laid in the spring. Eggs are laid in moist, concealed places on land (Stebbins 1985) far down in the rocks (Werner and Reichel 1994).

Management

Potential threats for the species across its global range also apply to Montana populations, but population declines or extinctions have not been documented here. Some populations continue to be vulnerable to highway construction activity, and most populations occur at elevations and in forest types where timber harvest is a common activity. Routine monitoring (Groves et al. 1996) of known populations should be conducted to identify threats to each, as well as to determine their continued viability.

Management Plan

Maxell, B. A. 2000. Management of Montana's Amphibians: A Review of Factors that may Present a Risk to Population Viability and Accounts on the Identification, Distribution, Taxonomy, Habitat Use, Natural History and the Status and Conservation of Individual Species. U.S. Forest Service, Missoula, Montana. 161 pp.

**Coeur d'Alene Salamander Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Data poor<br><br>Outdated survey | | Conduct monitoring program to establish long-term trends of abundance and distribution of populations<br><br>Routinely monitor known populations |
| Disease and parasites | Disease and parasites | Implement and promote measures to prevent the spread of chytrid fungus (Maxell et al. 2004) |
| Incompatible forest management practices | Incompatible forest management practices | Work with landowners and land management agencies to limit activities that may be detrimental to this species |
| Mining | Mining | Keep new mining tailings out of drainages<br><br>Reclaim streams impacted by dredge mining |

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| | | Work with companies to minimize mining impacts in occupied streams |
| Non-native species | Non-native species | Avoid stocking non-native fish in nearby waters<br><br>Coordinate closely with fisheries conservation efforts in these areas |
| Pollution | Pollution | Minimize pesticide use upstream from occupied areas<br><br>Regulate chemical application (e.g., herbicides, pesticides, fertilizers) within 300 feet of water bodies or wetlands |
| Restricted mobility coupled with increasing habitat fragmentation makes this species susceptible to local extirpation | Restricted mobility coupled with increasing habitat fragmentation makes this species susceptible to local extirpation | Conduct surveys of potential habitats for the Coeur d'Alene salamander<br><br>Replace culverts with bridges when possible<br><br>Work with private landowners and land management agencies to conserve habitat through proper management of development, logging, and chemical applications |
| Road construction | Road construction | Minimize road construction upstream or within 300 feet of known salamander sites<br><br>Survey drainages for salamanders or habitat prior to new road construction |
| | Climate change altering habitat characteristics (e.g., air and water temperature, precipitation timing and amount) | Continue to evaluate current climate science models and recommended actions<br><br>Monitor habitat changes and address climate impacts through adaptive management as necessary<br><br>Routinely monitor known populations |

Northern Leopard Frog (*Rana pipiens*) State Rank: S1, S4

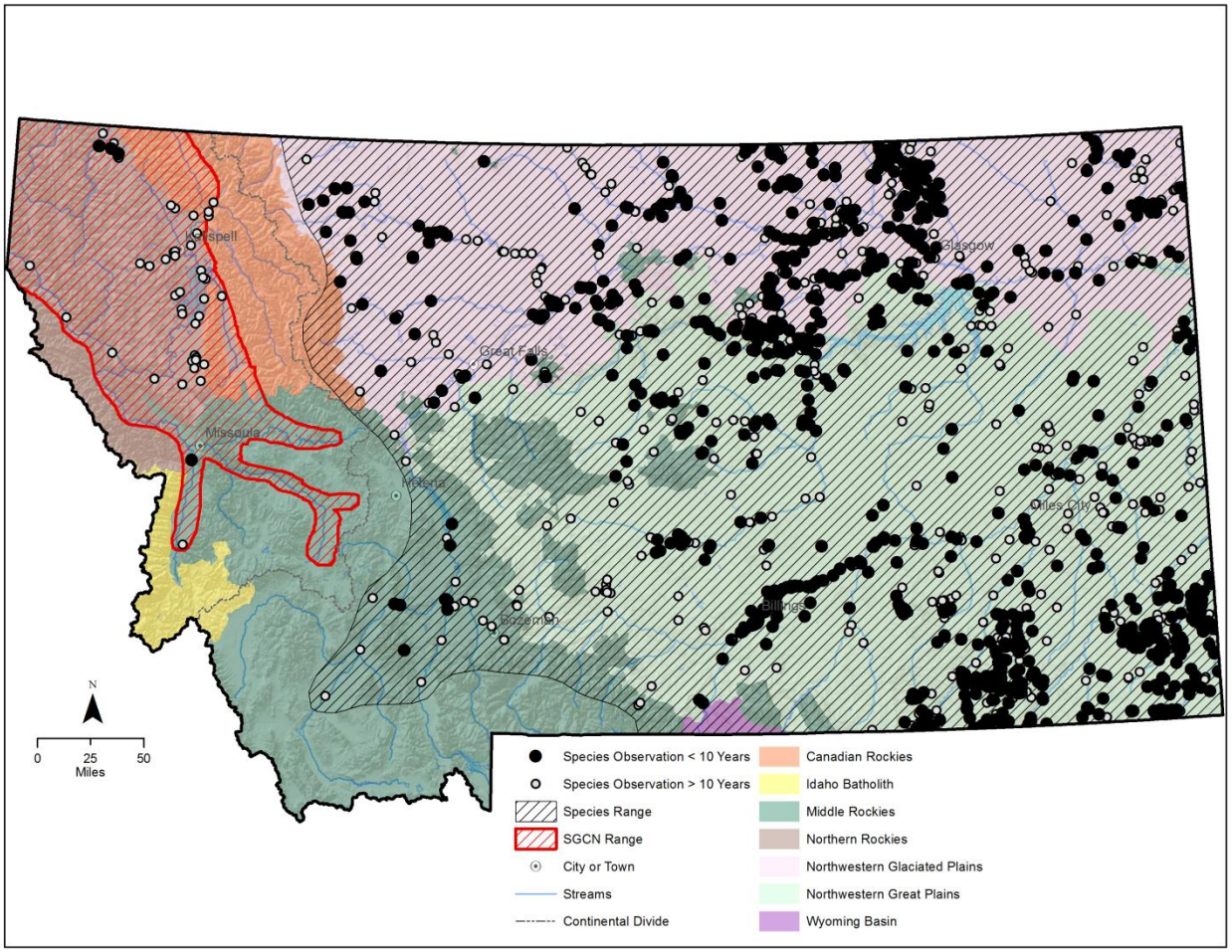


Figure 54. Montana range and observations of the northern leopard frog

Habitat

Habitats used by northern leopard frogs in Montana include low-elevation and valley bottom ponds, spillway ponds, beaver ponds, stock reservoirs, lakes, creeks, pools in intermittent streams, warm water springs, potholes, and marshes (Brunson and Demaree 1951; Mosimann and Rabb 1952; Black 1969; Miller 1978; Dood 1980; Reichel 1995; Hendricks and Reichel 1996; Hendricks 1999).

Northern leopard frogs require a mosaic of habitats to meet annual requirements of all life stages. They occupy a variety of wetland habitats of relatively fresh water with moderate salinity, including springs, slow streams, marshes, bogs, ponds, canals, floodplains, beaver ponds, reservoirs, and lakes, usually in permanent water with rooted aquatic vegetation. Adults and juveniles commonly feed in open or semi-open wet meadows and fields with shorter vegetation, usually near the margins of water bodies where there is permanent water and growth of cattails or other aquatic vegetation, yet they may forage far from water in damp meadows (Stebbins 1985). They seek cover underwater and seem to avoid denser vegetation.

Management
Populations east of the Continental Divide have a state rank of S4 and therefore are not a SGCN and are not addressed in this SWAP. Only the populations west of the Continental Divide that are SGCN with a state rank of S1 are included in this SWAP.

No special management needs are currently recognized for populations in eastern Montana. Any populations discovered in the western region should be reported to the native species biologist of FWP or the program zoologist of MNHP.

Management Plan
Maxell, B. A. 2000. Management of Montana's Amphibians: A Review of Factors that may Present a Risk to Population Viability and Accounts on the Identification, Distribution, Taxonomy, Habitat Use, Natural History and the Status and Conservation of Individual Species. U.S. Forest Service, Missoula, Montana. 161 pp.

**Northern Leopard Frog Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Disease and parasites | Disease and parasites | Implement and promote measures to prevent the spread of chytrid fungus (Maxell et al. 2004) |
| Global change (climatic and atmospheric changes such as increased UV-B radiation, pollution, acid rain, and disease) | Climate change altering habitat characteristics (e.g., air and water temperature, precipitation timing and amount) | Begin monitoring program to establish long-term trends of abundance and distribution of populations<br><br>Continue to evaluate current climate science models and recommended actions<br><br>Monitor habitat changes and address climate impacts through adaptive management as necessary |
| Loss of wetlands and hydrological regimes | Loss of wetlands and hydrological regimes | Support wetland habitat conservation and improvement projects<br><br>Work with landowners and land management agencies to limit activities that may be detrimental to this species and wetlands<br><br>Explore using beaver in areas where they historically occupied to provide additional breeding sites for the northern leopard frog; follow FWP's existing protocol on translocation |

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Non-native species (e.g., game fish, mosquitofish, bullfrogs) | Non-native species (e.g., game fish, mosquitofish, bullfrogs) | Allow no introduction of game fish or bullfrogs into waters with known breeding sites<br><br>Coordinate closely with fisheries conservation efforts in these areas<br><br>Remove bullfrogs from isolated wetlands with northern leopard frog habitat<br><br>Suppress the spread of bullfrogs |
| Pollution | Pollution | Minimize pesticide use upstream from occupied areas<br><br>Regulate chemical application (e.g., herbicides, pesticides, fertilizers) within 300 feet of water bodies or wetlands |
| Range contraction: this species has nearly vanished on western side of Continental Divide in Montana | Range contraction: this species has nearly vanished on western side of Continental Divide in Montana | Protect the two remaining breeding populations west of the Continental Divide in Montana<br><br>Survey western Montana to locate additional populations<br><br>Monitor historical breeding sites and populations<br><br>Support ongoing reintroduction efforts |
| | Over collection | Increase education and information on amphibian biology and awareness of the importance of breeding sites<br><br>Implement regulatory protections to prevent over collection |

Great Plains Toad (*Anaxyrus cognatus*) State Rank: S2

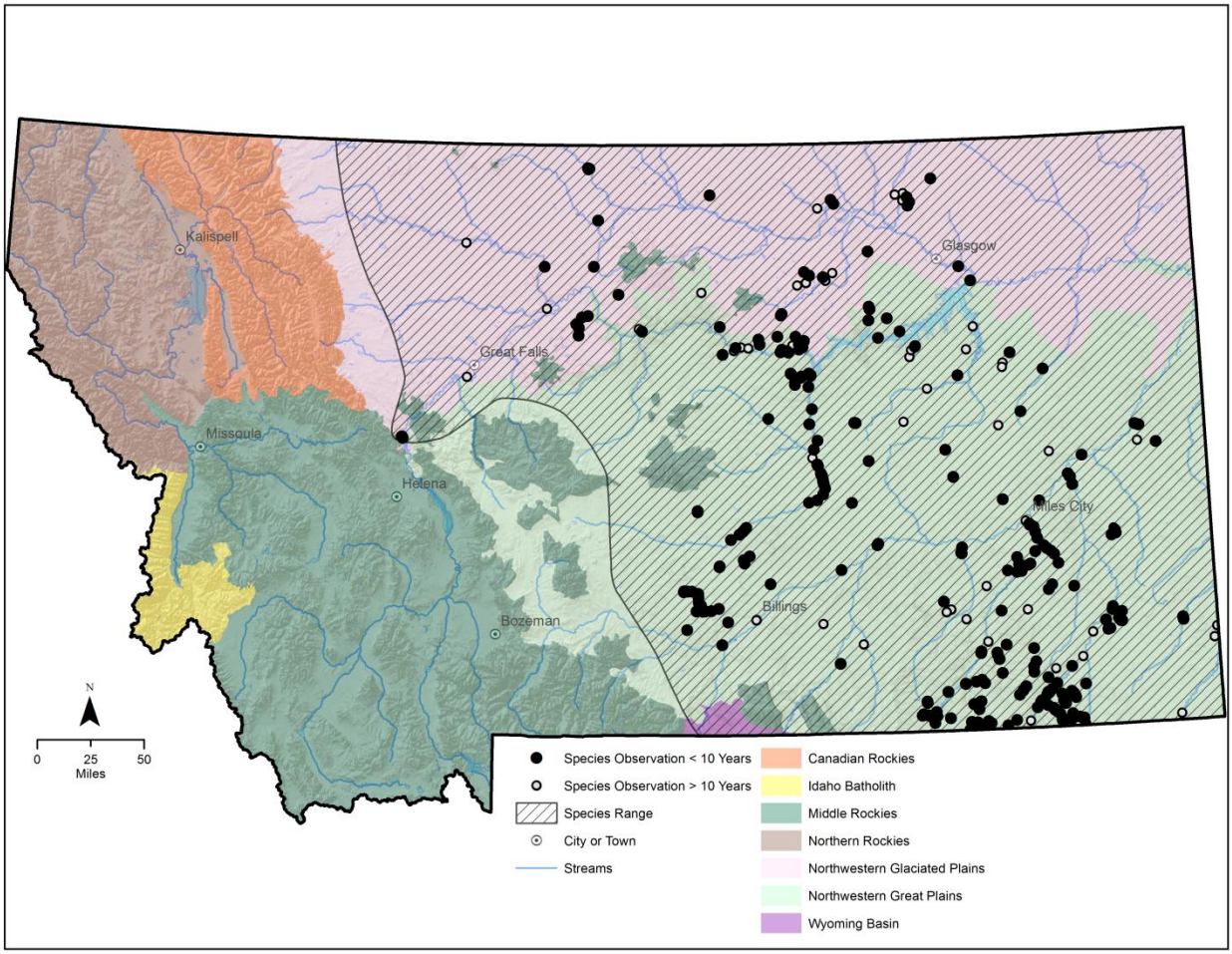


Figure 55. Montana range and observations of the Great Plains toad

Habitat

Little specific information on the habitat of Great Plains toad is available. It has been reported from sagebrush-grassland, rainwater pools in road ruts, in stream valleys, at small reservoirs and stock ponds, and around rural farms. Breeding has been documented in small reservoirs and backwater sites along streams (Mosimann and Rabb 1952, Dood 1980, Hendricks 1999).

Information gathered from other locations indicates that when inactive, the Great Plains toad is found in burrows, and under rocks or wood. During the active season, it occupies burrows during the day that are quite shallow. This species enters water only to breed. It breeds in rain pools, flooded areas, and ponds and reservoirs that fluctuate in size, and appears to prefer stock tanks and roadside ponds rather than floodplains (Baxter and Stone 1985). Eggs and larvae develop in shallow water that is usually clear or slightly turbid, but not muddy.

