



# ***Wyoming Department of Transportation***



## ***ENDANGERED, THREATENED, PROPOSED AND CANDIDATE SPECIES RESOURCE MANUAL***

***Version 2  
October 2006***

***Prepared By:***



# Wyoming Department of Transportation Endangered, Threatened, Proposed and Candidate Species Resource Manual

*Version 2*  
*October 2006*

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Note: Front page cover photos are courtesy of the USFWS

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# Introduction

The Endangered Species Act (ESA) was passed by Congress in 1973 with the intended purpose of providing protection for Threatened and Endangered (T&E) species. An endangered species is a species that is in immediate danger of becoming extinct, and a threatened species is one that may become endangered in the foreseeable future. The ESA is not limited to protecting just birds, mammals, reptiles, amphibians, and fish, it also applies to plants, insects, crustaceans, and any flora or fauna that is in jeopardy of becoming extinct. As of October 17, 2006 there were 744 species of plants and 567 species of animals listed as either threatened or endangered in the U.S.

The U.S. Fish and Wildlife Service (USFWS) is the primary regulatory agency for threatened and endangered species. Listed species and species recognized by the USFWS as proposed for listing receive protection under the ESA. In addition, the USFWS maintains a list of species that are candidates for listing as threatened or endangered. Candidate species are those species for which the USFWS has sufficient information on their status and threats to propose them as endangered or threatened. While candidate species are not officially protected under the ESA, the current position of the USFWS and many federal agencies on candidate species is protection and conservation to the fullest extent possible to prevent them from becoming threatened or endangered. The list of candidate species is periodically reviewed by the USFWS, and updated to advise other agencies, state and local governments, industry and the public of those species that are at risk of becoming endangered or threatened. As of October 17, 2006 there were 138 species of animals and 140 species of plants listed as candidate species.

Since 1973 the ESA has been amended several times. In the Amendments of 1982, Section 7 was added. Section 7 stipulates that each Federal agency shall, in consultation with the Secretary of Interior, insure that any action they may authorize, fund, or carry-out is not likely to jeopardize the continued existence of any T&E species or result in the destruction or adverse modification of habitat critical for a T&E species. Each agency shall use the best scientific and commercial data available to determine the need for consultations. Because many Wyoming Department of Transportation (WYDOT) projects involve funding from the Federal Highway Administration (FHWA), they must follow procedures outlined in Section 7 if a project potentially affects T&E species. FHWA and WYDOT recently completed a programmatic consultation for endangered species throughout Wyoming. This manual is intended to help with the consultation by allowing WYDOT personnel to identify where potential impacts may occur based on species ranges and suitable habitat.

**This manual is intended to be used by WYDOT personnel as a first step in identifying potential conflict areas with highway projects and protected species throughout Wyoming. It is not intended to be the definitive source on whether a protected species actually occurs or does not occur at a particular site in Wyoming, however, it does provide criteria for determining whether a project has the potential to impact a listed species.**

This manual includes a series of maps that outline areas that have T&E species or areas that provide habitat for T&E species. These maps can be referred to quickly as a means of narrowing

down the list of potential T&E species that may occur in a project area. The narrative provides descriptions, habitat requirements, and other related information regarding each species. By using the maps to first narrow the list of species and then the text portion of the manual to answer questions regarding individual species, WYDOT personnel will be able to better anticipate potential conflicts between projects and listed species. For example, if a project occurs within the range of black-footed ferrets as shown on the map, it should be considered as a potentially affected T&E species. By then going to the text portion of the manual, the investigator would see that black-footed ferrets require prairie dogs and their burrows for food and shelter. If the investigator knows that there are prairie dogs in or around the project area, they could anticipate the need for evaluating the potential effects of the project on black-footed ferrets (e.g., conducting a ferret survey). On the other hand, if the investigator knows that there are not any prairie dogs in or near the project area, they could anticipate that the project would not affect black-footed ferrets and could proceed without consultation with the USFWS for black-footed ferrets. It should be noted again that this manual is not intended to be used for definitive answers regarding the presence or absence of T&E species and only as a first step approach in identifying potential conflict areas with highway projects and T&E species.

In addition to T&E species in Wyoming, certain WYDOT projects have the potential to affect T&E species in adjacent states. Currently, the FHWA and USFWS have entered into programmatic memorandums which identify project related impacts, specifically water depletions in the Platte River and Colorado River systems, and the mitigation measures necessary to minimize potential impacts associated with the water depletions. Because of these programmatic agreements in place, individual WYDOT projects do not undergo review of potential impacts to downstream listed species and simply operate according to the agreement guidance. The text portion of the manual also includes brief descriptions of the T&E species that occur in the Platte River and Colorado River Drainages for informational purposes.

# Birds

The bald eagle (*Haliaeetus leucocephalus*) threatened; and western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), candidate occur or potentially occur in Wyoming.

Other species not included in this manual may be considered sensitive or of special concern by the Wyoming Game and Fish Department (WGFD), Bureau of Land Management (BLM), or U.S. Forest Service (USFS). A list of these species is available from the Wyoming Natural Diversity Database. Species of concern by these agencies may need to be considered during project development on a case by case basis if, for example, BLM or USFS lands are affected.

# **Bald Eagle**

*Haliaeetus leucocephalus*

**Status and Protection:** Threatened,  
Proposed for de-listing  
*Endangered Species Act*  
*Migratory Bird Treaty Act*  
*Bald and Golden Eagle Protection Act*

In 1978, the USFWS listed bald eagle throughout the lower 48 states as endangered except in Michigan, Minnesota, Wisconsin, Washington, and Oregon, where it was listed as threatened<sup>1</sup>. In 1995, the bald eagle was reclassified from endangered to threatened in all of the lower 48 states<sup>2</sup> and in July 1999, the USFWS proposed de-listing bald eagle<sup>3</sup>.



Photo: David Young

## **Description/Identification**

The adult bald eagle is dark brown with a white head and tail. The large beak is all yellow. Immature birds are brownish-black to brown with a dark beak. Immature birds have lighter colored wing linings and often white at the base of the tail. Both sexes are similar in appearance. Bald eagles are 75-108 cm (30-43 inches) in length and have a wingspan of 2-2.5 m (7-8 feet).

Golden eagles can look similar to immature bald eagles, however adult golden eagles are all dark, and immature golden eagles have white at the base of the flight feathers and the base of the tail. All golden eagles have a golden head. The white on immature bald eagles is blotchily scattered about the underwing coverts. Immature golden eagles have yellow ceres (base of bill) while immature bald eagles have dark ceres.

## **Wyoming Occurrence**

*Time of Year:* Year round. Increased number in winter due to influx of migrants

*Locations:* Statewide.

## **Biology and Habitat Requirements**

Bald eagles are year round residents of Wyoming. Their main food source is medium to large fish, but they will also eat carrion, waterfowl, and small to medium sized mammals. Because the main food source is fish (either caught or carrion), bald eagles use riparian, lake, or reservoir

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<sup>1</sup> Determination of Certain Bald Eagle Populations as Endangered or Threatened. Fed. Reg. 43:6230-6233.

<sup>2</sup> Endangered and Threatened Wildlife and Plants; Final Rule to Reclassify the Bald Eagle From Endangered to Threatened in All of the Lower 48 States. Fed. Reg. 60(133): 35999-36010.

<sup>3</sup> Endangered and Threatened Wildlife and Plants; Proposed Rule To Remove the Bald Eagle in the Lower 48 States From the List of Endangered and Threatened Wildlife; Proposed Rule. Fed. Reg. 64(128):36453-36464.

areas year round and usually nest in large trees within 1.4 km (0.9 miles) of shorelines. Important habitat for bald eagles are nest sites and winter roosts which are used annually.

Bald eagles nest in early spring, usually March, after returning from wintering areas. Females lay two eggs and both parents incubate for about 35 days. Both parents feed the young for about three months before the fledgling(s) is driven away.

Winter concentrations of bald eagles require suitable roost sites as well as adequate food supplies. Winter roost sites are located in areas with high densities of large, old trees and protected from prevailing winds. Individual roost trees within these stands are the largest, oldest, and most structurally open. Winter foods are primarily fish and carrion.

### **Historic and Current Distribution**

Bald eagles historically occurred in most of North America and continue to be widely distributed throughout the U.S. and Canada. Human encroachment and the use of pesticides resulted in the eagle's range being greatly reduced to less populated areas across North America. In recent years the population has increased resulting in the species being down listed from endangered to threatened, and in 1999, the USFWS proposed de-listing bald eagle.

In 1996 there were 70 known pairs attempting to nest in Wyoming; by 2004 an estimated 90 pairs occurred in Wyoming, although the WGFDD does not keep records for all nests. The majority of nesting bald eagles occur in and around Yellowstone and Grand Teton National Parks. Nesting bald eagles can be found throughout the state in suitable habitat.

### **Issues of Concern**

Disturbance to nest sites and winter roost sites from construction activities are the primary issues of concern for WYDOT projects. Also of concern is the potential for sediment runoff during construction work, which may impact rivers or other waters, thus reducing fish availability. Because fish is one of the main components of the bald eagle's diet, decreased availability may reduce use of an area by eagles. Of secondary concern is vehicle-eagle collisions where bald eagles scavenge road killed wildlife.

### **Other Sources of Information**

Anderson, S. H., C. T. Patterson. 1988. Characteristics of bald eagle winter roosts in Wyoming. *Prairie Nat.* 20(3):142-152.

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Annual Completion Reports.

## **Western Yellow-billed Cuckoo**

*Coccyzus americanus occidentalis*

**Status and Protection:** Candidate  
*Migratory Bird Treaty Act*

A petition was filed in February 1998 by a host of conservation groups requesting that yellow-billed cuckoo be listed as endangered. In February 2000, the USFWS initiated a 12-month status review to determine if listing yellow-billed cuckoo was warranted<sup>4</sup>. The petition presents that yellow-billed cuckoo is endangered in a significant portion of its range, specifically the western U.S., which is coterminous with the western subspecies of yellow-billed cuckoo, but that listing was precluded by higher priority actions.