Management

No special management needs are currently recognized. However, at permanent and semi-permanent water bodies (reservoirs and stock ponds) where breeding has been observed, portions of the shoreline with emergent vegetation could be fenced to create exclosures that protect

breeding adults, eggs and tadpoles from trampling and the removal of emergent cover by livestock. Another option would be the creation of ponds designed for use by prairie amphibians as breeding sites, with the perimeter surrounded by fencing to prevent access by livestock. Game fish should not be introduced to any of these ponds.

Management Plan

Maxell, B. A. 2000. Management of Montana's Amphibians: A Review of Factors that may Present a Risk to Population Viability and Accounts on the Identification, Distribution, Taxonomy, Habitat Use, Natural History and the Status and Conservation of Individual Species. U.S. Forest Service, Missoula, Montana. 161 pp.

**Great Plains Toad Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Breeding site destruction | Breeding site destruction | Protect certain wetlands occupied by Great Plains toads from introduced species and human disturbance<br><br>Manage livestock access to known breeding sites within grazing allotments<br><br>Maintain important wetland habitats<br><br>Survey road ditches for tadpoles before any blading of ditches in June/July and defer blading where tadpoles are found<br><br>Survey wetlands suitable for Great Plains toads |
| Disease and parasites | Disease and parasites | Implement and promote measures to prevent the spread of chytrid fungus (Maxell et al. 2004) |
| Pollution | Pollution | Minimize pesticide use upstream from occupied areas<br><br>Regulate chemical application (e.g., herbicides, pesticides, fertilizers) within 300 feet of water bodies or wetlands |

Western Toad (*Bufo boreas*) State Rank: S2

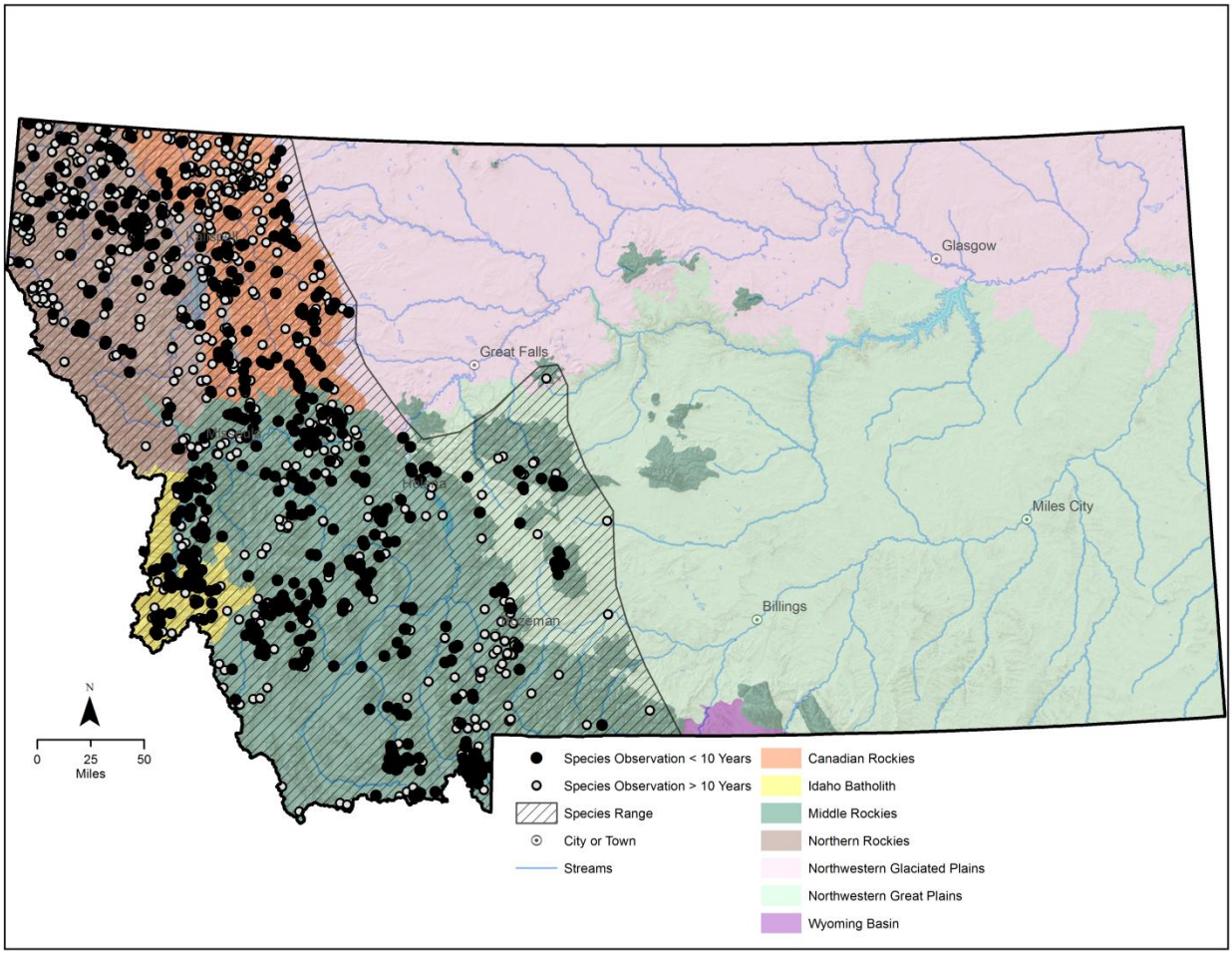


Figure 56. Montana range and observations of the western toad

Habitat

Habitats used by western toads in Montana are similar to those reported for other regions and range from low-elevation beaver ponds, reservoirs, streams, marshes, lake shores, potholes, wet meadows, and marshes to high-elevation ponds, fens, and tarns at or near tree line (Rodgers and Jellison 1942; Brunson and Demaree 1951; Miller 1978; Marnell 1997; Werner et al. 1998; Boundy 2001). Forest cover in or near encounter sites is often unreported, but toads have been noted in open-canopy ponderosa pine woodlands and closed-canopy dry conifer forests in Sanders County (Boundy 2001), willow wetland thickets and aspen stands bordering Engelmann spruce stands in Beaverhead County (Jean et al. 2002), and mixed ponderosa pine/cottonwood/willow sites or Douglas-fir/ponderosa pine forests in Ravalli and Missoula counties.

Elsewhere the western toad is known to utilize a wide variety of habitats, including desert springs and streams, meadows and woodlands, mountain wetlands, beaver ponds, marshes, ditches, and backwater channels of rivers where they prefer shallow areas with mud bottoms (Nussbaum et al. 1983; Baxter and Stone 1985; Russell and Bauer 1993; Koch and Peterson 1995; Hammerson 1999). Forest cover around occupied montane wetlands may include aspen,

Douglas-fir, lodgepole pine, Engelmann spruce, and subalpine fir; in local situations western toads may also be found in ponderosa pine forest. They also occur in urban settings, sometimes congregating under streetlights at night to feed on insects (Hammerson 1999). Normally they remain fairly close to ponds, lakes, reservoirs, and slow-moving rivers and streams during the day, but may range widely at night. Eggs and larvae develop in still, shallow areas of ponds, lakes, or reservoirs or in pools of slow-moving streams, often where there is sparse emergent vegetation. Adult and juvenile western toads dig burrows in loose soil, use burrows of small mammals, or occupy shallow shelters under logs or rocks. At least some toads overwinter in terrestrial burrows or cavities, apparently where conditions prevent freezing (Nussbaum et al. 1983; Koch and Peterson 1995; Hammerson 1999).

Management

In previous decades the western toad was considered the most abundant amphibian of the western third of the state (Rodgers and Jellison 1942; Brunson 1952; Maxell et al. 2003), and although still encountered widely and frequently though by no means commonly, it is no longer ranked as the most abundant amphibian. Numerous surveys since the early 1990s indicate that this species has experienced regional population declines in the state. Western toads were documented to breed at only 2-5% of more than 2,000 standing water bodies surveyed since 1997, and where breeding was documented, fewer than 10 breeding females contributed in a given year (Maxell 2000; Maxell et al. 2003). Rangewide declines in this species have been indicated in Montana as well as in other western states.

Management Plan

Maxell, B. A. 2000. Management of Montana's Amphibians: A Review of Factors that may Present a Risk to Population Viability and Accounts on the Identification, Distribution, Taxonomy, Habitat Use, Natural History and the Status and Conservation of Individual Species. U.S. Forest Service, Missoula, Montana. 161 pp.

**Western Toad Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Breeding site destruction | Breeding site destruction | Explore using beaver in areas where they historically occupied to provide additional breeding sites for the western toad; follow FWP's existing protocol on translocation<br><br>Manage livestock access to known breeding sites within grazing allotments<br><br>Protect certain wetlands occupied by western toads from introduced species and human disturbance |

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| | | Survey wetlands for suitable habitat<br>Support habitat conservation and improvement projects<br><br>Survey road ditches for tadpoles before any blading of ditches in June/July |
| Connectivity | Connectivity | Explore installation of underpasses to access breeding areas |
| Disease and parasites | Disease and parasites | Implement and promote measures to prevent the spread of chytrid fungus (Maxell et al. 2004) |
| Pollution | Pollution | Minimize pesticide use upstream from occupied areas<br><br>Regulate chemical application (e.g., herbicides, pesticides, fertilizers) within 300 feet of water bodies or wetlands |
| Predation increase by species attracted to human disturbance | Predation increase by species attracted to human disturbance | Avoid building new roads into areas near breeding sites<br><br>Control availability of anthropogenic food sources near breeding sites (e.g., trash collection containers, livestock feeding areas) to reduce the presence of avian and mammalian predators near breeding sites |

## Birds

(The distribution reflects a species' entire range and does not discriminate between breeding and wintering areas.)

Whooping Crane (*Grus americana*) State Rank: S1M

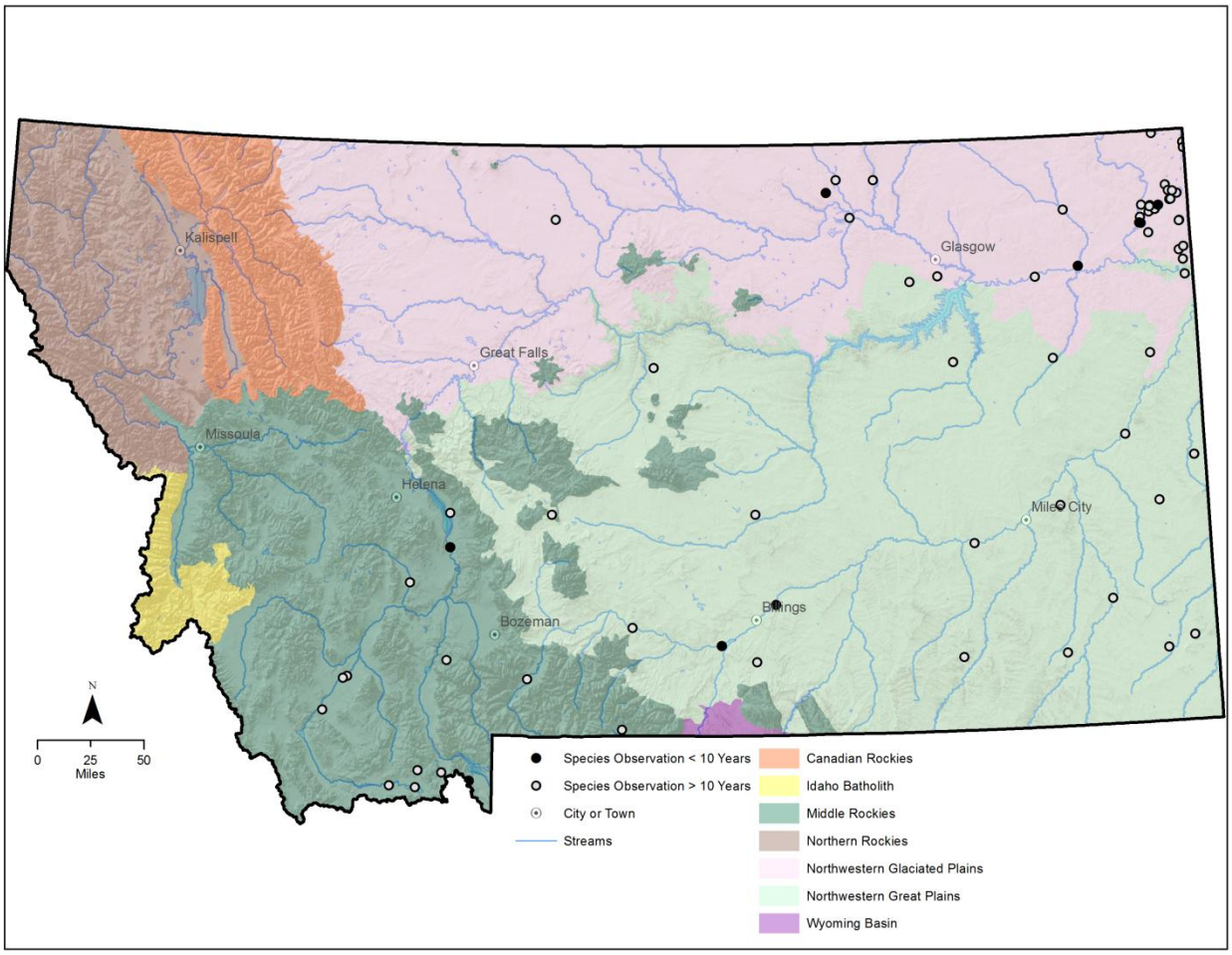


Figure 57. Montana observations of the whooping crane

### Habitat

Within Montana the whooping crane has been observed at or within the marsh habitat present at Medicine Lake NWR and Red Rock Lakes NWR. Observations of individual birds in other areas of the state include grain and stubble fields, recently burned areas, wet meadows, wet prairie habitat, and freshwater marshes that are usually shallow and broad with safe roosting sites and nearby foraging opportunities.

### 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.

Management Plans
Kushlan, J. A., M. J. Steinkamp, K. C. Parsons, J. Capp, M. A. Cruz, M. Coulter, I. Davidson, L. Dickson, N. Edelson, R. Elliot, R. M. Erwin, S. Hatch, S. Kress, R. Milko, S. Miller, K. Mills, R. Paul, R. Phillips, J. E. Saliva, B. Sydeman, J. Trapp, J. Wheeler, and K. Wohl. 2002. Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan, Version 1. Waterbird Conservation for the Americas, Washington, DC. 78 pp.

Olsen, D. L. 1980. Whooping Crane Recovery Plan. Whooping Crane Recovery Team. 206 pp.

**Whooping Crane Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Collisions with powerlines | Collisions with powerlines<br><br>Collision with turbine blades | Conduct preconstruction evaluations and/or surveys to identify wetlands that provide potentially suitable stopover habitat<br><br>Do not site turbines, transmission lines, access roads, or other project facilities within or adjacent to wetlands that provide suitable stopover habitat (U.S. Department of Energy Western Area Power Administration and USFWS 2013) |
| Habitat degradation and fragmentation of native prairies and wetlands | Habitat degradation and fragmentation of native prairies and wetlands | Identify migration stopover habitat and work to conserve grasslands and wetlands in those areas<br><br>Work with landowners to conserve native prairies in northeastern Montana |
| Human misidentification as sandhill cranes during hunting season | Human misidentification as sandhill cranes during hunting season | Educate hunters on identification and distinction between sandhill and whooping cranes |

Black Rosy-Finch (*Leucosticte atrata*) State Rank: S2
Species of Greatest Inventory Need

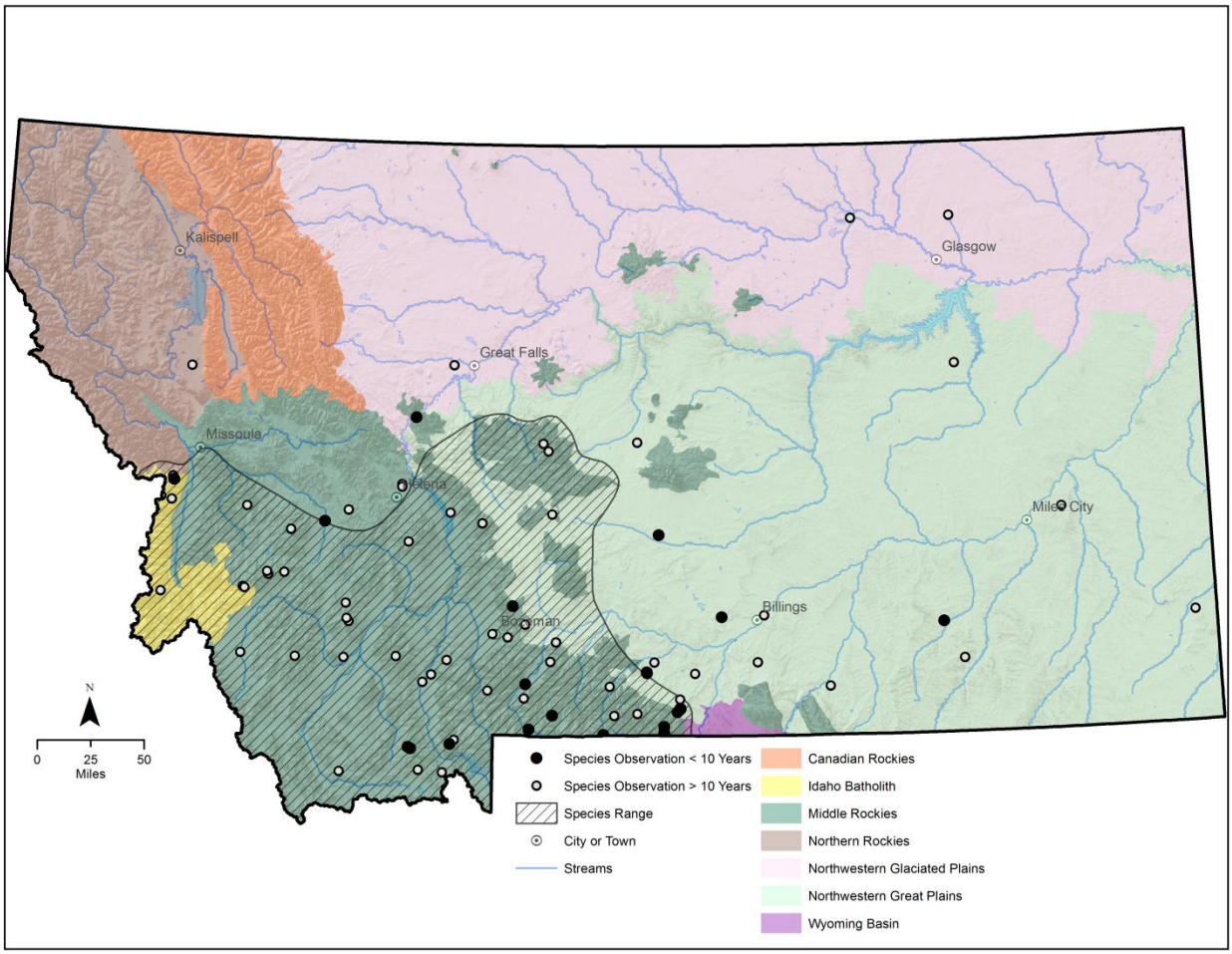


Figure 58. Montana range and observations of the black rosy-finch

Habitat

Habitat use in Montana has not been studied, but is similar to other regions (P. Hendricks personal observation), where black rosy-finches are known to nest in crevices in cliffs and talus among glaciers and snowfields above timberline (also possibly in abandoned buildings above treeline) and forage in barren, rocky or grassy areas adjacent to the nesting sites; in migration and winter they also occur in open situations, fields, cultivated lands, brushy areas, and around human habitation (American Ornithologists Union 1998, Johnson 2002). They may roost in mine shafts or similar protected sites. During some winters, individuals move out onto the shortgrass and mid-grass prairies to feed (Hendricks and Swenson 1983, Johnson 2002).

Management Plan

Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

**Black Rosy-Finch Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Data poor - inadequate monitoring<br><br>Outdated survey | | Encourage citizen data collection in winter & data entry via Ebird or other appropriate publicly shared outlets<br><br>Examine Christmas Bird Count data for trends in wintering populations<br><br>Establish and periodically run alpine bird surveys during the breeding season to monitor changes in distribution and population<br><br>Search for winter roost sites - determine if they need protection (e.g. open mine shafts)<br><br>Target species for survey and inventory<br><br>Use location data and habitat layer to derive a list of high priority breeding sites to visit |
| Human disturbance | Human disturbance | If winter roost sites are identified as threatened by human activities consider management options (e.g. gate mine shafts instead of sealing them) |
| | Climate change altering habitat characteristics (e.g., air and water temperature, precipitation timing and amount) | Continue to evaluate current climate science models and recommended actions<br><br>Monitor habitat changes and address climate impacts through adaptive management as necessary<br><br>Routinely monitor known populations |
| | Wind energy development | Follow recommendations in FWP's *Fish and Wildlife Recommendations for Wind Energy Development in Montana* (In prep) |

Gray-crowned Rosy-Finch (*Leucosticte tephrocotis*) State Rank: S2B, S5N
Species of Greatest Inventory Need

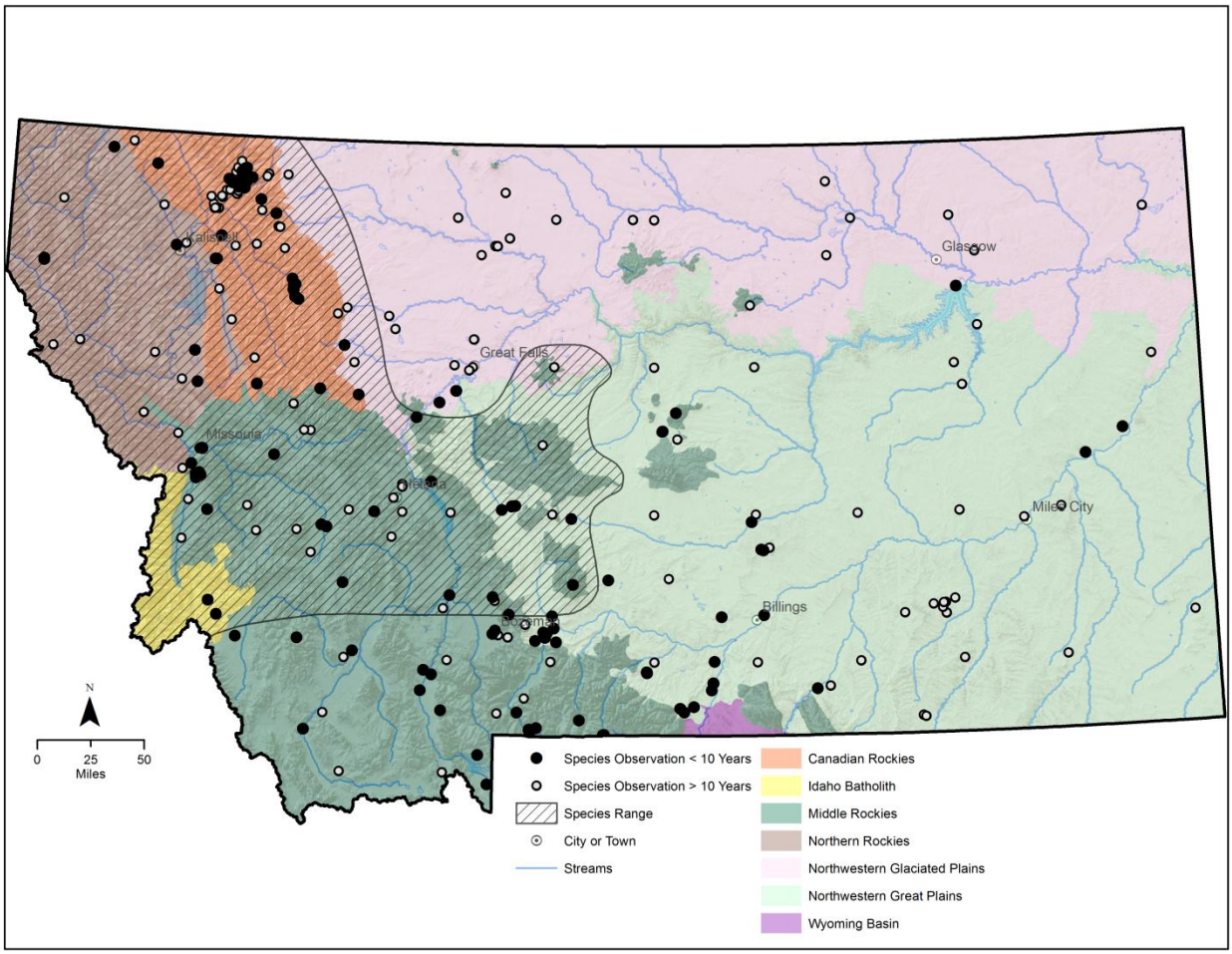


Figure 59. Montana range and observations of the gray-crowned rosy-finch

Habitat

Breeding, nesting, and winter roosting habitat in Montana is similar to other regions in the species' range (Johnson 1965, Hendricks 1981). Gray-crowned rosy-finches nest in crevices in cliffs and talus among glaciers and snowfields above timberline (also in abandoned buildings above treeline) and forage in barren, rocky or grassy areas adjacent to the nesting sites; in migration and winter they also occur in open situations, fields, cultivated lands, brushy areas, and around human habitation. They may roost in mine shafts or similar protected sites. During some winters individuals move out onto the shortgrass and mid-grass prairies to feed (Hendricks and Swenson 1983, Swenson et al. 1988).

Management

No special management action appears to be required at this time, although traditional winter roosts in abandoned mine shafts should be protected and reclaimed using methods that allow continued access by the birds, if possible.

Management Plan
None.

**Gray-crowned Rosy-Finch Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Data poor - inadequate monitoring<br><br>Lacks a baseline survey | | Determine where the Montana nesting populations over winter<br><br>Encourage citizen data & data entry via Ebird or other appropriate publicly shared outlets<br><br>Examine Christmas Bird Count data for trends in wintering populations<br><br>Search for winter roost sites - determine if they need protection (e.g. open mine shafts)<br><br>Establish and periodically run alpine bird surveys during the breeding season to monitor changes in distribution and population<br><br>Target species for survey and inventory |
| Human disturbance | Human disturbance | If winter roost sites are identified as threatened by human activities consider management options (e.g. gate mine shafts instead of sealing them) |
| | Climate change altering habitat characteristics (e.g., air and water temperature, precipitation timing and amount) | Continue to evaluate current climate science models and recommended actions<br><br>Monitor habitat changes and address climate impacts through adaptive management as necessary<br><br>Routine monitoring of known populations |
| | Wind energy development | Follow recommendations in FWP's *Fish and Wildlife Recommendations for Wind Energy Development in Montana* (In prep) |

Blue-gray Gnatcatcher (*Polioptila caerulea*) State Rank: S2B

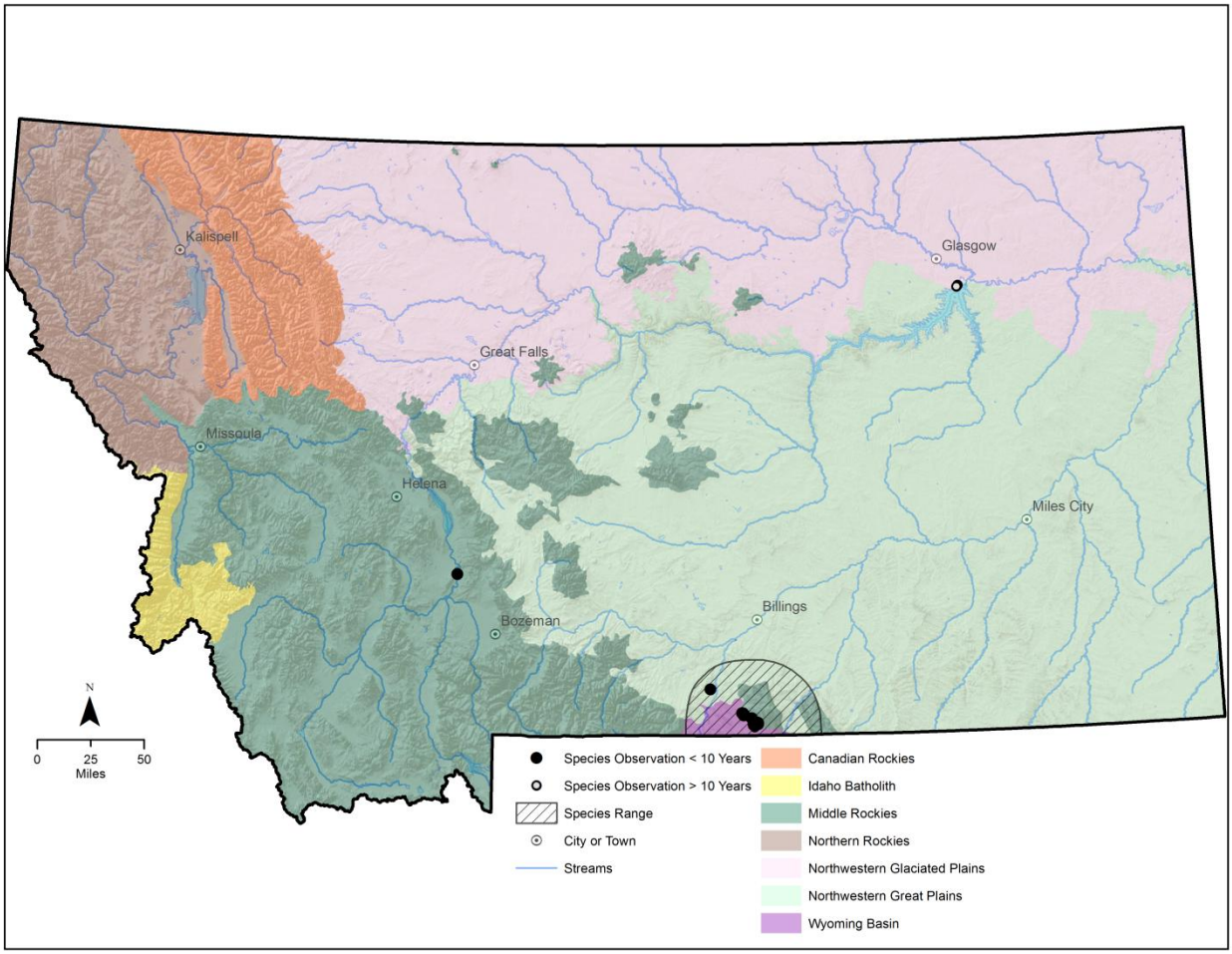


Figure 60. Montana range and observations of the blue-gray gnatcatcher

Habitat

Breeding habitat in Montana is restricted to open stands of Utah juniper (*Juniperus osteosperma*) and limber pine (*Pinus flexilis*) with intermixed big sage (*Artemisia tridentata*). All nests found have occurred 2.5 to 5.5 feet above ground in Utah juniper or big sage growing on the lower slopes or bottoms of canyons (P. Hendricks unpublished data).