Photo Source: [www.mangoverde.com](http://www.mangoverde.com)

### **Description/Identification**

Yellow-billed cuckoo is a robin-sized long tailed bird with a yellow orbital ring, cinnamon inner webs to primaries, brown head, back and upper wings, and white chin breast and belly. The brown upper tail has black outer tail feathers with white tips. Adult birds have a black bill with yellow on the basal half of the lower mandible, and the tail feathers have extensive pale tips below. They are about 11 inches in length and the sexes are similar in appearance. Juvenile birds have significantly smaller pale tips below, and occasionally have an entirely black bill.

Similar sympatric species include the black-billed cuckoo (*Coccyzus erythrophthalmus*), which has a red orbital ring, black bill, smaller tail spots, and lacks cinnamon primaries. Juvenile black-billed cuckoos can be similar to juvenile yellow-billed cuckoo but do not share the cinnamon primaries of the yellow-billed.

### **Wyoming Occurrence**

*Time of Year:* Spring through Fall, generally arriving in late May and departing in September-October.

*Locations:* Lincoln, Uinta, Jackson, and Sweetwater counties. In Wyoming, only cuckoos found west of the continental divide are classified as belonging to the western population.

### **Biology and Habitat Requirements**

Yellow-billed cuckoos are found in open to dense, streamside deciduous woodland with low, scrubby vegetation. They require relatively large riparian tracks below 7,000 feet for breeding, and generally prefer willow thickets for nesting and cottonwood stands for foraging. Diet

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<sup>4</sup>U.S. Fish and Wildlife Service. 2000. Endangered and Threatened Wildlife and Plants: Notice of 90-Day Finding for a Petition to List the Yellow-Billed Cuckoo as Endangered and Commencement of a Status Review. Federal Register 65(33): 8104-8107.

consists primarily of caterpillars, but also other large insects and occasionally frogs and lizards. They will also eat small fruits and nuts.

### **Historic and Current Distributions**

Yellow-billed cuckoo is more common in the eastern United States. It has been nearly extirpated in the west and is restricted to small isolated populations, primarily along the major river drainages.

### **Issues of Concern**

The USFWS found that habitat loss, overgrazing, tamarisk invasion of riparian areas, river management, logging, and pesticide use are the primary causes of decline for this species. Approximately 90 percent of the riparian habitat in the west that has been lost or degraded as a result of conversion to agriculture, dams and river flow management, bank protection, overgrazing, and competition from exotic plants such as tamarisk.

Currently, the potential for a WYDOT project to impact this species would be based on the occurrence of a project within southwestern Wyoming during the summer that affects riparian habitat along rivers and large streams. Highway projects may affect yellow-billed cuckoos through loss of breeding habitat and disturbance or displacement of breeding individuals. Indirect effects from projects may include effects from riparian habitat degradation.

### **Other Sources of Information**

Hughes, J. M. 1999. Yellow-billed Cuckoo (*Coccyzus americanus*). *In* The Birds of North America, No. 418 (A. Poole and F. Gill, eds.). The Birds of North America, Inc., Philadelphia, PA.

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<http://uwadmnweb.uwyo.edu/wyndd/Birds/YBCuckoo.htm>. Accessed 4-9-2003.

# Mammals

Federally endangered, threatened, or candidate mammal species in Wyoming include black-footed ferret (*Mustela nigripes*), endangered; grizzly bear (*Ursus arctos horribilis*), threatened; gray wolf (*Canis lupus*), experimental non-essential; Preble's meadow jumping mouse (*Zapus hudsonius preblei*), threatened; and Canada lynx (*Lynx canadensis*), threatened.

## **Black-footed Ferret**

*Mustela nigripes*

### **Status and Protection:**

Endangered

*Endangered Species Act*

Black-footed ferret was included on the list of endangered species in 1967 prior to the enactment of the Endangered Species Act. The primary causes of decline for the species were loss and fragmentation of habitat (prairie dog colonies) and disease. Black-



Photo: David Young

footed ferrets were thought to be extinct before the discovery of a population near Meeteetse, Wyoming in 1981. This population was nearly wiped out by canine distemper by 1985 and the last remaining ferrets were captured and brought into captivity for a breeding program. The captive breeding program for black-footed ferrets has been very successful, and in 1991, a release program was initiated with captive bred ferrets. The first release site was located in the Shirley Basin, Carbon County, Wyoming. Today, ferrets are known from experimental populations in Wyoming, Montana, South Dakota, Colorado/Utah, Arizona, and Mexico.

### **Description/Identification**

The black-footed ferret is a short-legged, slender-bodied member of the weasel family. The overall fur color is pale yellow to yellowish-brown with lighter throat and belly. It has a dark mask across its face and very dark brown to black feet and tail. An adult ferret is about 48.0-56.7 cm (19-22 inches) long and weighs approximately 0.5-1.3 kg (1.2-2.8 lbs).

### **Wyoming Occurrence**

*Time of Year:* Year round.

*Locations:* Known to occur in Albany and Carbon counties. Potential to occur in some white-tailed prairie dog colonies.

### **Biology and Habitat Requirements**

Black-footed ferrets almost always occur in prairie dog colonies. Prairie dogs make up 90% of the ferret's diet and ferrets live in prairie dog burrows. Black-footed ferrets also occasionally eat mice, gophers, ground squirrels, and birds. Because black-footed ferrets are almost entirely nocturnal and utilize prairie dog burrows for food and shelter, they are almost never seen even when known to be present.

Black-footed ferrets breed from mid-March to early April. Gestation is 42-45 days and young remain in the below ground nest for another 40 days before emerging above ground for the first time. Litter size varies from 3-5 kits. Young ferrets will stay with the female until early to mid-August before they disperse and become independent.

## **Historic and Current Distributions**

Black-footed ferrets historically occurred wherever prairie dogs occurred. This range extended south from southern Saskatchewan and Alberta to central Texas and from eastern Nebraska west to eastern Utah, and included all non-mountainous areas in Wyoming. Currently, the only known black-footed ferrets existing in the wild have been reintroduced. Reintroduced populations occur in Montana, South Dakota, Wyoming, Colorado/Utah, Arizona, and Mexico.

Black-footed ferrets were thought to be possibly extinct before the discovery of the Meeteetse, Wyoming population. The remaining individuals from that population were brought into captivity and they are not known to occur at that location now. In Wyoming, the only known ferrets exist at the Shirley Basin reintroduction site in Carbon County. The Sybille Research Unit formerly housed captive black-footed ferrets, however, this population has now been moved to a breeding facility in Colorado. Black-footed ferrets were also released at a site in northwestern Colorado and northeastern Utah. The experimental range for this population extends into southern Sweetwater County east of Flaming Gorge Reservoir, but it is not known if ferrets have dispersed into this area yet. The USFWS and WGFD have also been evaluating a site in Thunder Basin National Grasslands in northeast Wyoming for reintroduction.

The USFWS has recently block-cleared all black-tailed prairie dog colonies, and some white-tailed prairie dog colonies for black-footed ferrets, thus no surveys for ferrets are required in these areas. Some areas containing white-tailed prairie dog colonies in southern and western Wyoming have not yet been block-cleared, and these areas may contain wild black-footed ferrets. The locations of these areas are found on the map for black-footed ferrets.

## **Issues of Concern**

Loss of prairie dog colonies (critical habitat) and low genetic diversity within the breeding population are the primary issues of concern for black-footed ferrets. For WYDOT projects the primary concerns would stem from highway projects within the re-introduced populations that may lead to loss of habitat (prairie dog towns) or disturbance from construction activities. Also of concern, is potential disturbance to ferrets and habitat in areas that have not been block-cleared by the USFWS.

## **Other Sources of Information**

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# Grizzly Bear

*Ursus arctos horribilis*

## Status and Protection:

Threatened  
Proposed for De-  
listing

*Endangered Species Act*



Photo Courtesy: WGFD

Grizzly bear was included on the list of endangered species in 1967 prior to the enactment of the Endangered Species Act and was down listed to threatened in 1975<sup>5</sup>. The primary threats to the species appear to be habitat loss from activities such as logging,

recreational use, and developments encroaching on current bear range; and conflict with and habituation to humans. The grizzly bear population in the GYE has been increasing and the USFWS recently announced that the greater Yellowstone population has reached recovery goals, triggering the de-listing process.

## Description/Identification

Grizzly bears, also known as brown bears, vary greatly in color from nearly white to nearly black, but mature bears have long, silver tipped hairs on their back. Grizzly bears are distinguished from black bears by a shoulder hump on the back, long snout, and concave face when viewed from the side. Adult grizzlies weigh from 135 to 385 kg (300-850 lbs) and stand 1.4 m (4.5 ft) at the shoulders when on all fours. When standing on its hind legs an adult may stand 2.7 m (9 ft) tall.

## Wyoming Occurrence

*Time of Year:* Potentially year round, however bears are most active during the spring, summer and fall months. Grizzly bears hibernate during the winter.

*Locations:* In Wyoming, grizzly bears are found in Yellowstone and Teton National Parks, and surrounding areas in Teton County, the western portion of Park County, and south into the northern parts of Fremont and Sublette Counties.

## Biology and Habitat Requirements

Grizzly bears breed from mid-May to mid-July with the peak breeding occurring in mid-June. Breeding season is one of the few times that adult bears are tolerant of each other. Gestation lasts for 229 to 266 days, with cubs being born in the winter den. Typical litter size is two cubs,

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<sup>5</sup> Amendment Listing the Grizzly Bear (*Ursus arctos horribilis*) of the 48 Conterminous States as a Threatened Species. Federal Register 40:31734-31736.



with litters of one to four reported. Cubs will stay with the female for up to two years before they disperse. Adult females average 3.5 years between births.