Throughout their range blue-gray gnatcatchers typically inhabit deciduous forest, riparian woodland, open woodland, second-growth, scrub, brushy areas and chaparral in the east, south, and coastal west (Tropical to lower Temperate zones) (American Ornithologists Union 1998, Ellison 1992). In the Great Basin region of the west they also occupy open pine woodland, where they are associated with rosaceous shrubs and rock outcrops (Pavlacky and Anderson 2001).

They nest especially where tracts of brush, scrub, or chaparral are intermixed with taller vegetation (e.g., forest edge, riparian corridors); nesting often occurs near water. Nests are built on branches or forks of trees or shrubs, usually 3.3-82 feet above ground (Harrison 1978) and both sexes participate in nest construction. A broad range of brushy habitats is occupied during winter (Ellison 1992).

Management
No management activity is currently underway. Grazing may have a negative impact by directly or indirectly altering habitat for nesting and foraging. Nest parasitism by brown-headed cowbirds has recently been documented in Montana (P. Hendricks unpublished data).

This species is expanding its range northward and using existing bird survey efforts (e.g. Statewide Integrated Monitoring in Bird Conservation Regions surveys) may help track this expansion. Targeted surveys still may be needed.

Management Plan
None.

**Blue-gray Gnatcatcher Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Brown-headed cowbird nest parasitism | Brown-headed cowbird nest parasitism | Monitor known breeding sites to determine status<br><br>Monitor parasitism by brown-headed cowbirds and address if determined to be detrimental |
| | Incompatible grazing practices | Work with landowners and land management agencies to ensure species nesting and foraging needs are adequately addressed in grazing and RMPs |
| | Juniper removal | Restrict juniper removal in occupied gnatcatcher habitat |
| | Wildfire increase | Appropriate conservation action(s) unknown |

Caspian Tern (*Hydroprogne caspia*) State Rank: S2B

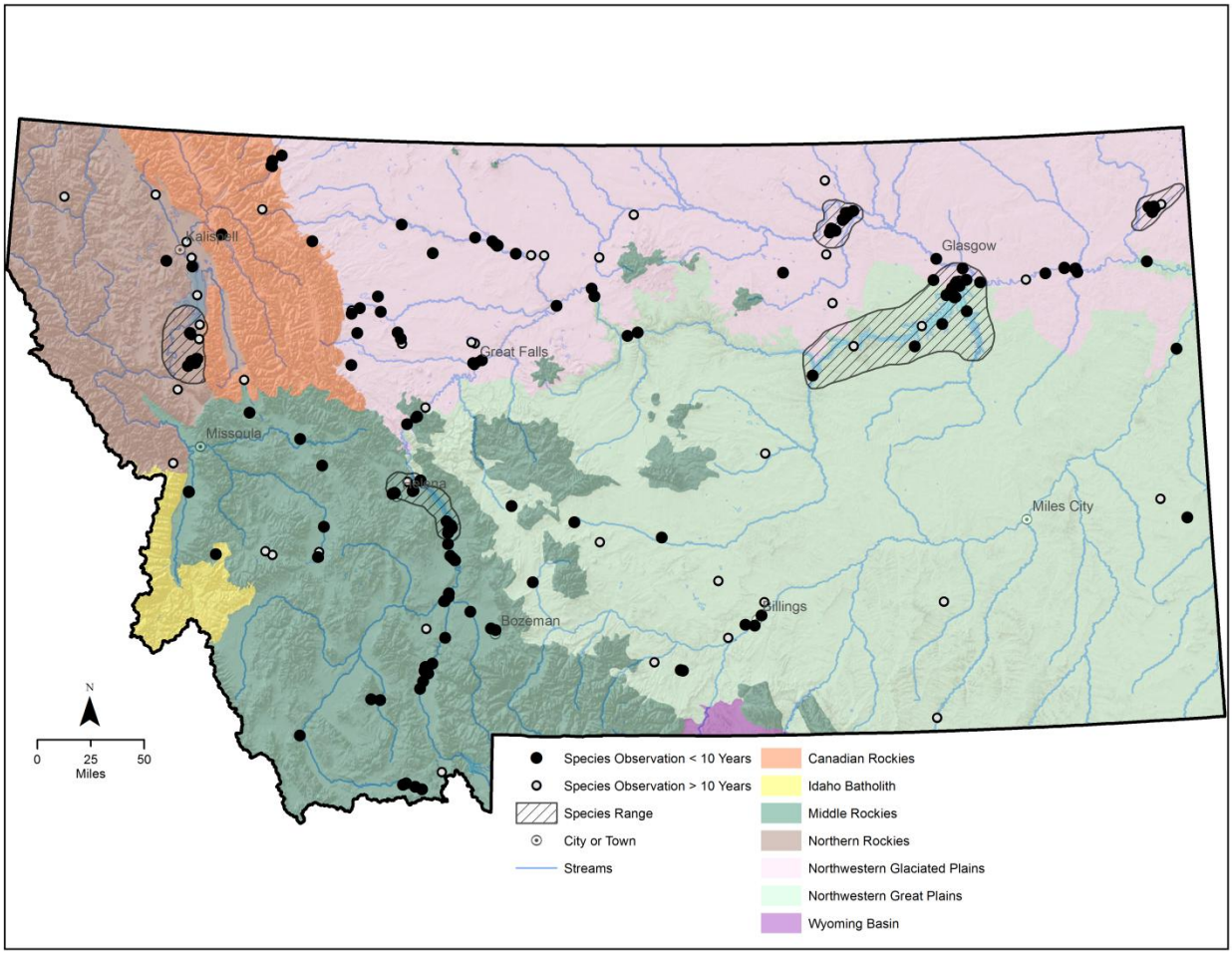


Figure 61. Montana range and observations of the Caspian tern

## Habitat

In Montana, the Caspian tern prefers islands within large lakes or reservoirs, where sandy or stony beaches are used for nesting (Johnsgard 1986). The species has also been noted to utilize rivers, though nesting in this habitat is not documented (Johnsgard 1986, Casey 2000).

## Management

No management activities specific to Caspian tern in Montana are documented, however, management recommendations include surveying known nesting colonies on an annual basis to determine status; providing adequate levels of water to protect nesting terns from mammalian predators; managing water levels on lake and river nesting areas to mimic natural seasonal fluctuations; and minimizing human disturbance at nesting colonies during the breeding season (Casey 2000).

## Management Plan

Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

**Caspian Tern Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Human disturbance | Human disturbance | Minimize human disturbance at nesting colonies during the breeding season |
| Inter-species competition | Inter-species competition | Survey known and potential nesting areas routinely to estimate competition impacts |
| | Climate change altering habitat characteristics (e.g., air and water temperature, precipitation timing and amount) | Continue to evaluate current climate science models and recommended actions<br><br>Monitor habitat changes and address climate impacts through adaptive management as necessary<br><br>Routinely monitor known populations |

Least Tern (*Sterna antillarum*) State Rank: S1B
Species of Greatest Inventory Need

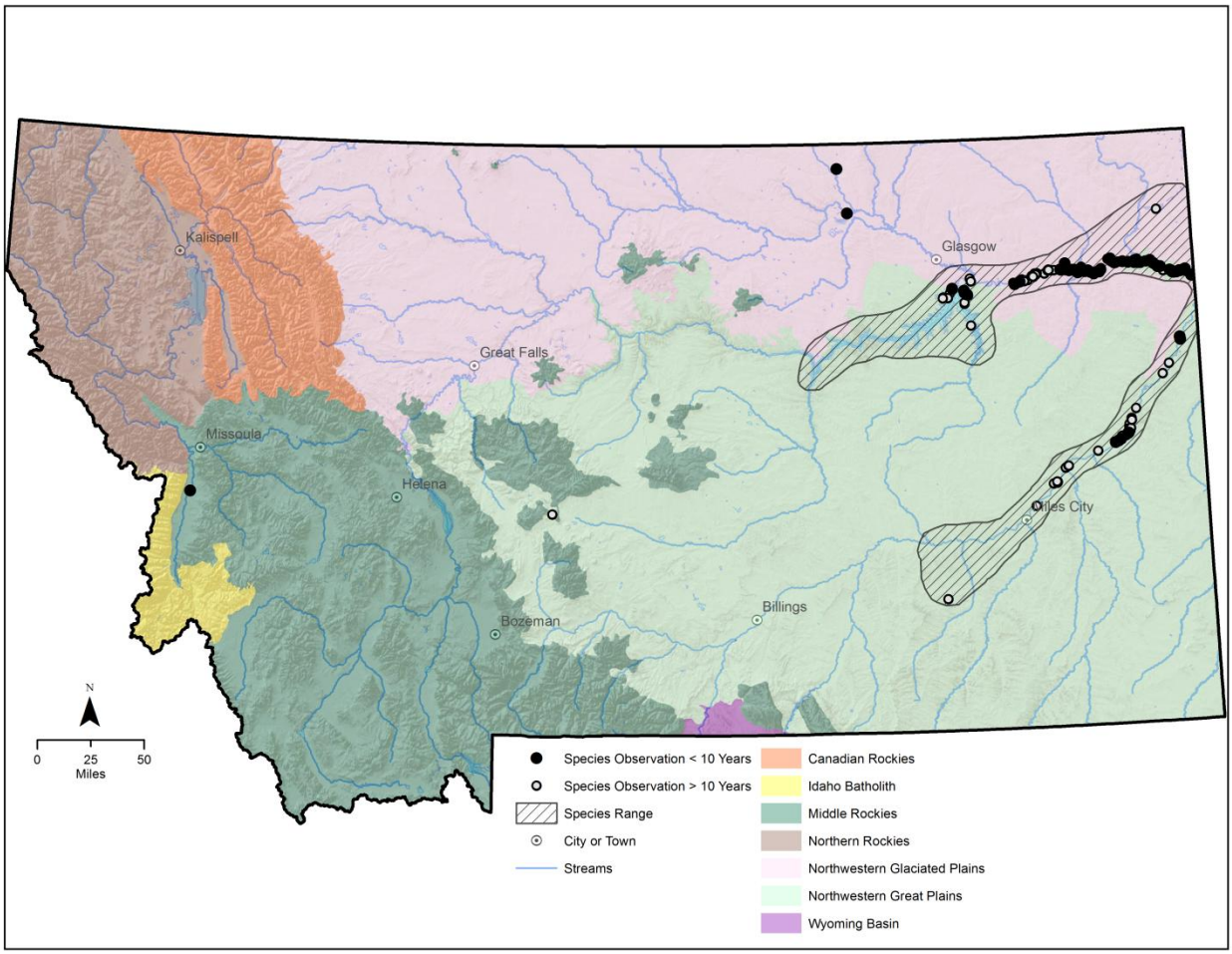


Figure 62. Montana range and observations of the least tern

Habitat

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 least terns. Sites with 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 vegetational encroachment; least 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. In addition, nesting sites may simply not be available because of

encroaching vegetation or because water levels are so high that beaches are under water during the early part of, and possibly throughout, the nesting season (MPPRC 1994).

Management

As identified in the USFWS recovery plan for the least tern, delisting can be considered when four censuses confirm that the interior population has reached 7,000 and remains stable for at least 10 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), with 50 individuals as the minimum targeted for Montana's population. Interior least tern counts in the Missouri River drainage continue to fall short of that population target even though extensive recovery efforts have occurred in that drainage over the past decade. This drainage has been extensively impounded and modified, and population size of least terns in the Missouri River drainage remains at or near levels that were present in 1990, despite a high investment in habitat manipulation and management. This indicates that the population has been stable, estimated recoverable carrying capacity of available habitat in the Missouri River drainage was likely overestimated in the 1990 recovery plan, and is not biologically achievable under the existing habitat baseline.

FWP periodically surveys least terns along the Yellowstone but has found average or fewer than average number of birds during the past five years of monitoring.

Appropriate water management, which includes natural seasonal flows, is identified as the major consideration for least tern conservation in Montana, for the greatest threat to breeding pairs, in some years, is the loss of existing nesting sites from inundation by high water at unusual times of the breeding season (MPPRC 1994). Rising water levels late in the nesting season can also decrease overall island size, and may result in assisting local avian predators to locate nests (containing eggs or nestlings) more easily (Erickson and Prellwitz 1999). These conditions reinforce the need to manage reservoirs and dammed rivers in a manner that mimics more natural seasonal fluctuations for the protection of least tern populations. Other management activities beneficial to the species include: instituting grazing management practices more appropriate to the conservation of the least tern; controlling access to key nesting locations; moving nests upslope from areas where flooding of nests is imminent; relocating eggs to nests of other least terns for foster incubation; signing of beaches to indicate nesting by least terns (though in areas where there is hostility toward the species, or toward listed species in general, this is not recommended); beach enhancement (grading or burning to remove unwanted encroaching vegetation); raising island elevation to make room to move nests in years with rising water during the nesting season (MPPRC 1994); and timing spring flow releases from Fort Peck Dam to more closely mimic the natural seasonal flows of the river (FWP 2013d). Other management activities to enhance habitat or affect better protection for this species includes reducing human, dog, and vehicular disturbance during nesting (FWP 2013d).

Management of least terns is under direction of the 1990 USFWS Recovery Plan and the 2006 FWP species management plan that calls for a goal of 50 individuals within Montana.

Management Plans
Atkinson, S. J., and A. R. Dood. 2006. Montana Interior Least Tern Management Plan. Montana Fish, Wildlife and Parks, Bozeman, Montana. 47 pp.

Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

Kushlan, J. A., M. J. Steinkamp, K. C. Parsons, J. Capp, M. A. Cruz, M. Coulter, I. Davidson, L. Dickson, N. Edelson, R. Elliot, R. M. Erwin, S. Hatch, S. Kress, R. Milko, S. Miller, K. Mills, R. Paul, R. Phillips, J. E. Saliva, B. Sydeman, J. Trapp, J. Wheeler, and K. Wohl. 2002. Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan, Version 1. Waterbird Conservation for the Americas, Washington, D.C. USA, 78 pp.

U.S. Fish and Wildlife Service. 1990. Recovery plan for the interior population of the least tern (*Sterna antillarum*). Twin Cities, Minnesota. 90 pp.

**Least Tern Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Data poor<br><br>Outdated survey | | Target species for survey and inventory |
| Food availability | Food availability | Investigate fish prey abundance and foraging success along both the Missouri and Yellowstone rivers |
| Human disturbance | Human disturbance | Manage human use at nesting beaches<br><br>Preserve and restore suitable nesting habitat through protective easements |
| Nesting and reproductive success | Nesting and reproductive success | Analyze the population's likelihood of persistence, using Population Viability Analysis, coupled with a review of the status of the least tern<br><br>Continue annual monitoring of terns coupled with efforts to standardize monitoring and data collection techniques within and between states in the interior U.S. |
| Pollution and environmental contaminants | Pollution and environmental contaminants | Decrease point and nonpoint inputs of pesticides and heavy metals into rivers and floodplains |

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Increased predator abundance | Increased predator abundance | Continue site specific use of predator deterrents and predator control measures where predators are determined to be a limiting factor<br><br>Manage vegetation encroachment to increase nest site availability and security<br><br>Remove human created structures utilized by predators (e.g. abandoned buildings) |
| Unpredictable water levels (flooding) | Unpredictable water levels (flooding) | Manage water flows that reduce the potential for nest inundation but allow for periodic bank scouring for habitat creation |
| Water flow and river dynamics | Water flow and river dynamics | Manage water flows that restore riverine habitats and their associated ecosystem processes |

Chestnut-collared Longspur (*Calcarius ornatus*) State Rank: S2B

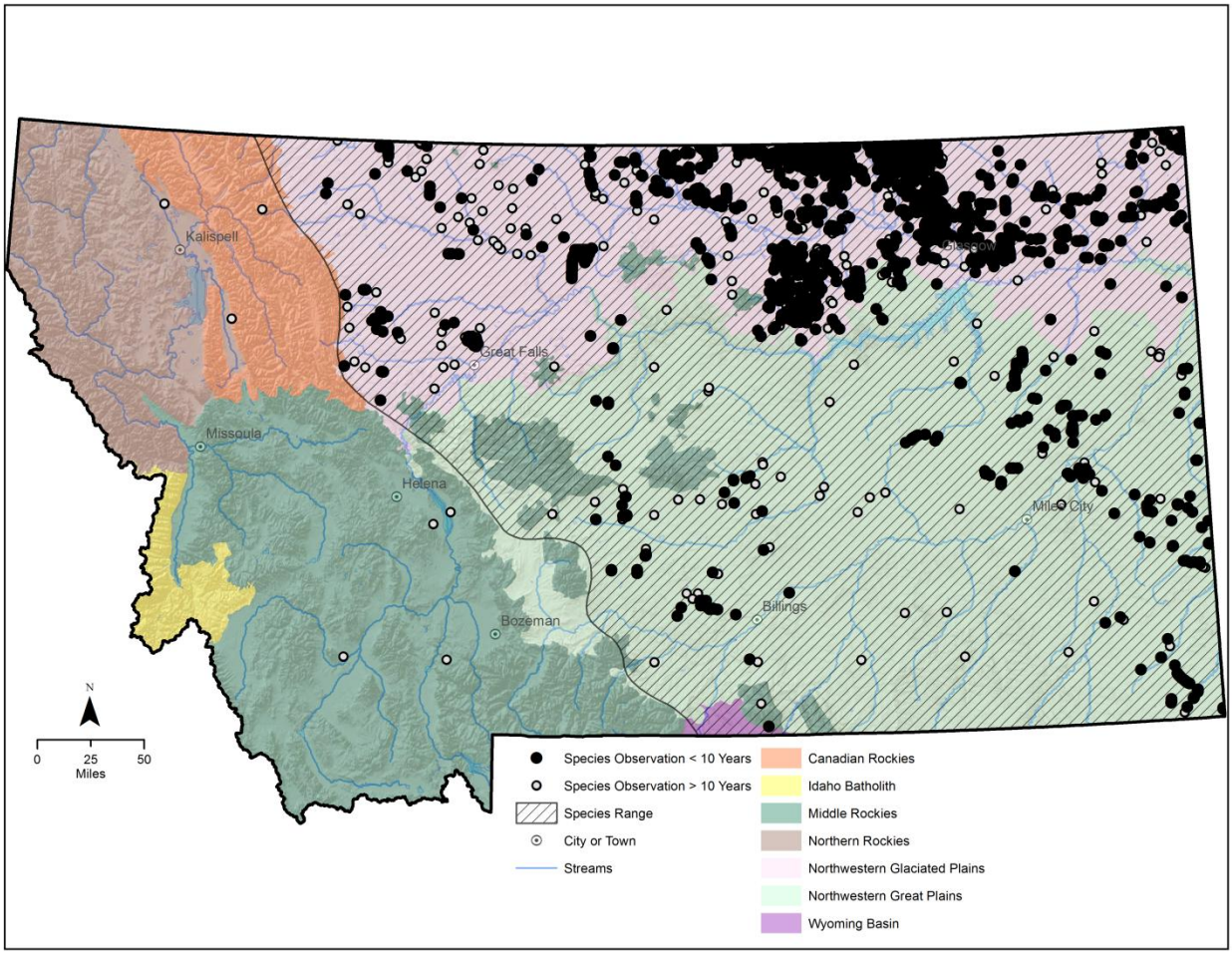


Figure 63. Montana range and observations of the chestnut-collared longspur

Habitat

Species prefers short-to-medium grasses that have been recently grazed or mowed. This species prefers native pastures.

Management

This species is one of several that is monitored under the Statewide Integrated Monitoring in Bird Conservation Regions surveys (Hanni et al. 2011).

Management Plan

Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

**Chestnut-collared Longspur Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Habitat conversion | Habitat conversion | Protect grasslands that are at highest risk of conversion to cropland through the use of easements, fee acquisitions, and incentive programs<br><br>Support the SodSaver provision of Farm Bill to reduce incentive to convert native grasslands to crops<br><br>Provide incentives to maintain grazed grasslands over conversion to croplands<br><br>Work with landowners and land management agencies to limit activities that may be detrimental to this species |
| Lack of grazing to create favorable structure | Lack of grazing to create favorable structure | Implement grazing management that creates heterogeneous structure, with emphasis of mid to shorter stature vegetation on a yearly basis<br><br>Reduce tall, thick vegetation in priority areas<br><br>Work with landowners and land management agencies to ensure species needs are adequately addressed in grazing and RMPs |
| | Oil and gas exploration and extraction | Follow recommendations in FWP's *Fish and Wildlife Recommendations for Oil and Gas Development in Montana* (In prep)<br><br>Monitor population trends via *Breeding Bird Surveys* and *Statewide Integrated Monitoring in Bird Conservation Regions* (Hanni et al. 2011) surveys |
| | Wind energy development | Follow recommendations in FWP's *Fish and Wildlife Recommendations for Wind Energy Development in Montana* (In prep) |

Mountain Plover (*Charadrius montanus*) State Rank: S2B

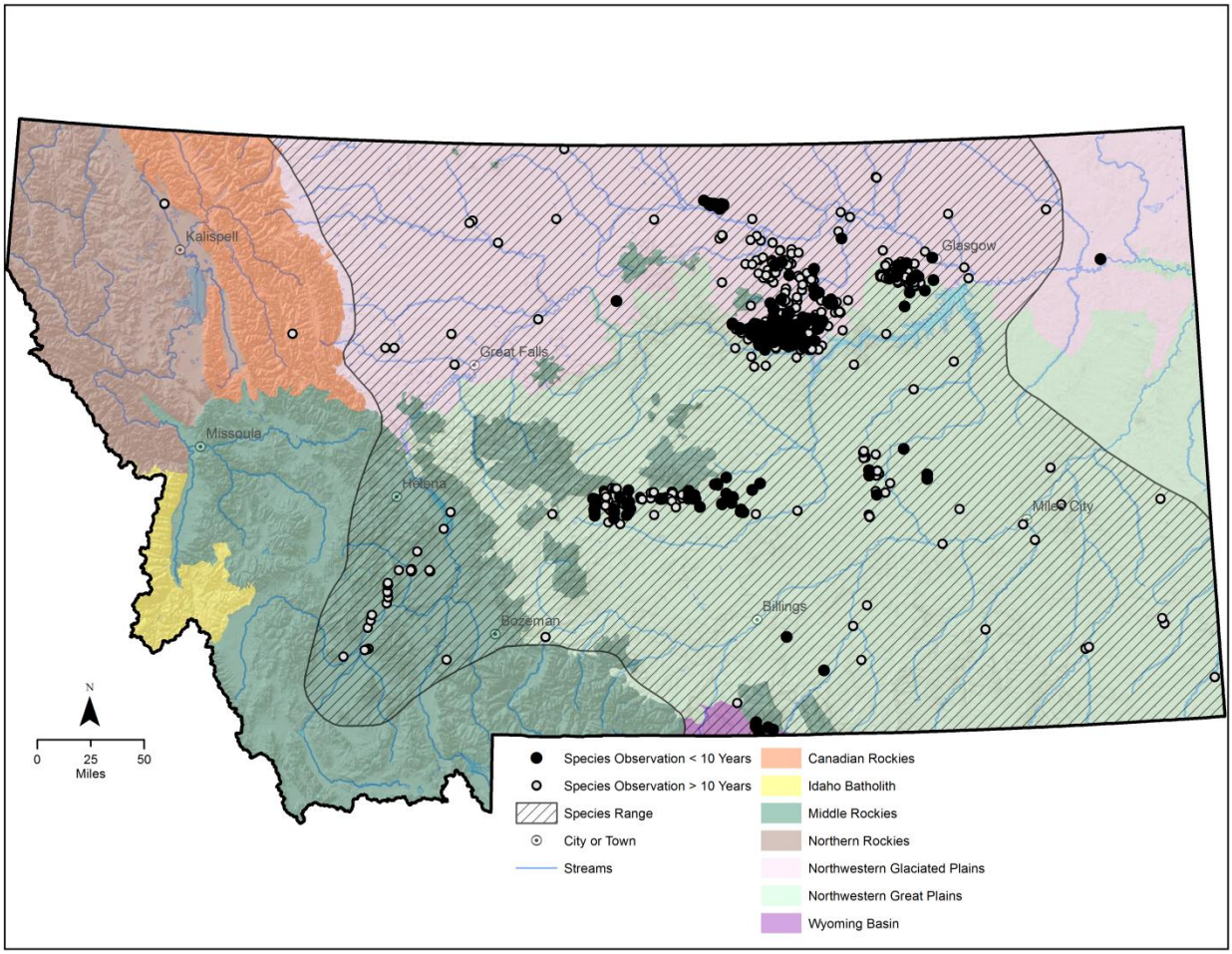


Figure 64. Montana range and observations of the mountain plover

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*). 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 7.4 acres (Knowles et al. 1982); from 15 to 124 acres in another study (Olson-Edge and Edge 1987), and from five to more than 371 acres in another (Dinsmore 2001). Knopf and Rupert (1996) found the minimum habitat requirement for broods in Montana was 70 acres.

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 and 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% and grass height of less than three inches (Knowles et al. 1995). Knowles and 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 BLM has some management activities specific to mountain plover; increased coordinated management activities in Montana are needed. The unifying habitat features desirable to mountain plovers are extremely short vegetation, a high percentage of bare soil, and an extensive area (0.3 to 0.6 miles 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; USFWS 1995; Dinsmore 2001).

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, Massachusetts.

Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

**Mountain Plover Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Decrease in the total acreage of prairie dog habitat on suitable substrate selected by mountain plovers | Decrease in the total acreage of prairie dog habitat on suitable substrate selected by mountain plovers | Continue management and potential enhancement to prairie dog colonies<br><br>Work through cooperative agreements with private landowners and land management agencies to manage for healthy populations of prairie dogs<br><br>Use of deltamethrin to protect prairie dog populations until a sylvatic plague vaccine is available<br><br>Continue to develop, refine, and implement financial incentives for landowners to maintain prairie dogs |

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Habitat loss due to conversion of short-grass prairies to agriculture | Habitat loss due to conversion of short-grass prairies to agriculture | Provide incentives to maintain grazed grasslands over conversion to croplands<br><br>Support strategic conservation easements to enhance and protect important native habitat<br><br>Work with landowners and land management agencies to limit activities that may be detrimental to this species |
| Invasive plant species | Invasive plant species | Apply appropriate range management practices to reduce presence and spread of noxious and invasive plant species<br><br>Control shrub and noxious weed encroachment at known and potential breeding sites |
| Lack of grazing to create favorable structure | Lack of grazing to create favorable structure | Work with landowners and land management agencies to ensure species needs are adequately addressed in grazing and RMPs<br><br>Support livestock grazing management that maintains or improves native rangeland integrity |

Piping Plover (*Charadrius melodus*) State Rank: S2B

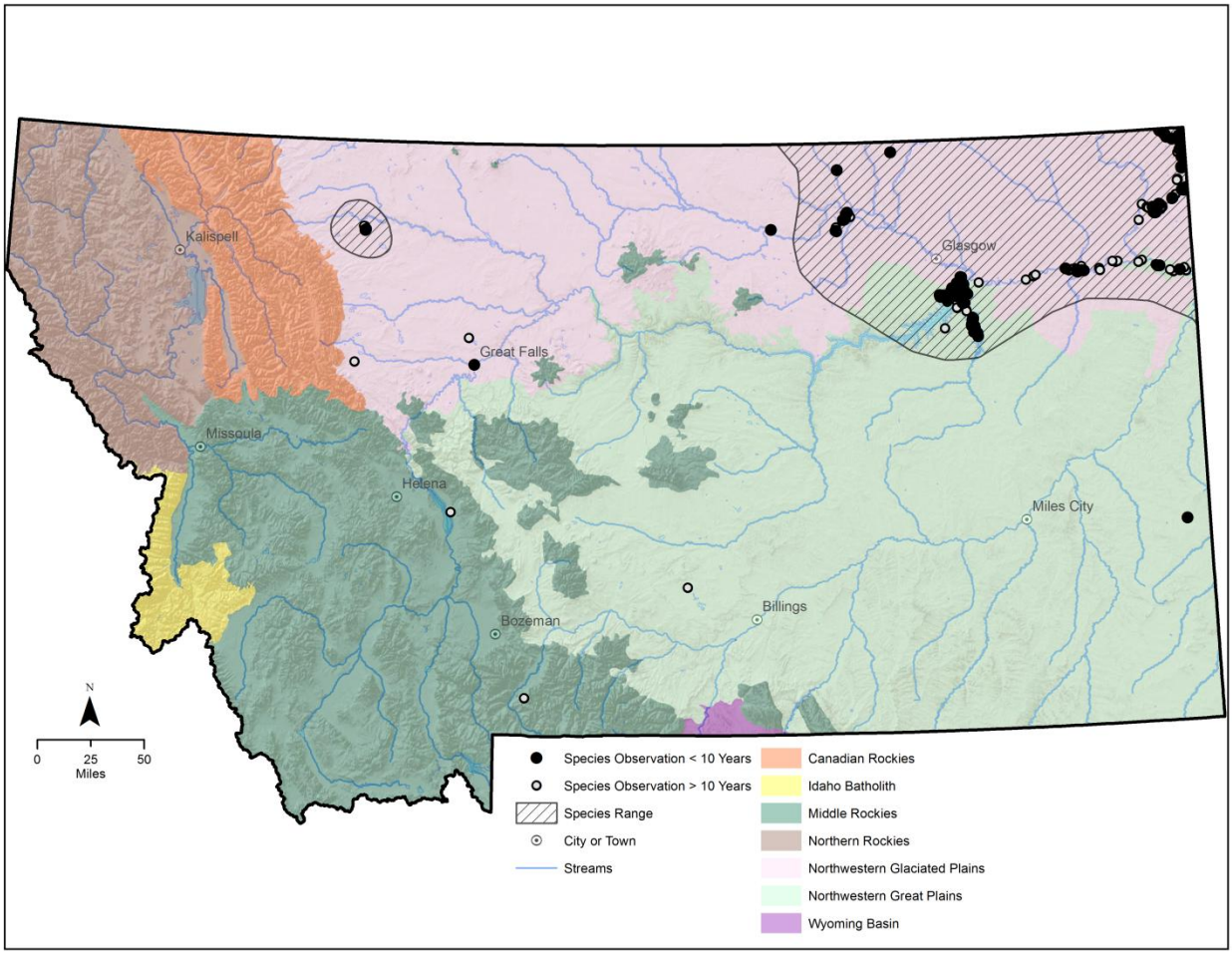


Figure 65. Montana range and observations of the piping plover

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 (FWP 2013e). 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 2013a).