Grizzly bear habitat is highly variable, from open areas to forested areas. In non-forested areas they prefer wet meadows, grassy plateaus, alpine grasslands, river bottoms, and burned areas. In forested areas grizzly bears often use wet to medium wet areas with herbs and fruiting plants. Grizzlies will use spruce/fir forests as well as lodgepole pine forest for cover. In general, all grizzly habitats are usually located in wilderness areas away from human disturbance, however, grizzlies have been known to come into camp sites, garbage dumps, and other such sites in search of food.

Grizzly bears are omnivores. Their diet consists of 50-60 percent animal matter (insects, rodents, big game, carrion) and the 40-50 percent plant matter (roots, berries).

### **Historic and Current Distributions**

Historically the grizzly bear ranged throughout western North America, including rangelands and mountainous area. Today in the lower 48 states, grizzly bears are found only in and around the Greater Yellowstone Region and areas of northern Montana, Idaho, and Washington.

### **Issues of Concern**

The main issue of concern regarding grizzly bears is the loss of habitat to logging, recreational use, and housing developments encroaching on current bear range. Issues of concern for WYDOT are loss of habitat from widening of roads, new roads, and other construction activities. New and improved roads may bring more people into grizzly bear habitat further reducing habitat suitability. Increased potential for road killed bears as a result of increased speeds or from grizzlies foraging on other road kills is also a concern.

### **Other Sources of Information**

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World Wildlife Fund. 1990. *The official World Wildlife Fund guide to endangered species of North America*. Walton Beacham, Washington, D.C.

# Gray Wolf

*Canis lupus*

## Status and Protection:

Experimental, Non-Essential  
*Endangered Species Act*

Gray wolf was included on the list of endangered species in 1967 prior to the enactment of the Endangered Species Act and was reclassified to threatened in most of its range in 2003. The primary



Photo courtesy: USFWS

threats to wolves are loss of habitat and illegal killing by humans (poaching, poisoning). In Wyoming, gray wolf has a dual listing. Within the boundaries of Yellowstone National Park and Grand-Teton National Park, gray wolf is listed as a threatened species. Outside the boundaries of these national parks it is listed as experimental, non-essential as part of the reintroduction efforts in YNP. Despite the status and threats, wolves appear to be thriving in northwest Wyoming and central Idaho as well as in the upper midwest (Minnesota, Michigan, Wisconsin), and de-listing of the species has been considered contingent on approved state management plans.

## Description/Identification

Over 20 subspecies of gray wolves (timber wolves) once occurred in North America and there is considerable variation in appearance across the species. Gray wolf can vary in color from white to black, but are usually gray with black speckles and a yellowish or cream stomach and legs. Adult males average about 43 kg (95 lbs) but can be as much as 80 kg (175 lbs). Adult females are smaller and average only 36 kg (80 lbs) and can reach weights of 57 kg (125 lbs).

## Wyoming Occurrence

*Time of Year:* Year round.

*Locations:* Fremont, Park, Teton, and Sublette counties and YNP and GTNP.

## Biology and Habitat Requirements

Wolves generally hunt and live in packs. Wolf packs varying in size from only a few to 20 or 30 individuals and are built on a social hierarchy. The alpha male and female are the leaders in hunting, feeding, and breeding. Typically only one litter of pups are born in the pack each year and this is to the alpha pair. Breeding season is from January to March and gestation is 63 days. Average litter size is 6-7 pups and may vary from one to 11 pups. Pups are weaned in the summer and can start to hunt with the pack by fall.

Wolves generally prey on large ungulates such as moose, elk, bison, or deer. When their primary prey populations are low, wolves will also prey on smaller animals such as rodents, beaver, domestic animals, or carrion.

Gray wolves can occupy almost all habitats in North America as long as the habitat is secluded enough and provides adequate prey.

### **Historic and Current Distributions**

Historically, gray wolves occurred over most of North America, with the exception of areas with extreme desert conditions in the west and where the red wolf occurred in the southeast. Currently gray wolves are still abundant in northern North America (Canada and Alaska). There are also native populations in northern Minnesota, Michigan, Montana, and Wisconsin. Gray wolves historically occurred throughout Wyoming until they were exterminated in the State. During 1995 and 1996, the USFWS reintroduced wolves captured in Canada into Yellowstone National Park (and central Idaho) and by the end of 1997 it was estimated that the population had grown to at least 80 wolves. At the end of 2005 it was estimated that at least 252 wolves existed in Wyoming.

### **Issues of Concern**

Loss of habitat and poaching are the primary issues of concern for gray wolves. Concerns for WYDOT relative to gray wolves are similar to concerns for grizzly bears. These include loss of habitat from widening of roads, potential impacts to wolf movement, increased potential for road killed wolves as a result of increased speeds; and increases in human use of remote areas due to new and improved roads.

### **Other Sources of Information**

- Clark, T.W. and M.R. Stromberg. 1987. Mammals in Wyoming. Museum of Natural History, University of Kansas, Lawrence, KS.
- Fritts, S.H., E.E. Bangs, J.A. Fontaine, M.R. Johnson, M.K. Phillips, E.D. Koch, J.R. Gunson. 1997. Planning and implementing a reintroduction of wolves to Yellowstone National Park and Central Idaho. *Restoration Ecology* 5:7-27.
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- University of Wyoming. 1998. Spatial Data and Visualization Center, Wyoming Bioinformation Node web site. [www.sdvc.uwyo.edu](http://www.sdvc.uwyo.edu).
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- World Wildlife Fund. 1990. The official World Wildlife Fund guide to endangered species of North America. Walton Beacham, Washington, D.C.
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# **Preble's Meadow Jumping Mouse**

*Zapus hudsonius preblei*

**Status and Protection:** Threatened  
*Endangered Species Act*

Preble's meadow jumping mouse was listed as threatened in May 1998<sup>6</sup>. Critical habitat was designated for Preble's in Colorado and Wyoming in 2003.

## **Description/Identification**

Meadow jumping mice are 187-255 mm (7.4-10.0 inches) in total length with 108-

155 mm (4.2-6.1 inches) in length being made up of a nearly hairless tail. Meadow jumping mice also have large hind feet measuring 28-35 mm. They are grayish to yellowish brown on the back with paler sides and white below. Darker hair forms band or stripe on its back. Preble's meadow jumping mouse can only be distinguished from western jumping mouse (*Zapus princeps*) using dental patterns, genetics, and to a lesser extent, location and elevation.



Photo: David Young

## **Wyoming Occurrence**

*Time of Year:* Year round.

*Locations:* Albany, Converse, Goshen, Laramie, and Platte counties.

## **Biology and Habitat Requirements**

Preble's preferred habitat consists of areas with dense undergrowth of grasses and forbs and an overstory of shrubs, bushes, or trees in moist areas. This habitat generally relates to wetlands, riparian areas, and heavily vegetated streams. They will also occur periodically in upland areas with adequate cover adjacent to wetter areas, such as native grass hay meadows.

Grass seeds are the most important part of the Preble's diet. Preble's will also eat invertebrates (e.g., beetles), buds, leaves, and fungi. More invertebrates are eaten in the spring as mice emerge from hibernation.

Although exact dates are not known for immergence and emergence, Preble's are generally active from April-May through September-October. Meadow jumping mice are capable of breeding throughout their active period, however most reproduction occurs from early June to mid-August. Females will have one to three litters per year with litter size varying between two

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<sup>6</sup>Endangered and Threatened Wildlife and Plants: Final Rule to List the Preble's Meadow Jumping Mouse as a Threatened Species. Federal Register 63(92): 26517-26530.

and eight offspring with an average of four to five. Preble's meadow jumping mouse is mainly nocturnal, but may be observed in daylight when flushed from resting cover.

### **Historic and Current Distributions**

Preble's meadow jumping mice occur only in Colorado and Wyoming. Historically, they occurred from the Front Range of Colorado east to the South Platte River and from Colorado Springs north to the North Platte River in Wyoming. Currently, they continue to occur sporadically over most of this range, but habitat loss and degradation has resulted in lower populations. Historical loss of wetlands may be the largest cause of decline for this species.

In Wyoming, the USFWS considers the species to potentially occur within Laramie, Platte, Goshen, eastern Albany, southern Converse, and southeastern Natrona counties. The USFWS has designated critical habitat for the species along three stream units: Cottonwood Creek in northeast Albany and western Platte Counties, Chugwater Creek in eastern Albany, northwestern Laramie and southern Platte Counties, and Lodgepole Creek in eastern Albany and western Laramie Counties. Critical habitat occurs within 120 m of either side of each stream.

### **Issues of Concern**

Lack of information and loss of habitat are the main issues of concern. Loss of habitat from new or reconstruction, repair, or replacement of stream crossings or encroachment on streams and wetlands are the main concerns for WYDOT. Little is known about the movement of Preble's; however, it is generally thought that highways may act as a barrier to the mouse and hinder movement along streams.

The decline of Preble's is thought to be primarily due to habitat loss, degradation, and fragmentation. Other factors potentially affecting Preble's include pesticide and herbicide use, livestock grazing practices, urban development (primarily in Colorado), and inadequacy of existing regulatory measures. Historical loss of riparian wetlands may be the largest cause of decline for this species.

### **Other Sources of Information**

Armstrong, D.M., M.E. Bakeman, A. Deans, C.A. Meaney, and T.R. Ryon. 1997. Conclusions and recommendations from the report on habitat findings of the Preble's meadow jumping mouse. Presented to the USFWS and Colorado Division of Wildlife.

Beauvais, G. P. 2001. Preble's meadow jumping mouse (*Zapus hudsonius preblei*) in Wyoming: Status report, July 2001. Wyoming Natural Diversity Database, University of Wyoming, Laramie, Wyoming. 14pp.

Fitzgerald, J. P., C.A. Meaney, and D.M. Armstrong. 1994. Mammals of Colorado. Denver Museum of Natural History.

Keinath, D. A. 2001. Habitat associations of Preble's meadow jumping mice in Wyoming: A GIS model and descriptive analysis. Prepared for U. S. Fish and Wildlife Service, Cheyenne, Wyoming. 18pp.

U.S. Fish and Wildlife Service. 1997. Interim survey guidelines for Preble's meadow jumping mouse.

U.S. Fish and Wildlife Service. 2003. Preble's meadow jumping mouse (*Zapus hudsonius preblei*).  
<http://uwadmweb.uwyo.edu/wyndd/Mammals/Zapus/zapus.htm>. Accessed 4-9-2003.

## **Canada Lynx**

*Lynx canadensis*

### **Status and Protection:**

Threatened

*Endangered Species Act*

Canada lynx was proposed for listing as threatened in the lower 48 states on July 8, 1998 and was listed as a threatened species on March 24, 2000<sup>7</sup>. The primary threats to the species include human alteration of lynx habitat, past exploitation, range expansion of competitors (e.g. coyote, bobcat), and elevated human access into lynx habitat.



Photo courtesy: USFWS

### **Description/Identification**

Lynx are stocky built, medium-sized cats with long legs and well-furred paws. Ear tufts are more pronounced on lynx than on bobcats, which are somewhat similar in appearance. The entire tip of the short tail is black, unlike the bobcat whose tail is only black on the top. The body is generally a mix of brownish-gray and cream or pale brown on top, and paler buff to white underparts.

### **Wyoming Occurrence**

*Time of Year:* Year round.

*Locations:* Fremont, Lincoln, Park, Sublette, Teton, and Uinta counties. The majority of lynx sightings in Wyoming have been in the mountains of the west and northwestern parts of the state. There have been other reports and historical sightings of lynx in the Bighorn National Forest and Medicine Bow National Forest. The USFWS currently considers all forests in Wyoming potential lynx habitat.

### **Biology and Habitat Requirements**

Lynx typically occur in large, unbroken, uneven aged stands of spruce/fir/lodgepole pine in higher elevations. In parts of their range in the eastern U.S. they may be associated with large swamps. The uneven aged stands are important because they provide mature stands with plenty of dead fall for denning, dense stands for cover, early successional forests with snowshoe hares for forage, and areas of open understory for travel.

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<sup>7</sup>Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the Contiguous United States Distinct Population Segment of the Canada Lynx; Final Rule. Federal Register 65(58):16052-16086.

Lynx generally reach sexual maturity at two years of age. Mating probably occurs in March and early April and young are born 9 weeks later in late May or early June. A typical litter is three kittens but litters of one to six have been reported.

Up to 80 percent of the lynx's diet is snowshoe hares. Other components of the diet include grouse, squirrels, mice, young ungulates, and carrion.

### **Historic and Current Distributions**

Lynx historically occurred throughout Alaska, Canada and the northern portion of the lower 48 states. Today, lynx are limited to primarily Alaska and Canada with some populations remaining around the Great Lakes, New England, and the northern and central Rocky Mountain States.

### **Issues of Concern**

The main issues of concern regarding lynx are loss or fragmentation of habitat and overall human encroachment on occupied habitat. Little is known about the potential for highways to create barriers to lynx movement but based on WGFD research of lynx in the Wyoming range they appear to make annual long range movements during which they encounter and cross two-lane highways throughout the Greater Yellowstone Ecosystems. Two-lane or smaller, low volume roads probably do not act as a barrier to movement, however, large, high volume and high speed highways may obstruct natural movement patterns of lynx.

### **Other Sources of Information**

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Poole, K. G., L. A. Wakelyn, and P. N. Nicklen. 1996. Habitat selection by lynx in the Northwest Territories. *Can. J. Zool.* 74:845-850.

Reeve, A., F. Lindzey, S. Buskirk. 1986. Historic and recent distribution of the lynx in Wyoming. Wyoming Game and Fish Department Report.

University of Wyoming. 1998. Spatial Data and Visualization Center, Wyoming Bioinformation Node web site. [www.sdvc.uwyo.edu](http://www.sdvc.uwyo.edu).



# Fish

There are two federally listed fish that occur in Wyoming outside of the Colorado River drainage (see below), Kendall warm springs dace (*Rhinichthys osculus thermalis*), an endangered subspecies of speckled dace, and arctic grayling (*Thymallus arcticus*), candidate. Both species have limited ranges in Wyoming and will likely never be of concern for WYDOT projects.

## **Kendall Warm Springs Dace**

*Rhinichthys osculus thermalis*

**Status and Protection:** Endangered  
*Endangered Species Act*



Photo Courtesy: Pinedale Middle School

Kendall Warm Springs dace was included on the 1970 list of endangered species<sup>8</sup>. The primary threats to the species are the limited species range, past habitat alterations (e.g. a culvert road crossing, livestock grazing), potential for destruction, degradation, and pollution of the Kendall Warm Springs area. Human encroachment from access to the Kendall Springs area is also a threat to this species.

### **Description/Identification**

Kendall Warm Springs dace (a small minnow) is a subspecies of speckled dace (*Rhinichthys osculus*) that only occurs in one small stream in north-central Sublette County, Wyoming. Adult male dace are often bright purple, whereas females are typically dull olive green. Adults will reach 5.5 cm (2 inches) in length.

### **Wyoming Occurrence**

*Time of Year:* Year round.

*Locations:* Kendall Warm Springs Creek, Sublette County.

### **Biology and Habitat Requirements**

Kendall dace spawn more than once a year, possible year round. Small fry utilize shallower water in and around mats of vegetation while adults and juveniles use the main channels and edges of vegetation mats.

Kendall Warm Springs Creek is a total of 340 m (1115 ft) long and 8-12 m (26-40 ft) wide. The creek flows from several springs in the surrounding limestone and is at or near a constant temperature of 29°C (84°F). The terminus of Kendall Warm Springs Creek is a 4 m (13 ft) waterfall into the Green River. Large mats of *Chara* spp. and other vegetation are found throughout the creek. No other fish occur in the creek.

### **Historic and Current Distributions**

Kendall Warm Springs dace have probably always been restricted to their current distribution. No records exist of the fish occurring in other locations.

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<sup>8</sup>U.S. Fish and Wildlife Service. 1970. Appendix D - United States List of Endangered Native Fish and Wildlife Federal Register 35:16047-16048

### **Issues of Concern**

Main issues of concern are destruction, degradation, and pollution of the Kendall Warm Springs area and potential encroachment by humans. In general, WYDOT projects have very little potential to impact this species. The primary concern for WYDOT would be the construction of a new road or upgrading the U.S. Forest Service road in the area of Kendall Warm Springs or in the immediate watershed. Improvement of Wyoming Highway 352 and/or the USFS road at the end of Highway 352 would require evaluation of potential impacts to this species. Any action that may affect the Kendall Warm Springs Creek watershed would be of concern.

### **Other Sources of Information**

Gryska, A. D. 1996. Development of population monitoring protocols: description of several life history aspects of Kendall Warm Springs dace (*Rhinichthys osculus thermalis*). M.S. Thesis, University of Wyoming.

World Wildlife Fund. 1990. The official World Wildlife Fund guide to endangered species of North America. Walton Beacham, Washington, D.C.

## **Arctic Grayling**

*Thymallus arcticus*

### **Status and Protection:**

Candidate in Native Range



Photo Courtesy: WGFD

The USFWS found that listing the fluvial (living in streams or rivers) population of arctic grayling as endangered was

warranted but precluded by higher priority actions in 1994<sup>9</sup>. Arctic grayling was then included on the list of candidate species. Arctic grayling are widely distributed throughout the west due to fish stocking and introductions. The population of this species which is considered a candidate species is the fluvial form that occurs within its native range. In Wyoming, the native range of arctic grayling occurs within Yellowstone National Park within the headwater streams of the Madison and Gibbon rivers.

### **Description/Identification**

The arctic grayling is a salmonid (trout, salmon) which has a long body with a forked tail and adipose fin. The very large, long dorsal fin is the main identifying characteristic of grayling. They are gray to bluish above and iridescent with black spots and are white to silvery below. Adult length is often less than 30.5 cm (12 inches).

### **Wyoming Occurrence**

*Time of Year:* Year round.

*Locations:* Native to Yellow Stone National Park; introduced widely across Wyoming.

### **Biology and Habitat Requirements**

Grayling migrate into streams in early spring to spawn. They are primarily insectivores, with a high percentage being terrestrial insects, but they will also eat small fish.

Grayling are generally considered a cold water, stream fish, but they have been transplanted into lakes and ponds with good success. In lakes, grayling need ready access to streams and rivers for spawning. Temperature and oxygen limits are similar to other trout species.

### **Historic and Current Distributions**

Arctic grayling historically and currently occur in the northern regions of North America. This range extended from Alaska and Canada south into portions of the Midwest and the Rocky Mountain regions of Montana and Wyoming.

In Wyoming, grayling were originally found only in the headwaters of the Madison and Gibbon rivers in Yellowstone National Park. Currently, grayling are becoming less common in their

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<sup>9</sup> U.S. Fish and Wildlife Service. 1994. Endangered and Threatened Wildlife and Plants; Finding on a Petition To List the Fluvial Population of the Arctic Grayling as Endangered. Federal Register 59(141):37738-37741.

historic range, but they are raised in hatcheries and released in many lakes and ponds around the state.

### **Issues of Concern**

Degradation of habitat in the native range is the main issue of concern for candidate arctic grayling. WYDOT does not maintain the roads within YNP, and it is highly unlikely that a WYDOT project would impact native arctic grayling. The Madison and Gibbon rivers are located in the northwest corner of YNP and flow westerly in to Idaho and southern Montana. The nearest potential WYDOT project would be located some distance away to the south or east and outside of YNP. Federal Highway Administration and National Park Service road projects in Yellowstone National Park are of concern.