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 2013a). 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 NWR, 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 NWR, 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 (BOR), USFWS, and the local irrigation districts. The Memorandum, in combination with a biological opinion from the USFWS, guides management actions at this location (USFWS 2013a).

The 2011 international piping plover breeding census detected roughly half of the plovers detected in previous censuses. Censuses are conducted every five years. Significant flooding throughout the nesting range of the plover in this year likely limited nesting and survey detectability.

An interagency team, including FWP, began revision of the 1988 recovery plan in 2010 and it is still being developed. FWP management of piping plovers is also guided by the 2006 species management plan that has goal of 60 breeding pairs over a 10 year running average, distributed across appropriate habitats in Montana. A workshop was held in 2011 to discuss current population status and trend of the Great Plains population and new population monitoring and estimation techniques.

Management Plans
Atkinson, S. J. and A. R. Dood. 2006. Montana Piping Plover Management Plan. Montana Department of Fish, Wildlife & Parks, Bozeman, Montana. 78 pp.

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, Massachusetts.

Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

Haig, S., et al. 1988. Recovery plan for piping plovers (*Charadrius melodus*) of the Great Lakes and northern Great Plains. U.S. Fish and Wildlife Service. 160 pp.

Haig, S., et al. 1994. Revised recovery plan for piping plovers (*Charadrius melodus*) breeding on the Great Lakes and northern Great Plains. Technical/agency review draft. Great Lakes/Northern Great Plains Piping Plover Recovery Team. 121 pp.

**Piping Plover Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Flooding<br><br>Water flow and river dynamics | Flooding<br><br>Water flow and river dynamics | Encourage management of water flows that restore riverine and sandbar habitats and their associated ecosystem processes |
| Food availability | Food availability | Investigate forage availability |
| Incompatible grazing practices | Incompatible grazing practices | Provide assistance to private landowners interested in implementing voluntary conservation measures that improve wetland habitat and limit livestock disturbance<br><br>Work with landowners and land management agencies to ensure species needs are adequately addressed in grazing and RMPs |
| Human disturbance | Human disturbance | Consider limiting access and certain types of activities when known to be disturbing to nest sites |
| Land use change:<br><br>Conversion of uplands to cropland<br>Wetland loss and modification | Land use change:<br><br>Conversion of uplands to cropland<br>Wetland loss and modification | Manage vegetation encroachment and substrate to increase nest site availability<br><br>Protect habitat that is at highest risk of conversion to cropland through the possible use of easements and acquisition |

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| | | Work with landowners and land management agencies to limit activities that may be detrimental to this species |
| Nesting and reproductive success | Nesting and reproductive success | Continue regular monitoring of plovers coupled with efforts to standardize monitoring and data collection techniques within and between states/provinces in the Northern Great Plains |
| Pollution and environmental contaminants | Pollution and environmental contaminants | Work with watershed groups, agencies, organizations, and the public to identify and reduce point source pollution in headwater streams |
| Increased predator abundance | Increased predator abundance | Continue site specific use of predator deterrents and predator control measures where predators are determined to be a limiting factor<br><br>Control gull populations in close proximity to plover breeding locations by eliminating nesting habitat for gulls (install structures avoided by gulls)<br><br>Remove human created structures utilized by predators (e.g. abandoned buildings) |

Harlequin Duck (*Histrionicus histrionicus*) State Rank: S2B
Species of Greatest Inventory Need

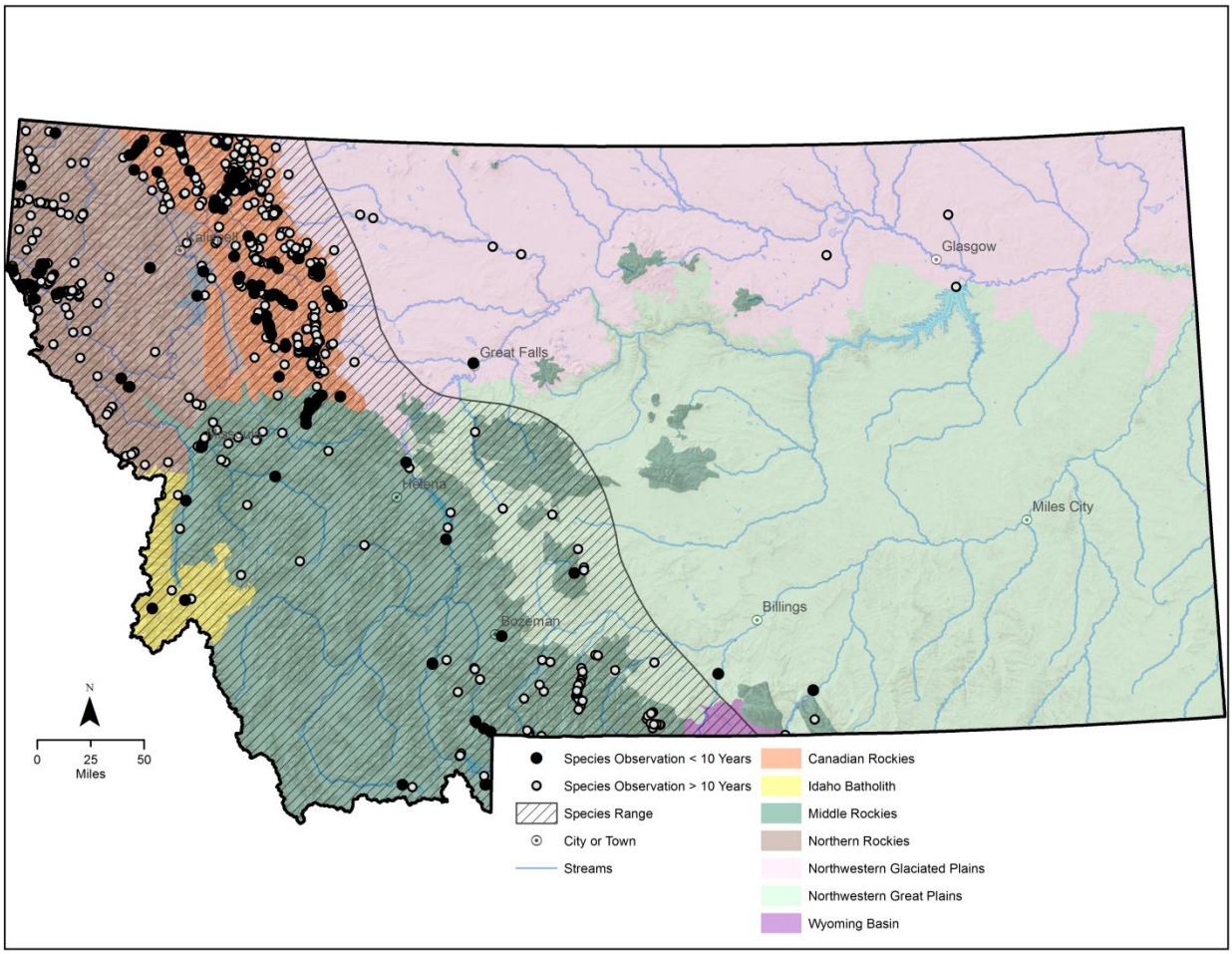


Figure 66. Montana range and observations of the harlequin duck

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%), 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% 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 33 feet, 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.

The strongest stream section factor in Montana appears to be for stream reaches with more than two loafing sites per 33 feet (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 10-115 feet in Montana. On stream gradients of 7%, occupied stream reaches ranged from 1.8-2.8% (Fairman and Miller 1990), while velocity at 42 harlequin observation points ranged from 2.6-13.5 feet 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 YNP. 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% of area used), but also used cut-off side channels and other backwaters during periods of high water and as brood rearing habitat (Kuchel 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 Plans

Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

Cassirer, E. F., J. D. Reichel, R. L. Wallen, and E. C. Atkinson. 1996. Harlequin Duck (*Histrionicus histrionicus*) conservation assessment and strategy for the U.S. Rocky Mountains. Unpublished technical report, Idaho Department of Fish and Game, Lewiston, Idaho.

North American Waterfowl Management Plan. 1998. Expanding the Vision (update). 32 pp.

Will, G. C. January 1986. Waterfowl, Sandhill Crane and Snipe Management Plan.

**Harlequin Duck Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Data poor<br><br>Outdated survey | | Continue survey efforts to find occupied streams throughout its range in the state<br><br>Develop a statewide population estimate |

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| | | Develop monitoring schedule to estimate and evaluate population trend<br><br>Target species for survey and inventory |
| Destruction of watershed stability and stream flow regimes | Destruction of watershed stability and stream flow regimes | Maintain and enhance fisheries and aquatic invertebrate populations<br><br>Maintain backwater areas that are used for brood rearing<br><br>Maintain large woody debris for nesting sites; in some cases, nest boxes may be erected to supplement natural nesting sites<br><br>On stream reaches with water control structures, avoid increasing peak flows during nesting season |
| Incompatible forest management practices | Incompatible forest management practices | Work with landowners and land management agencies to limit activities that may be detrimental to occupied streams |
| Human disturbance by paddlers (especially in breeding season) | Human disturbance by paddlers (especially in breeding season) | Consider limiting access and certain types of activities when known to be disturbing to nest sites |
| Impoundments and diversions on breeding streams | Impoundments and diversions on breeding streams | Encourage watershed management practices that maintain habitat quality throughout the nesting season<br><br>Explore impoundment removal if possible |
| Road construction/use impacting suitable nesting habitat and causing riparian degradation | Road construction/use impacting suitable nesting habitat and causing riparian degradation | Decommission old/unused roads<br><br>Manage road density at or below current levels |
| Water pollution on headwater streams utilized for nesting, brood rearing, and prey base | Water pollution on headwater streams utilized for nesting, brood rearing, and prey base | Work with watershed groups, agencies, organizations, and the public to identify and reduce point source pollution in headwater streams |

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| | Climate change altering habitat characteristics (e.g., air and water temperature, precipitation timing and amount) | Continue to evaluate current climate science models and recommended actions<br><br>Monitor habitat changes and address climate impacts through adaptive management as necessary<br><br>Routine monitoring of known populations |

Black Swift (*Cypseloides niger*) State Rank: S1B
Species of Greatest Inventory Need

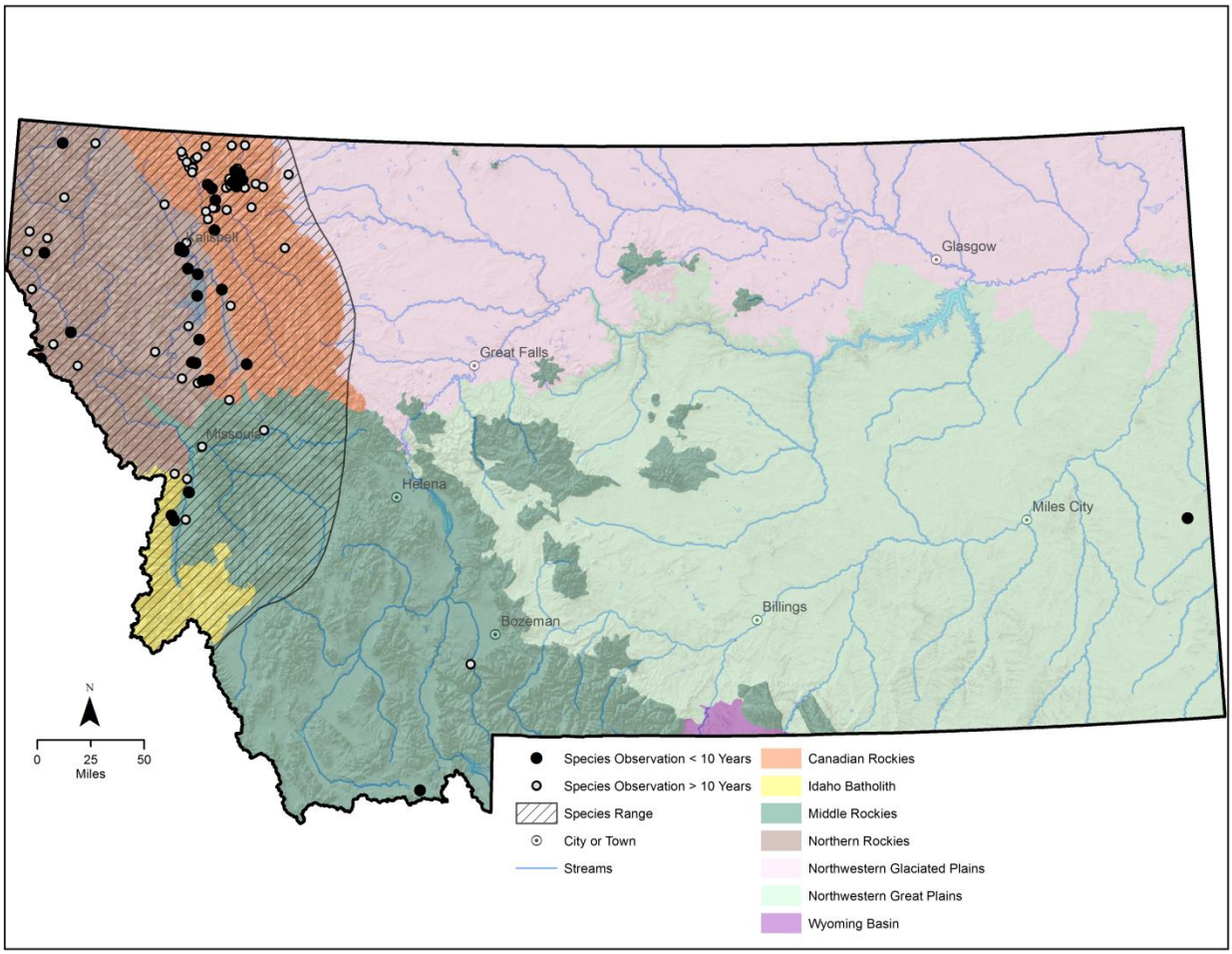


Figure 67. Montana range and observations of the black swift

Habitat

No specific information regarding black swift habitat exists for Montana. Information from other regions indicates they forage over forests and in open areas. They nest behind or next to waterfalls and wet cliffs (Michael 1927, Knorr 1961, Foerster and Collins 1990), on sea cliffs and in sea caves (Vrooman 1901, Legg 1956), and occasionally in limestone caves (Davis 1964). Nests are located in dark, inaccessible sites with an unobstructed flight path (Knorr and Knorr 1990). Nest site persistence and tenacity is almost absolute (Knorr and Knorr 1990). The nest is a cup-like structure of mud, mosses and algae.