### **Other Sources of Information**

Baxter, G. T. and M. D. Stone. 1995. Fishes of Wyoming. Wyoming Game and Fish Department, Bulletin No. 4.

# Amphibians and Reptiles

There are two federally listed amphibians that occur in Wyoming, southern boreal toad (*Bufo boreas boreas*), candidate, and Wyoming toad (*Bufo baxteri*), endangered. Both species have limited ranges in southern Wyoming (Albany and Carbon counties). There are no listed reptiles that occur in Wyoming.

## Wyoming Toad

*Bufo baxteri*

(formerly *Bufo hemiophrys baxteri*)

**Status and Protection:** Endangered  
*Endangered Species Act*

Wyoming toad was listed as an endangered species in 1984<sup>10</sup>. The decline of the Wyoming toad was thought to be due to a combination of factors including loss of habitat, chemical pollution, increased predation due to range expansion of predators, and continued decline resulting in fewer and smaller isolated populations.



Photo: David Young

### Description/Identification

Wyoming toads are about 55 mm (2.2 inches) in length, with females being slightly larger than males. They are dark brown, gray, or greenish, with small dark blotches. The belly is also spotted, and the body is covered with “warts”. Males have a dark throat. This species was previously classified as a subspecies of the Manitoba or Canadian toad (*Bufo hemiophrys*).

### Wyoming Occurrence

*Time of Year:* Year round.

*Locations:* Albany County; wetlands, ponds, and floodplains in the Laramie Basin.

### Biology and Habitat Requirements

The Wyoming toad was historically found in riverine wetlands and fringes of lakes throughout the Laramie Basin. The most dominant plant species found at calling and breeding sites are spikerush (*Eleocharis palustris*) and three-square bulrush (*Scirpus americanus*). Both of these plants have vertical stems that allow for free movement by the toads but still offer protection from predators. The toads burrow to reduce the amount of water lost during the hot summer months. The diet consists of ants, beetles, and other small insects.

Eggs are laid in mid-May to early June. The female discharges the eggs in gelatinous strips into the water. As the eggs are being laid, the male fertilizes them as they go into the water. Young tadpoles hatch in three to 20 days. Tadpoles transform into toads by early August.

### Historic and Current Distributions

Historically the Wyoming toad was found only in the Laramie Basin in southeastern Wyoming. Currently they are found in the wild only at Mortenson Lake National Wildlife Refuge, Lake Hutton National Wildlife Refuge and some private land in the Laramie Basin. There are also

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<sup>10</sup> U.S. Fish and Wildlife Service. 1984. Endangered and Threatened Wildlife and Plants; Determination that *Bufo Hemiophrys Baxteri* (Wyoming Toad) is an Endangered Species. Federal Register 49(11):1992-1994.

several captive breeding populations in facilities around the country including the Wyoming Game and Fish Department's Sybille Research Unit, Albany County and Saratoga Fish Hatchery, Carbon County. The USFWS is currently evaluating additional release sites for captive reared toads within the Laramie Basin.

### **Issues of Concern**

Loss of habitat, chemical pollution, and the lack of wild breeding populations are the main issues of concern for Wyoming toads. In general, there is little concern for WYDOT projects due to the isolated nature of the toad populations in the state. Of concern would be construction on roads that occur near known populations or the captive breeding populations. Currently there are two Albany County roads within approximately one mile of Mortensen Lake - Phalow Lane and Harmony Road. Similarly, access to the Saratoga Fish Hatchery is via a Carbon County Road and the hatchery is approximately one mile from Wyoming Highway 130. Wyoming Highway 34 runs through the Sybille Research Unit and could potentially affect toads at this facility. As the reintroduction program expands and if new populations are established, other highways in Albany County may become of concern.

### **Other Sources of Information**

Baxter, G. T. and M. D. Stone. 1980. Amphibians and reptiles of Wyoming. Wyoming Game and Fish Department.

World Wildlife Fund. 1990. The official World Wildlife Fund guide to endangered species of North America. Walton Beacham, Washington, D.C.

Withers, D. I. 1992. The Wyoming toad: and analysis of habitat use and life history. M.S. Thesis, University of Wyoming, Laramie.



## **Boreal Toad**

*Bufo boreas*

**Status and Protection:** Candidate (southern population only)

In 1995, the USFWS ruled that a petition to list the southern Rocky Mountain population of boreal toad as endangered was warranted but precluded by higher priority actions<sup>11</sup>. The determination covered the species in the United States from the San Juan Mountains in



Photo Courtesy: CNAH

northern New Mexico north to the Medicine bow and Sierra Madre Mountains of southern Wyoming. This population, considered a distinct population segment of the Western toad (*Bufo boreas boreas*), was then added to the list of candidate species. The primary threats to the species are largely unknown as loss and degradation of habitat, over utilization, or disease or predation do not appear to be significant problems. A combination of factors may be the primary cause of population declines for this species.

### **Description/Identification**

Boreal toads are about 76 mm (3 inches) in length. The body is stout and the head short and blunt. These toads are olive, brownish, or black and have a white or yellowish stripe down the center of the back. The sides and belly have black spots and the back has many “warts” as large as 4 mm in diameter. The boreal toad has a distinctive musky odor.

### **Wyoming Occurrence**

*Time of Year:* Year round.

*Locations:* Albany and Carbon counties; primarily within the Medicine Bow National Forest.

### **Biology and Habitat Requirements**

Boreal toads emerge from hibernation shortly after the ice melts from ponds and lakes, and return to hibernation in late August to mid September. Breeding occurs from mid-May to July, depending on the elevation and weather conditions. Eggs are laid in long gelatinous strands in shallow water on the north side of lakes and ponds. There is some indication that tadpoles may overwinter if they do not develop fully before winter.

Boreal toads occur in the foothills, montane, and subalpine areas of the Rocky Mountains. They are restricted to moister areas for most of the time but may venture into dry conditions to feed on abundant insects. The wetter areas are generally subalpine lakes and ponds, seeps, and springs. The toad feeds mostly on ants, beetles, moths, and other insects.

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<sup>11</sup> U.S. Fish and Wildlife Service. 1995b. Endangered and Threatened Wildlife and Plants; 12-month Finding for a Petition to list the Southern Rocky Mountain Population of the Boreal Toad as Endangered. Federal Register 60(56):15281-15283, March 23, 1995.

### **Historic and Current Distributions**

Boreal toads historically and currently occur in the Rocky Mountains from Alaska to northern New Mexico and west to the Pacific Coast. In Wyoming it occurs in the western mountain ranges and the Snowy and Sierra Madre Ranges in south-central Wyoming. Only the portion of the population in the Medicine Bow National Forest is considered a candidate species in Wyoming. The toad's elevational range is contracting. Historically they occur at nearly 10,500 feet (3,200 m), but recently they have not been found above approximately 9,600 feet (2,925 m).

### **Issues of Concern**

Lack of information and loss of habitat are the main issues of concern for boreal toads. WYDOT projects throughout most of the state should not affect candidate boreal toads. Currently, the potential for a WYDOT project to impact this species would be based on the occurrence of a project within the Medicine Bow or Sierra Madre mountains in southern Wyoming. This includes only Wyoming Highways 10, 11, and 70 and portions of Wyoming Highways 130 and 230. Highway construction projects within toad habitat could result in loss of habitat, mortality of individuals, habitat fragmentation, and disturbance or displacement.

### **Other Sources of Information**

Baxter, G. T. and M. D. Stone. 1980. Amphibians and reptiles of Wyoming. Wyoming Game and Fish Department.

Keinath, D. and J. Bennett. 2000. Distribution and status of the Boreal Toad (*Bufo boreas boreas*) in Wyoming. Prepared for U. S. Fish and Wildlife Service, Wyoming Field Office, Cheyenne, Wyoming. 22pp.

Livo, L. J. and D. Yeakley. 1997. Comparison of current with historical elevation range in the boreal toad. Herpetological Review 28:143-144.

# Plants

There are four plant species listed under the Endangered Species Act (ESA) which are known to occur in Wyoming; blowout penstemon (*Penstemon haydenii*), endangered; Ute ladies'-tresses orchid (*Spiranthes diluvialis*), threatened; Colorado butterfly plant (*Guara neomexicana coloradensis*), threatened; and desert yellowhead (*Yermo xanthocephalus*), threatened. With the exception of Ute ladies'-tresses orchid, each of these plants are known to occur in relatively small areas geographically. Ute's ladies tresses orchid may potentially occur throughout the state. One additional species, the slender moonwort (*Botrychium lineare*), is considered a candidate species in Wyoming and is known only from the Black Hills. Threats to these species vary but include grazing, invasive weeds, recreation, habitat loss, and changes in land management.

## **Blowout Penstemon**

*Penstemon haydenii*

**Status and Protection:** Endangered  
*Endangered Species Act*

Blowout penstemon was listed as endangered in 1987, and at the time was thought to be endemic to the sand hills region of Nebraska<sup>12</sup>. The primary threats to the species include habitat loss due to land management actions (e.g., fire suppression, grazing practices), surface disturbances from off-road vehicles, and loss of individuals (e.g., grazing, insects, collections, pesticides).

### **Description/Identification**

Blowout Penstemon is a milky-blue, aromatic perennial flowering plant.



Photo: David Young

### **Wyoming Occurrence**

*Time of Year:* Year round. Plants are in full bloom and therefore more easily identified in July.

*Locations:* Carbon County, between the Ferris and Seminoe Mountains.

### **Biology and Habitat Requirements**

Blowout penstemon is restricted to shifting, sparsely vegetated sand dunes. It appears to be highly specialized to specific habitat conditions in sparsely vegetated shifting sand dunes and blowout depressions created by wind erosion (Fertig 2001).

### **Historic and Current Distributions**

Originally, blowout penstemon was thought to be endemic to the sand hills region of Nebraska. In 1996, a small population of the species was found on public lands (BLM) in the northwest part of Carbon County, Wyoming in the western Seminoe Mountains. Habitat targeted surveys in 2000 found a few nearby populations in the eastern Ferris Mountains but the species distribution in Wyoming is still confined to a 5 square mile area between the Ferris and Seminoe mountains (Fertig 2001). The total area occupied by the species is approximately 80 acres in size and on land administered by the BLM.

### **Issues of Concern**

The primary concerns for small isolated populations of species such as blowout penstemon is the vulnerability of the species to human encroachment, changes in land management, and loss of individuals. Because of the isolated nature of the populations of blowout penstemon in

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<sup>12</sup> U.S. Fish and Wildlife Service. 1987. Endangered and Threatened Wildlife and Plants: Final Rule to Determine Penstemon Haydenii (Blowout Penstemon) To Be an Endangered Species. Federal Register 52(169):32926-32929, September 1, 1987.

Wyoming, WYDOT projects generally have little chance of affecting this species. The species occurs in a remote location between the Ferris and Seminoe Mountains on land administered by the BLM. The nearest highway under the WYDOT system is U.S. Highway 287 / Wyoming Highway 789 approximately 18 miles west of the known species range in Wyoming. The primary concern for WYDOT would be upgrading a BLM road in the area, which is considered highly unlikely to occur in the foreseeable future.

### **Other Sources of Information**

Fertig, W. 2001. 2000 Survey for Blowout Penstemon (*Penstemon haydenii*) in Wyoming. Wyoming Natural Diversity Database, University of Wyoming, Laramie, Wyoming. April 3, 2001.

U. S. Fish and Wildlife Service. 1999. U.S. Fish and Wildlife Service announces discovery of endangered plant, blowout penstemon, in Wyoming. News Release, Mountain-Prairie Region.

# ***Ute Ladies'-Tresses Orchid***

*Spiranthes diluvialis*

**Status and Protection:** Threatened

*Endangered Species Act*

Ute ladies'-tresses orchid was listed as a threatened species in 1992<sup>13</sup>. The species is a perennial wetland plant that occurs in scattered populations across the west from Nebraska to Washington. The primary threats to the species include land management actions which affect wetlands including spraying of herbicides, grazing, agricultural conversion of native grass wet meadows, stream channelization, and urban development.

## **Description/Identification**

Ute ladies'-tresses orchid is a perennial orchid that grows 20 to 50 cm (7.8-19.7inches) tall. The leaves extend from the base and are up to 28 cm (11 inches) long. The small white to ivory flowers are arranged on a 3-15 cm (1.2-5.9 inch) spike. Individual flowers are 7.5-15 mm long.

## **Wyoming Occurrence**

*Time of Year:* Year round; blooms in late July to September.

*Locations:* Converse, Goshen, Laramie, and Niobrara counties.

## **Biology and Habitat Requirements**

Ute ladies'-tresses flower in late July through August and occasionally into September or even October if conditions are favorable. This orchid is found in open areas along moist streambanks, wet meadows, shorelines of lakes and ponds, vegetated sandbars, and abandoned streambanks that have not been heavily grazed. Ute ladies'-tresses require some disturbance to reduce overstory cover from competing plants. It is found at elevations of 5100-6850 feet (1550-2100 m).

## **Historic and Current Distributions**

Very little is known regarding the historic distribution of this plant. It was historically thought to only have occurred in Utah and Colorado, and in 1992 approximately 90% of all known Ute ladies'-tresses occurred in Boulder County, Colorado. However, since the mid-1990s populations have been found in Nevada, Wyoming, Idaho, Nebraska, Montana, and Washington. Some of the areas in Utah known to have had Ute ladies'-tresses in the past no longer have this plant growing in them.

In Wyoming, there are known populations of Ute ladies' tresses in Laramie, Goshen, Niobrara, and Converse Counties. Potential habitat occurs throughout the state and it is possible that there are additional unknown populations.



Photo: David Young

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<sup>13</sup> U.S. Fish and Wildlife Service. 1992. Endangered and Threatened Wildlife and Plants; Final Rule to List the Plant *Spiranthes diluvialis* as a Threatened Species. Federal Register 57(12):2048-2054.

### **Issues of Concern**

Loss of wetland habitat to urbanization, stream channelization, and changes in land management regime that affect wetlands are the main issues of concern for Ute ladies'-tresses. Highway projects may affect Ute ladies'-tresses through mortality of individual plants, loss of suitable habitat, fragmenting populations, and sedimentation or runoff. Also of concern for highway projects is the limited time frame for conducting surveys for Ute ladies'-tresses. The species is difficult to identify and only blooms in late-July to September making identification possible. The USFWS only accepts clearance surveys that have been conducted during the flowering period. For highway projects which may impact suitable habitat, timing issues may arise if presence/absence surveys are needed.

### **Other Sources of Information**

Fertig, W. Wyoming rare plant field guide. The Wyoming Rare Plant Technical Committee. Published by the Bureau of Land Management, Cheyenne, Wyoming.

Fertig, W. 2000a. Status Review of the Ute ladies tresses (sic) (*Spiranthes diluvialis*). Wyoming Natural Diversity Database, University of Wyoming, Laramie, Wyoming. January 4, 2000.

# Colorado Butterfly Plant

*Gaura neomexicana*

**Status and Protection:** Threatened  
*Endangered Species Act*

Colorado butterfly plant was listed as a threatened species in 2000<sup>14</sup>. The primary threats to the species include spraying of herbicides, agricultural conversion of native grass floodplain meadows, stream channelization, and urban development.

## Description/Identification

Colorado butterfly plant (also known as Colorado butterfly weed) is a short-lived perennial herb that grows 50-80 cm (19.7-31.5 inches) tall. Leaves are lance shaped with smooth edges and are 5-15 cm (2-5.9 inches) long. The Colorado butterfly plant has small (5-14 mm), white flowers that turn pink or reddish with age.

## Wyoming Occurrence

*Time of Year:* Year round.

*Locations:* Laramie and Platte Counties.

## Biology and Habitat Requirements

The Colorado butterfly plant flowers in June through October and produces fruit from July to October. This plant will continue to flower until the first frost of the year. This herb is found in moist meadows typified by sub-irrigated, alluvial soils of streams surrounded by mixed grass prairie. It is found at an elevation of 5,800-6,400 feet (1,770-1950 m).

## Historic and Current Distributions

Colorado butterfly plant occurs only in southeastern Wyoming, extreme western Nebraska, and northeastern Colorado. In Wyoming, this plant has only been found in Laramie and Platte Counties.

## Issues of Concern

Loss of habitat and the small population are the main issues of concern regarding this species. The main concerns for WYDOT are loss of habitat from construction and the invasion of weeds along highways excluding this species from its current habitats. Additionally, weed control and ROW maintenance activities could impact populations of this plant, as well as grazing, water development, and competition from exotic plants. As with Ute ladies'-tresses timing of



Photo: David Young

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<sup>14</sup> U.S. Fish and Wildlife Service. 2000c. Endangered and Threatened Wildlife and Plants; Threatened Status for the Colorado Butterfly Plant (*Gaura neomexicana* ssp. *coloradensis*) From Southeastern Wyoming, Northcentral Colorado, and Extreme Western Nebraska. States. Federal Register 65(202):62302-62310, October 18, 2000.



presence/absence surveys can be an issue. The species is most easily identified during the flowering period (July-September). The USFWS only accepts clearance surveys conducted during this time period.

### **Other Sources of Information**

Dorn, R. D. 1980. Illustrated guide to special interest vascular plants of Wyoming. USFWS and BLM.

Fertig, W. 2000b. Status Review of the Colorado Butterfly Plant (*Gaura neomexicana* ssp. *coloradensis*). Wyoming Natural Diversity Database, University of Wyoming, Laramie, Wyoming. January 13, 2000.

Fertig, W. Wyoming rare plant field guide. The Wyoming Rare Plant Technical Committee. Published by the Bureau of Land Management, Cheyenne, Wyoming.

## **Desert Yellowhead**

*Yermo xanthocephalus*

**Status and Protection:** Threatened  
*Endangered Species Act*

Desert Yellowhead was discovered in 1990 and is a Wyoming endemic known only from one location in southern Fremont County. The total area occupied by the species is approximately 50 acres in size and is entirely on BLM lands. Because of its limited distribution the USFWS listed the plant as a candidate



Photo Courtesy: WYNDD

species in 1997 and proposed the species for listing as a threatened species in 1998. Desert yellowhead was subsequently listed as a threatened species in March 2002<sup>15</sup>. The primary threats to the species include surface disturbances from oil/gas development, vehicles, and livestock and due to the isolated and small distribution, random catastrophic events that could impact the whole population.

### **Description/Identification**

Desert yellowhead is a member of the sunflower family (Asteraceae). The stem can be 30 cm (12 inches) long and is generally leafy. The leaves are oval to lanceolate in shape and 4-25 cm (1.5-9.8 inches) long and can have either smooth or toothed margins. It has numerous (25-180) yellow flower heads crowned at the top of the stem.

### **Wyoming Occurrence**

*Time of Year:* Year round.

*Locations:* Fremont County.

### **Biology and Habitat Requirements**

The desert yellowhead flowers and fruits in June and July. It is found on barren outcrops of white silty clay derived from the Split Rock Formation at an elevation of approximately 2040 m (6700 ft). The species appears to be restricted to specific habitat conditions in deflation hollows on sandstone outcrops of the Split Rock Formation.