Management

No active management currently is in place for black swifts in Montana. Although decreases in water flow and increased recreational use in areas where black swifts nest, or are thought to nest, should be discouraged (Casey 2000). Montana has at least six known nesting colonies (Anderson and Turnock 2012).

Management Plan
Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

**Black Swift Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Data poor - very few breeding records<br><br>Lacks a baseline survey | | Develop a list of potential waterfall nesting sites and survey<br><br>Identify, map, and survey microhabitats suitable for black swifts<br><br>Monitor site occupancy periodically to determine trends<br><br>Target species for survey and inventory |
| Altered stream flows due to upstream impacts | Altered stream flows due to upstream impacts | Encourage watershed management practices upstream of suitable waterfalls to maintain habitat quality throughout the nesting season |
| Dewatering | Dewatering | If known nest sites or waterfalls with a high likelihood of being occupied are threatened by dewatering, work with upstream managers and water-rights holders to maintain adequate stream flows throughout the nesting season |
| Human disturbance at waterfall nesting sites | Increased recreation | Consider limiting access and certain types of activities when known to be disturbing to nest sites<br><br>Evaluate human access at known nesting sites |
| | Climate change altering habitat characteristics (e.g., air and water temperature, precipitation timing and amount) | Continue to evaluate current climate science models and recommended actions<br><br>Monitor habitat changes and address climate impacts through adaptive management as necessary<br><br>Routinely monitor known populations |

Greater Sage-Grouse (*Centrocercus urophasianus*) State Rank: S2

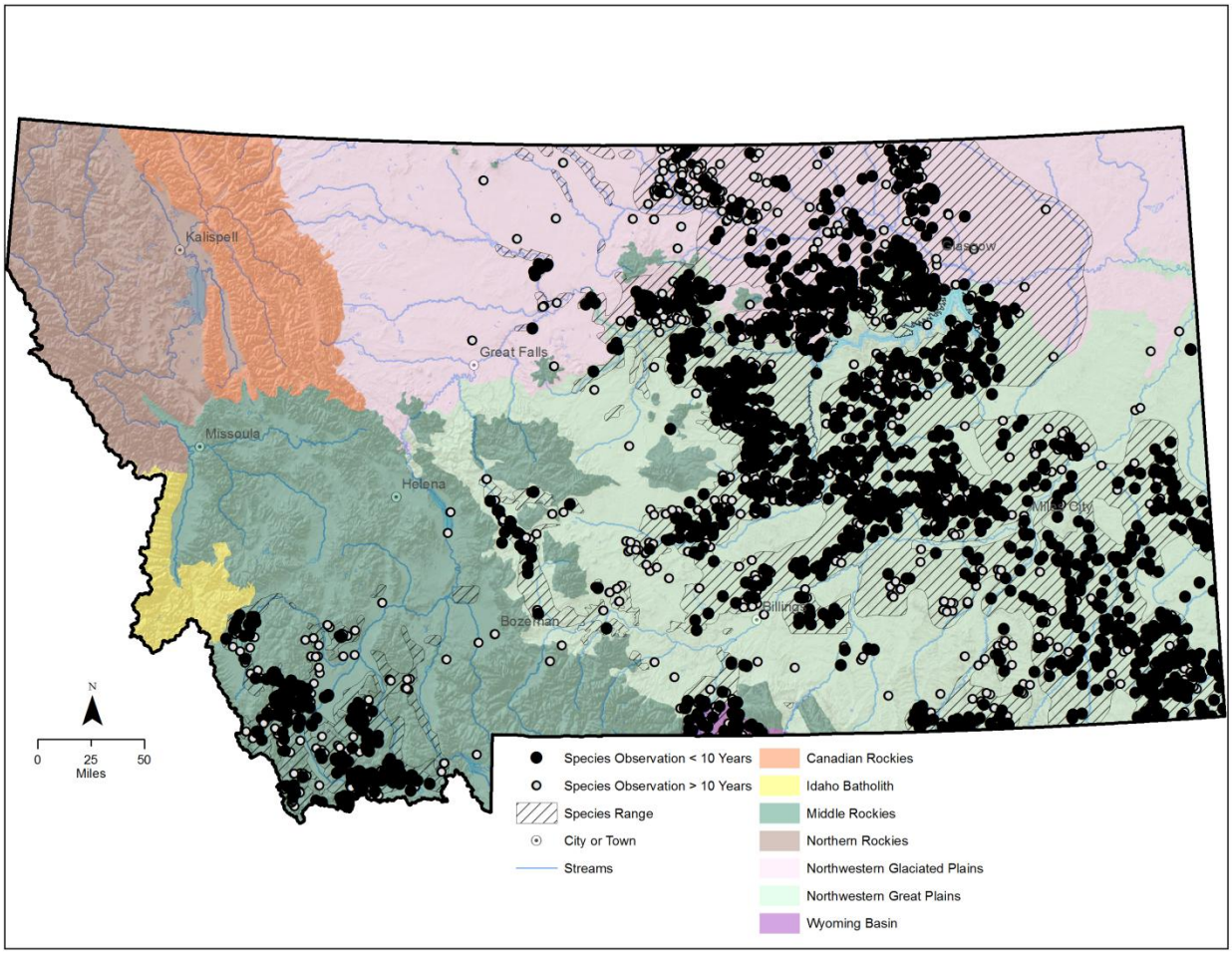


Figure 68. Montana range and observations of the greater sage-grouse

Habitat

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. The majority of greater sage-grouse nests are located within three miles of a lek. Hens generally nest under stands of sagebrush 12 to 30 inches in height, seeking taller shrubs in a stand for nesting. Residual grass (remaining from the previous growing season) is important for providing nest concealment from predators and the probability of sage-grouse selecting a nesting site increases with increasing residual grass height. After eggs hatch, hens seek relatively open sagebrush stands with more than 15% 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. Wintering greater sage-grouse typically prefer extensive stands of sagebrush with 10 - 30% canopy cover. However,

sage-grouse will move to areas of exposed sagebrush for food and cover if deep snow conditions are present.

Contiguous large blocks of intact, functional 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.

In 2008, FWP identified and mapped the areas that are most important to the persistence of sage-grouse populations in the state. These "Core Areas" were based on densities of displaying males and associated habitat. State, federal, and local partners use these Core Areas to focus conservation and management action designed to benefit sage-grouse.

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 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.

Federally-funded cooperative habitat projects are also available through the NRCS Sage Grouse Initiative. This initiative accesses several different funding sources for sagebrush restoration, enhancement, and conservation on private lands. Priority projects for these funds are located within FWP's sage-grouse Core Areas. Other federal land management agencies (i.e., BLM, USFS) also prioritize management for sage-grouse within Core Areas.

On March 5, 2010, USFWS determined that the greater sage-grouse warrants protection under the Endangered Species Act (ESA), but that listing the species under the Act is precluded by the need to address other listing actions of a higher priority.

Management Plans
Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

Montana's Greater Sage-Grouse Habitat Conservation Advisory Council. 2014. DRAFT Greater sage-grouse habitat conservation strategy. 73 pp.

Montana Sage Grouse Work Group. 2005. Management plan and conservation strategies for greater sage-grouse in Montana- Final Montana Sage Grouse Work Group. 200 pp.

Range-wide Interagency Sage-Grouse Conservation Team. 2012. Near-term Greater Sage-grouse Conservation Action Plan. Greater Sage-grouse Executive Oversight Committee and Sage-grouse Task Force.

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.

Stiver, S. J. A.D. Apa, J. R. Bohne, S. D. Bunnell, P. A. Deibert, S. C. Gardner, M. A. Hilliard, C. W. McCarthy, and M. A. Schroeder. 2006. Greater Sage-grouse Comprehensive Conservation Strategy. Western Association of Fish and Wildlife Agencies. Unpublished Report. Cheyenne, WY.

U.S. Fish and Wildlife Service. 2013. Greater Sage-grouse (*Centrocercus urophasianus*) Conservation Objectives: Final Report. U.S. Fish and Wildlife Service, Denver, CO.

**Greater Sage-Grouse Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Fragmentation of sagebrush grasslands (e.g., energy development, power lines, roads, urban sprawl) | Fragmentation of sagebrush grasslands (e.g., energy development, power lines, roads, urban sprawl) | Cluster development and use existing corridors for new infrastructure to minimize fragmentation<br><br>Follow recommendations in FWP's *Fish and Wildlife Recommendations for Oil and Gas Development in Montana* (In prep)<br><br>Follow recommendations in FWP's *Fish and Wildlife Recommendations for Wind Energy Development in Montana* (In prep) |

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| | | Minimize new surface disturbance by adhering to thresholds as defined in relevant management plans<br><br>Follow recommendations in the *Greater Sage-Grouse Habitat Conservation Strategy* (Montana's Greater Sage-grouse Habitat Conservation Advisory Council 2014) when finalized |
| Incompatible grazing practices | Incompatible grazing practices | Support livestock grazing management that maintains or improves native rangeland integrity and provides standing herbaceous cover, important for nesting and brood rearing<br><br>Support research evaluating livestock grazing systems that enhance sage-grouse habitat features and ultimately sage-grouse populations |
| Habitat conversion | Habitat conversion | Actively engage local working groups, organizations, and agency partnerships to promote and expand greater sage-grouse conservation<br><br>Follow actions set out in the *Greater Sage-Grouse Habitat Conservation Strategy* (Montana's Greater Sage-grouse Habitat Conservation Advisory Council 2014) when finalized<br><br>Promote conservation of intact sagebrush grassland landscapes through incentives and easements<br><br>Provide incentives to maintain grazed grasslands over conversion to croplands |

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| | | Work with landowners and land management agencies to limit activities that may be detrimental to this species |
| Invasive plant species | Invasive plant species | Apply appropriate range management practices to reduce presence and spread of noxious and invasive plant species |
| Rangeland treatments (e.g., prescribed fire, spraying) | Rangeland treatments (e.g., prescribed fire, spraying) | Apply herbicides selectively (i.e., no broadcast application)<br><br>Consider research on the use of fire to increase stand diversity (forbs) and productivity of invertebrates, especially where brood survival is low due to lack of food resources; any fire use must be carefully evaluated |
| West Nile virus | West Nile virus | Follow BMPs designed to minimize habitat for the mosquitoes vectors of West Nile virus when constructing new water structures |
| Fences | Fences | Mark fences to reduce collisions |
| | Climate change altering habitat characteristics (e.g., air and water temperature, precipitation timing and amount) | Continue monitoring of known populations<br><br>Continue to evaluate current climate science models and recommended actions<br><br>Monitor habitat changes and address climate impacts through adaptive management as necessary |

Sharp-tailed Grouse (*Tympanuchus phasianellus*)* State Rank: S1, S4

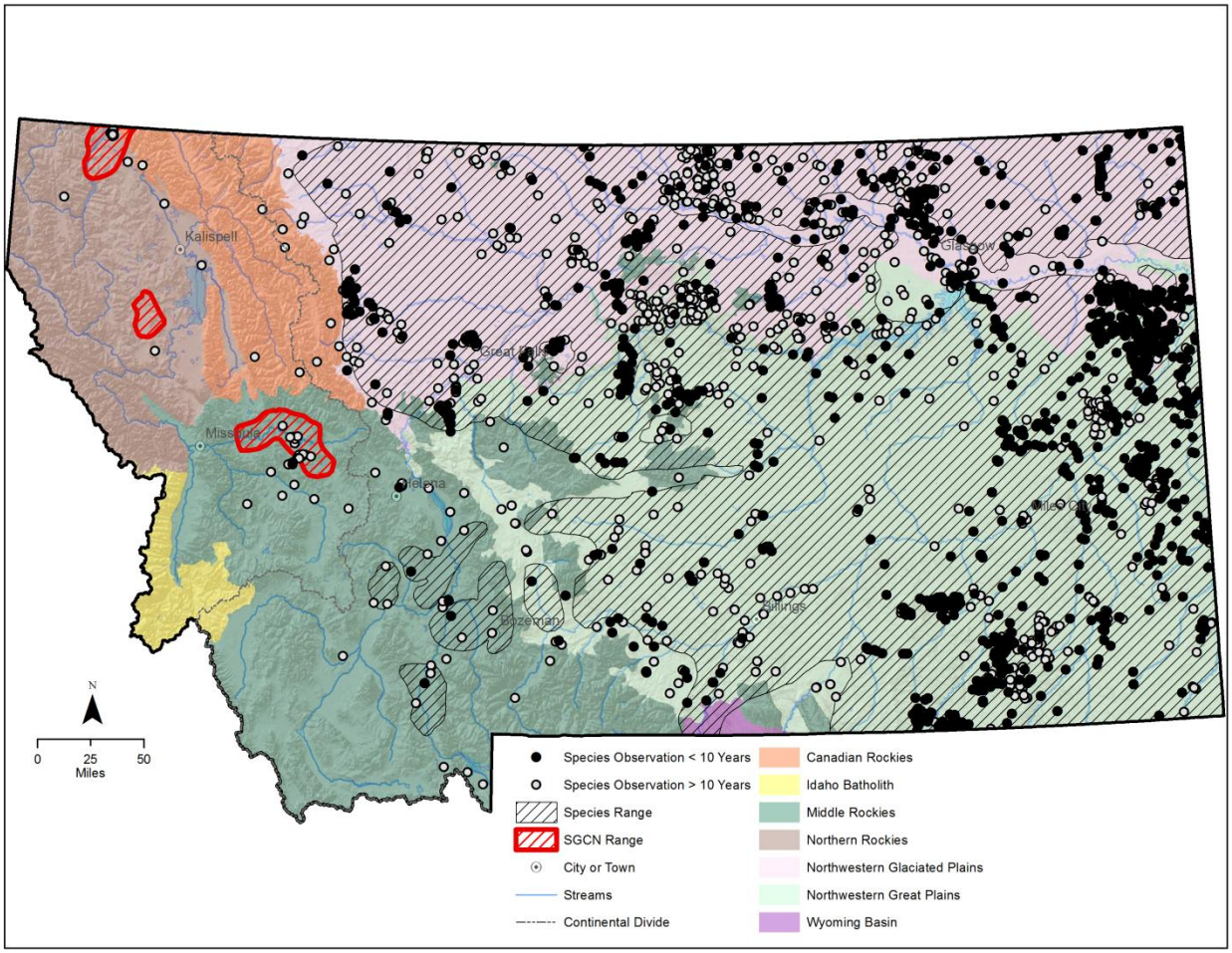


Figure 69. Montana range and observations of the sharp-tailed grouse

Habitat

Sharp-tailed grouse habitat is primarily grasslands interspersed with shrub and brush-filled coulees. They prefer stands of inter-mixed tree and shrub grasslands. With high population, they spread into islands of native grassland, usually along drainages surrounded by grain fields. Sharp-tailed grouse persist only on native bunchgrass-shrub stands. In Idaho, Saab and Marks (1992) found birds selected big sage habitat types during summer. They appeared to prefer range habitats that were in good condition.