### **Historic and Current Distributions**

Desert yellowhead's only known distribution is on the summit of the Beaver Rim within the southern Fremont County, Wyoming. Throughout the 1990's several efforts were made to systematically survey similar outcrop formations for the species throughout central and southern Wyoming (Heidel 2002). To date it is only known from the original location and two small

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<sup>15</sup> U.S. Fish and Wildlife Service. 2002. Endangered and Threatened Wildlife and Plants: Listing the Desert Yellowhead as Threatened. Federal Register 67(50):11442-11449, March 14, 2002.

nearby sub-populations. The exact location of the species is considered sensitive information and the BLM has withdrawn the area for future development, sale, or mining.

### **Issues of Concern**

Limited range, disturbance, and grazing are issues of concern regarding desert yellowhead. In general there is little concern over WYDOT projects impacting this species. The area set aside by BLM to protect the species is roughly 1-2 miles west of Wyoming Highway 135. The primary concern for WYDOT would be an improvement project on Highway 135 near the species location or upgrading a BLM road in the area, which is considered unlikely to occur in the foreseeable future. An improvement project to Wyoming Highway 135 in the vicinity of mileposts 26-30, would require review for potential impacts to the species, however, given the distance to the plants it is unlikely that it would affect the species.

### **Other Sources of Information**

Fertig, W. 1994. Wyoming rare plant field guide. The Wyoming Rare Plant Technical Committee. Published by the Bureau of Land Management, Cheyenne, Wyoming.

Heidel, B. 2002. Status report on Desert Yellowhead (*Yermo xanthocephalus*) in Wyoming. Wyoming Natural Diversity Database, University of Wyoming, Laramie, Wyoming. March 30, 2002.

## **Slender Moonwort**

*Botrychium lineare*

**Status and Protection:** Candidate  
*Endangered Species Act*

At the time slender moonwort was listed as a candidate species it was not known to occur in Wyoming. In June 2003, the U.S. Forest Service located a small population of slender moonwort in an area of the Black Hills

National Forest (BHNF) in Crook County near the South Dakota state line. The discovery marked the first record for this species in Wyoming.



Photo Courtesy: USFWS

### **Description/Identification**

Slender moonwort is a member of the adder's tongue family (*Ophioglossaceae*). The plant is a small fern with a single leaf ranging from 2 – 7 inches in length. The juvenile stages of the plant can not be reliably identified.

### **Wyoming Occurrence**

*Time of Year:* Yearround, although only above surface in spring and summer.

*Locations:* Crook County.

### **Biology and Habitat Requirements**

This is a small plant that occurs at low densities in forest and montane habitats. The plant may not grow leaves or spores during adverse climate conditions, and may remain dormant for a year or longer. Like other members of the *Botrychium* genus, this species is dependent on mycorrhizal fungi.

### **Historic and Current Distributions**

At the time of listing, the species was known from 9 populations in Colorado, Montana, Oregon and Washington. In 2003, one population was discovered in the Black Hills National Forest in Crook County, Wyoming. Little is known concerning the habitat requirements for this species, making it difficult to speculate on potential occurrence in Wyoming. For the present, the Black Hills National Forest and surrounding montane habitats may be considered potential habitat for this species.

### **Issues of Concern**

Similar to other listed plant species, limited range, disturbance, recreation and grazing are issues of concern regarding the slender moonwort. At the moment, there is little concern over WYDOT projects impacting this species. The potential for a WYDOT project to impact this species would be based on the occurrence of a project in the Black Hills National Forest. The nearest highway under the WYDOT system is Interstate 90 in extreme eastern Crook County approximately four miles north of the Black Hills National Forest. The primary concern for WYDOT would be the construction of a new road or upgrading a U.S. Forest Service road in the vicinity of the species

location. These events are considered unlikely to occur in the foreseeable future. As more information becomes available regarding this species, the potential range may be expanded.

**Other Sources of Information**

Endangered and Threatened Plants; 12 Month Finding for a Petition to List the Plant *Botrychium lineare* (Slender Moonwort) as Threatened. Fed. Reg. 66(109): 30368 – 30372.

# Species Outside of Wyoming Requiring Consideration

The USFWS requires that all projects occurring within the Platte River Drainage or Colorado River Drainage consider the effects of consumptive water use on T&E Species that occur in downstream portions of these drainages. All of these species are dependant on these rivers or riparian systems and dewatering from upstream projects may have detrimental effects to one or all of the species. The primary causes of decline for these species have been changes in the water management within these rivers including dams and water diversions that have changed the amount and timing of water within the rivers and thus the overall river/riparian characteristics within these drainages. Other factors threatening these species include competition from introduced species (in the case of the fish) and adjacent land management regimes that have altered the natural ecosystem functions.

Currently, there are two programmatic agreements between the USFWS and FHWA that are in place to insure that projects authorized and funded by FHWA do not further adversely affect these species. WYDOT projects that occur within the Colorado River and Platte River drainages fall under the jurisdiction of these agreements.

## ***Platte River Species***

### **Least Tern**

*Sterna antillarum athalassos*, Endangered

Least tern was listed as an endangered species in the U.S. in May 1985 except for those occurring within 50 miles of the coast (i.e., only least terns found further than 50 miles from coasts are considered endangered). This interior least tern is thought by many to be a separate subspecies and is the smallest of the terns, measuring 20-22 cm (8-9 inches) in length with a 50 cm (20 inch) wingspan. Least terns have a black cap and nape, white forehead, grayish back and wings, white underparts, orange legs, and a black tipped orange-yellow bill. Interior least terns nest on riverine sand bars as well as sand pits (gravel and sand mining operations) along the Platte River, Nebraska. Sandbar habitat along the Platte River has greatly decreased due to changes in flows caused by dams and water diversions, substantially limiting the amount of nesting habitat available.

### **Piping Plover**

*Charadrius melodus*, Threatened

In December 1985, piping plover was listed as an endangered species in the Great Lakes region and as a threatened species throughout the remainder of its range. The piping plover is a small, stocky shorebird measuring approximately 17 cm (6.8 inches) in length. They are pale beige on the back and sides and white on the chest and belly. They have a black chest band and a small black patch between the eyes. Piping plovers are often found nesting with least terns on sand bars and sand pits in the Platte River drainage. Piping plovers also nest on beaches and open flats along alkali lakes. Piping plovers suffer from the same decreases in habitat as least terns.

## **Eskimo Curlew**

*Numenius borealis*, Endangered

The Eskimo curlew is one of the rarest birds in North America, and its status is generally unknown. It was listed as endangered in 1967 prior to the enactment of the Endangered Species Act. This curlew is 30-36 cm (12-14 inches) in height and has a 42-58 mm (1.75-2.5 inches) bill which is slightly decurved. Overall it is a brownish color, being darker on its head and back and paler on sides and below. Eskimo curlews breed along the Arctic Circle in Canada and winter on the coast of Texas and Mexico. The Platte River in Nebraska historically was an important stop over area during migration. There are no recent observation of the Eskimo curlew occurring in Nebraska; the last observation was in Hall County (central Nebraska) in 1987. That individual bird was observed feeding in a wet meadow along the Platte River with other shorebirds.

## **Whooping Crane**

*Grus americana*, Endangered

The whooping crane, listed in 1967, utilizes unvegetated sand bars in wide sections of the Central Platte River in Nebraska as roost sites during spring and fall migration. Decreased flows in the Platte have resulted in narrowing of the channel and vegetation encroachment on sand bars.

## **Pallid Sturgeon**

*Scaphirhynchus albus*, Endangered

The pallid sturgeon was listed as endangered in September 1990. This species is similar in appearance to lake sturgeon, a Nebraska state threatened species, and the more common shovelnose sturgeon. The pallid sturgeon has a cream, whitish, or gray head, body, and fins with an elongated and pointed snout. It can grow to 2 m (6 feet) and weigh up to 39 kg (85 lbs). It has four fringed barbels anterior to the mouth and lacks belly plates. Pallid sturgeon are endemic to the Mississippi and Missouri Rivers and their larger tributaries, one of which is the Platte River. Dams constructed along the rivers limit spawning routes and also diminish spring floods which are thought to trigger spawning activities.

## **Western Prairie Fringed Orchid**

*Platanthera praeclara*, Threatened

Western prairie fringed orchid was listed as a threatened species in its entire range in September 1989. They are a medium sized forbs with large, creamy white fringed flowers. Very little is known of this plants life history. It usually grows in swales or draws in tall grass prairie and wet sedge meadows. This orchid was once found over large areas of the Great Plains region, but it is now limited to the area from southern Manitoba, Canada south through the Dakotas to Kansas and Missouri and into Nebraska and Minnesota. Conversion of tall grass prairie to crop land is the leading cause of the western prairie fringed orchid's decline.

## **American Burying Beetle**

*Nicrophorus americanus*, Endangered

The American burying beetle, also known as the giant carrion beetle, was listed as an endangered species in July 1989. It is the largest member of the burying beetle guild, measuring 2.5-3.6 cm (1-1.4 inches) and its known range extends from Rhode Island and Massachusetts to Nebraska and Oklahoma. It is identified by two pairs of reddish-orange spots on the wing covers, red antenna stems with orange clubs, and a large reddish-orange pronotal disk (segment behind the head). Burying beetles are attracted to a vertebrate carcass by smell. Once a pair finds a carcass of suitable size, 100-300 g, they bury it and the female lays eggs on it. The carcass needs to be of specific size so that it is large enough to provide food for the young but still small enough to bury and it needs to be in a location with deep, loose soils with a substantial litter layer. These types of soils are often found in mature forests and appear to be limiting factors to the beetles existence. American burying beetle has been found along the riparian zone of mature trees in the Platte River Drainage, Nebraska.