Until recently, sharp-tailed grouse in Montana were found west of the Continental Divide in larger mountain valleys with extensive native bunchgrass-shrub stands. However, they have now apparently been extirpated, or nearly extirpated, from this historic range (Hoffman and Thomas 2007).

Management

Sharp-tailed grouse in western Montana were originally thought to be Columbian sharp-tailed grouse. However, recent genetics studies have shown that the historic populations in western Montana were Plains sharp-tailed grouse, rather than Columbian sharp-tailed grouse (Warheit

and Dean 2009). Current populations east of the Continental Divide have a state rank of S4 and are not a SGCN and are not addressed in this SWAP. Only the populations west of the Continental Divide that are SGCN with a state rank of S1 are addressed by this SWAP. However, FWP staff will be recommending that the SOC committee review the status of this species and increase the state rank, thereby removing it from the SOC and SWAP SGCN lists.

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).

Management Plans
Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

Wood, M. 1991. Management plan for Columbian sharp-tailed grouse in western Montana.

**Sharp-tailed Grouse Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Conversion of native grassland and shrub/grass communities to agriculture and other unsuitable land uses | Conversion of native grassland and shrub/grass communities to agriculture and other unsuitable land uses | Coordinate with British Columbia to manage suitable habitat along the international Kootenai River valley<br><br>Protect habitat that is at highest risk of conversion to cropland through the possible use of easements acquisition<br><br>Provide incentives to maintain grazed grasslands over conversion to croplands<br><br>Work with landowners and land management agencies to limit activities that may be detrimental to this species |
| Encroachment of conifers onto grassland habitat | 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% of habitat will provide shrub cover during the recovery period of the burned area |

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Incompatible grazing practices | Incompatible grazing practices | Develop livestock management plans, which retain adequate residual cover across the land, and favor maintenance or enhancement of bunchgrass communities, forbs, species diversity, and upland shrubs<br><br>Work with landowners and land management agencies to ensure species needs are adequately addressed in grazing and RMPs |
| Human disturbance to leks | Human disturbance to leks | 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)<br><br>Protect known lek areas and surrounding habitats within 1.2 miles, and search for new leks in areas with appropriate physiographic and vegetative characteristics including minimizing pesticide use in order to provide an abundance of insects important for growth and survival of young birds |
| Invasive plant species | Invasive plant species | Apply appropriate range management practices to reduce presence and spread of noxious and invasive plant species<br><br>Avoid manipulation or alteration of vegetation within the breeding complex (lek and nesting areas) during the nesting period (mid-April to June) |

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Isolated and extremely small population | Isolated and extremely small population | Evaluate potential for sharp-tailed grouse reintroduction<br><br>Identify habitat connectivity across the Continental Divide to eastern Montana populations, and enhance/conserve grassland habitats to increase or maintain connectivity<br><br>Increase abundance and distribution of sharp-tailed grouse with reintroduction program into western Montana<br><br>Monitor existing SGCN populations to determine if management actions are adequate |
| Predation on nests by ravens and other predators | Predation on nests by ravens and other predators | Protect, maintain, and enhance winter breeding and nesting habitats near known populations where predators are determined to be a limiting factor |

Lewis's Woodpecker (*Melanerpes lewis*) State Rank: S2B

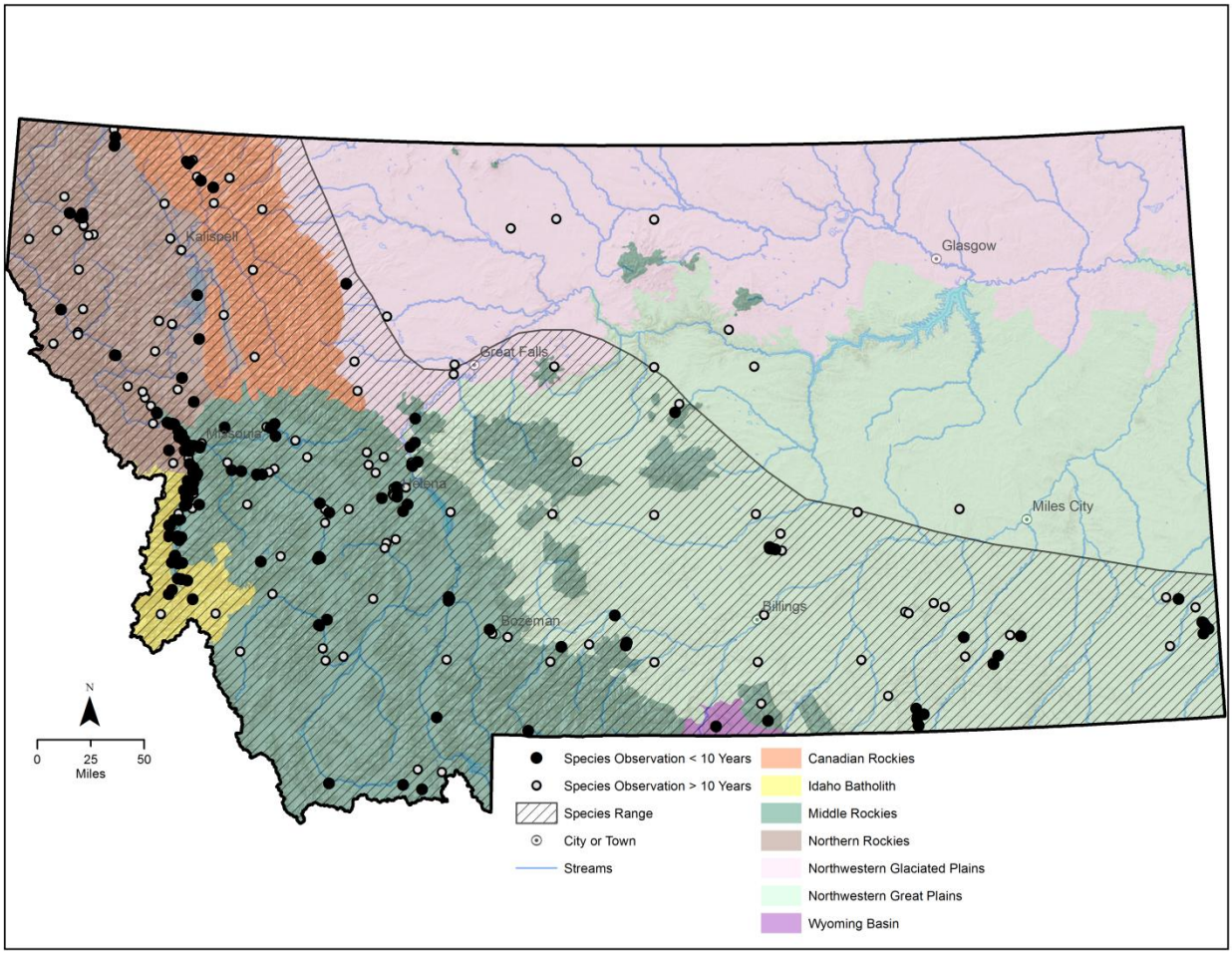


Figure 70. Montana range and observations of the Lewis's woodpecker

Habitat

In the Bozeman area, Lewis's woodpeckers are known to occur in river bottom woods and forest edge habitats (Skaar 1969). Habitat information from other Lewis's woodpecker sources state that the breeding habitat is open forest and woodland, often logged or burned, including oak and coniferous forest; primarily ponderosa pine (*Pinus ponderosa*), riparian woodland, and orchards, and less commonly in pinyon-juniper (*Pinus* spp.-*Juniperus* spp.; American Ornithologists Union 1998). Lewis's woodpecker distribution is closely associated with open ponderosa pine forest in western North America, and is strongly associated with fire-maintained old-growth ponderosa pine (Diem and Zeveloff 1980, Tobalske 1997, Saab and Dudley 1998).

Important habitat features include an open tree canopy, a brushy understory with ground cover, dead trees for nest cavities, dead or downed woody debris, perch sites, and abundant insects. Lewis's woodpeckers use open ponderosa pine forests, open riparian woodlands dominated by cottonwood (*Populus* spp.), and logged or burned pine. They also use oak (*Quercus* spp.) woodlands, orchards, pinyon-juniper woodlands, other open coniferous forests, and agricultural lands. Apparently the species prefers open ponderosa pine at high elevations and open riparian forests at lower elevations (Bock 1970, Tobalske 1997). In the Blue Mountains of Oregon, they

showed a preference for open stands near water (Thomas et al. 1979). Because the species catches insects from the air, perches near openings or in open canopy are important for foraging habitat (Bock 1970, Tobalske 1997).

Lewis's woodpeckers often use burned pine forests, although suitability of post-fire habitats varies with the age, size, and intensity of the burn, density of remaining snags, and the geographic region. Birds may move to unburned stands once the young fledge (Block and Brennan 1987, Tobalske 1997, Saab and Dudley 1998). They have been generally considered a species of older burns rather than new ones, moving in several years post-fire once dead trees begin to fall and brush develops, five to 30 years after fire (Bock 1970, Block and Brennan 1987, Caton 1996, Linder and Anderson 1998). However, on a two- to four-year-old burn in Idaho they were the most common cavity-nester, and occurred in the highest nesting densities ever recorded for the species (Saab and Dudley 1998). As habitat suitability declines, however, numbers decline. For example, in Wyoming, the species was more common in a seven-year-old burn than in a 20-year-old burn (Linder and Anderson 1998). Overall, suitable conditions include an open canopy, availability of nest cavities and perches, abundant arthropod prey, and a shrubby understory (Linder and Anderson 1998, Saab and Dudley 1998).

Unlike other woodpeckers, Lewis's woodpeckers are not morphologically well adapted to excavate cavities in hard wood. They tend to nest in natural cavities, abandoned northern flicker (*Colaptes auratus*) holes, or previously used cavities, three to 170 feet above ground. Sometimes they will excavate a new cavity in a soft snag, dead branch of a living tree, or rotting utility pole (Harrison 1979, Tobalske 1997). The mated pair may return to the same nest site in successive years. On partially logged burns with high nesting densities in Idaho, nest sites were characterized by the presence of large, soft snags and an average of 25 snags per acre that had more than nine-inch diameter at breast height (Saab and Dudley 1998).

In late summer, wandering flocks move from valleys into mountains or from breeding habitat to orchards. In winter, they use oak woodlands and nut and fruit orchards. An important habitat feature in many wintering areas is the availability of storage sites for grains or mast, such as tree bark (e.g., bark of mature cottonwood trees) or power poles with desiccation cracks (Bock 1970, Tobalske 1997). In southwestern Arizona and southeastern California, Lewis's woodpeckers may use scrub oak, pecan orchards, and cottonwoods, but more study is needed in this area (Bock 1970). In Mexico, they use open and semi-open woodlands, especially those with oaks (Howell and Webb 1995).

Management

No known active management is ongoing for Lewis's woodpecker in the state. However, management for Lewis's woodpeckers in dry forests fits very well with the management needs for flammulated owls. The landscape-level needs of the flammulated owl would probably accommodate any habitat-area needs of Lewis's woodpeckers. Specific needs of the Lewis's woodpecker at the microsite and site level could be met in the form of interspersed zones of shrubby understory within the overall habitat mosaic (Casey 2000). Recommendations for snag retention in forest management plans have been developed (Thomas et al. 1979). To sustain a maximum density of Lewis's woodpeckers (6.7 pairs per acre) a density of 101 snags per 100 acres, more than 12 inches in diameter at breast height, and more than 30 feet in height must be

maintained in ponderosa pine, riparian cottonwood, and mixed-conifer forest (Thomas et al. 1979).

In Montana, the strongest populations are found within two riverine IBAs, the Bitterroot River and Clark Fork River/Grass Valley IBAs. Conservation efforts should be strengthened within these IBAs and additional IBA acreage may be considered (if data support).

Management Plan
Casey, D. 2000. Partners in Flight Bird Conservation Plan Montana. 279 pp.

**Lewis's Woodpecker Current Impacts, Future Threats, and Conservation Actions**

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| Development | Development | Encourage use of FWP's voluntary subdivision recommendations (FWP 2012a) with local planners<br><br>Review subdivision requests and make recommendations based on FWP's *Fish and Wildlife Recommendations for Subdivision Development* (FWP 2012a) |
| Habitat loss:<br><br>Loss of riparian habitat<br>Loss or alteration of open ponderosa pine stands<br>Snag loss/removal | Continued habitat loss:<br><br>Logging<br>Loss of riparian habitat<br>Loss or alteration of open ponderosa pine stands<br>Snag loss/removal | In dry forests with potential habitat, maintain or restore open conditions following management recommendations for flammulated owls (Fylling 2013)<br><br>In cottonwood bottomlands retain snags, open forest structure, and shrub cover for a robust arthropod community (Fylling 2013)<br><br>Manage ponderosa pine stand densities to restore or maintain open, park-like conditions through selective harvest techniques<br><br>Manage water releases to mimic flooding and help with cottonwood recruitment in riparian areas<br><br>Provide outreach to private landowners on the importance of retaining snags in riparian bottomland habitat |

| Current Impacts | Future Threats | Conservation Actions |
|---|---|---|
| | | Remove Russian olive, salt cedar, and other invasive species from shelterbelts associated with riparian areas<br><br>Retain sufficient large snags in order to provide soft snags over time<br><br>Review existing data and consider additional surveys in dry forest and post-fire habitats to determine the importance of these habitats for Montana populations<br><br>Create snags in managed forest stands (ponderosa pine, riparian) |
| | Climate change altering habitat characteristics (e.g., air and water temperature, precipitation timing and amount) | Continue to evaluate current climate science models and recommended actions<br><br>Monitor habitat changes and address climate impacts through adaptive management as necessary<br><br>Routine monitoring of known populations |
| | Nest site competition | Appropriate conservation action(s) unknown |