## **Colorado River Species**

### **Colorado Pikeminnow**

*Ptychocheilus lucius*, Endangered (formerly Colorado Squawfish)

The Colorado pikeminnow is the largest member of the minnow family native to North America, measuring up to 1.5 m (5 feet) and weighing 36 kg (80 lbs). This species was listed as endangered in 1967 prior to the enactment of the Endangered Species Act. They are long and slender with a pointed snout, flattened head, and large mouth. They have been described as being “pike like” and are piscivorous like pike. Adults primarily utilize areas over sandbars but may be found in a wide range of habitats. Young are typically found in backwaters. Colorado pikeminnow are endemic throughout the Colorado River basin, from Wyoming to Arizona. Currently they are found in declining populations in the Colorado River upstream of Lake Powell, and portions of the San Juan, Green, Yampa, Gunnison, and White rivers.

### **Humpback Chub**

*Gila cypha*, Endangered

The humpback chub is a large chub measuring 30-38 cm (12-15 inches). It was listed as endangered in 1967 prior to the enactment of the Endangered Species Act. The most distinguishing characteristic is the large, prominent hump behind the head. It is olive to brown on the back and has silvery sides and belly. Adult humpback chubs are found in deep, swift rapids and channels, whereas juveniles prefer slower currents with silt substrates and a depth less than one meter. Historically, this chub may have been found throughout much of the Colorado River basin, however, changes in water flows from damming and diversions has decreased its habitat and isolated the populations. When Flaming Gorge Dam was built, the humpback chub was eliminated from long stretches of the Green River above and below the dam. Similar



reductions have occurred through the construction of other dams. Inundation above the dams and the release of cold waters in the tailwaters have been factors in this fishes decline.

## **Bonytail Chub**

*Gila elegans*, Endangered

Bonytails are a large, streamlined member of the minnow family. They were listed as endangered in April 1980 and are known to occur throughout the Colorado River system. They can reach 50 cm (18 inches) in length and weigh up to 0.5 kg (1 lb). They have a hump behind their head similar to a humpback chub, but it is not as pronounced, and the head is flattened. The overall color is silver with some greenish tinge along the back. Bonytails are omnivorous, feeding on insects, algae, and detritus. The bonytail is associated with eddies outside of the main river current and may be found in reservoirs. Bonytails once occurred throughout much of the Colorado River basin, but as of 1995, the last bonytail captured in a river occurred in 1985. They continue to be found in low numbers in Lake Mohave. Changes in water temperature and predation from nonnative fishes have contributed to the decline in bonytail numbers.

## **Razorback Sucker**

*Xyrauchen texanus*, Endangered

The razorback sucker was listed in October 1991. It can grow to 75 cm (2.5 ft) and weigh 5 kg (10 lbs). Like the bonytail and humpback chubs, the razorback sucker has a hump behind its head. This makes it the only sucker to have a large hump, or keel, on its back. It is olive to brownish on back, brown or pink on the side, and white to yellow on the belly. Breeding males will have a yellow to bright orange belly. Razorback suckers are found on silt to rock bottomed backwaters near areas of strong current and deep pools. Historically, this was a common species in the Colorado River basin. Razorback suckers are still commonly found in Lake Mohave and portions of the Middle Green River, but lack of recruitment is resulting in further decline. Overall, changes in physical habitat and water temperature due to construction of dams and introduction of exotic species have contributed to the decline of razorback suckers.

## **Issues of Concern**

The primary issue of concern for the species occurring in the Platte River and Colorado River drainages outside of Wyoming is the impact from consumptive water use in these watersheds. Dewatering in these drainages continues the process of altering the historic flow regimes that these species are dependant upon.

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# Glossary

**Adipose fin** - a small, fleshy fin found between the dorsal fin and tail on salmonids, catfish, and other fishes.

**Alkali flat** - areas with a high salt content and little or no vegetation.

**Alpha** - the first or dominate (i.e., alpha male is the dominate male).

**Alpine** - the area above timberline (tree line).

**Alluvial** - soils deposited by flowing water.

**Barbel** - fleshy, thread-like structures found on the head and around the mouth of many fishes.

**Basal** - located at or near the base.

**Canid** - a member of the family that includes dogs, wolves, coyotes, and foxes.

**Carnivore** - an animal that eats mostly or entirely animal flesh.

**Carrion** - dead and decaying animal matter.

**Claypan** - ponds not connected to the ground water, often with litter or no vegetation growing in or around them.

**Clutch** - the number of eggs produced or incubated at one time.

**Dorsal fin** - fin extending along the middle of the back

**Endangered species** - any species which is in danger of becoming extinct throughout all or a significant portion of its range (as defined by the USFWS).

**Emergence** - the act of coming out of hibernation.

**Endemic** - native to a certain region or locality.

**Fledge** - the process of growing or to have grown flight feathers and achieving the ability of flight.

**Fledgling** - a bird that has recently grown its flight feathers.

**Gestation** - the period of carrying offspring in the uterus, pregnancy.

**Guild** - pertaining to a group of plants or animals with similar characteristics.

**Hibernation** - the act of passing the winter in a dormant state.

**Immergence** - the act of going into hibernation.

**Incubate** - to sit on eggs.

**Insectivore** - an animal that eats entirely or mostly insects.

**Keeled** - to have a structure that resembles the keel of a ship.

**Lanced and Lanceolate** - narrowing or tapering at each end.

**Lateral line** - a series of external pores on the side of fish that are connected by an internal tube. The lateral line is used as a sensory organ to help fish orient, navigate and capture prey.

**Mollusk** - soft bodied animal generally covered by a hard shell (clams, oysters, slugs, snails).

**Montane** - mountainous region.

**Nape** - back of the neck.

**Nocturnal** - animals that are primarily or exclusively active a night.

**Omnivore** - animal that consistently eats both plant and animal matter.

**Pectoral fin** - fin just behind the gill.

**Perennial** - a plant that continues to grow year after year from the same root system.

**Piscivore** - an animal that eats primarily fish.

**Primary feathers** - large flight feathers on wings.

**Recruitment** - the act of moving from one age group to another (i.e., juvenile to breeding adult).

**Riparian** - the woody vegetation associated with rivers (e.g., cottonwood, willow).

**Subalpine** - the region just below timberline.

**Threatened species** - any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range (as defined by the USFWS).

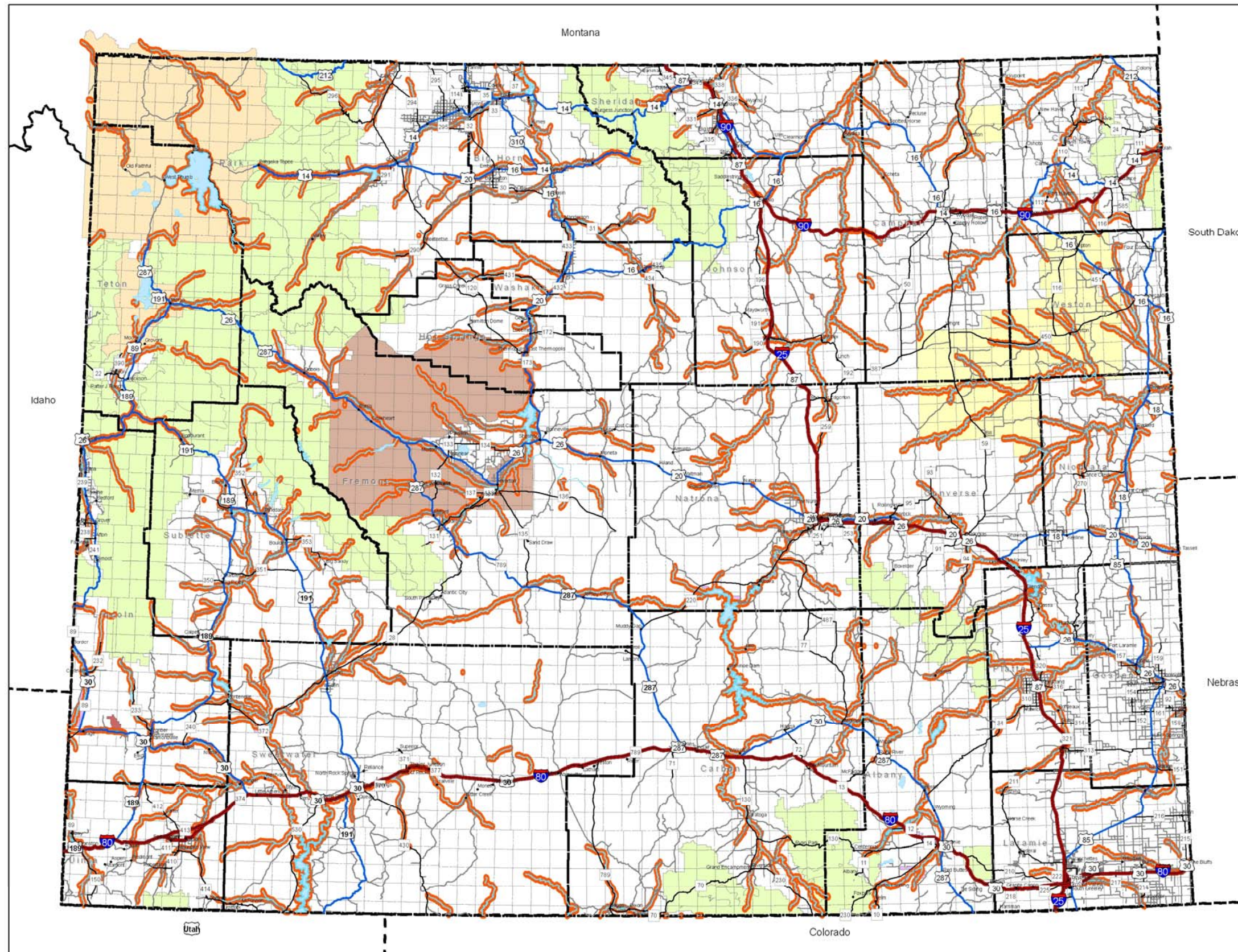
**Turbid** - water with significant amount of suspended sediment (“muddy water”).

**Upland** - drier areas not considered wetland (see below).

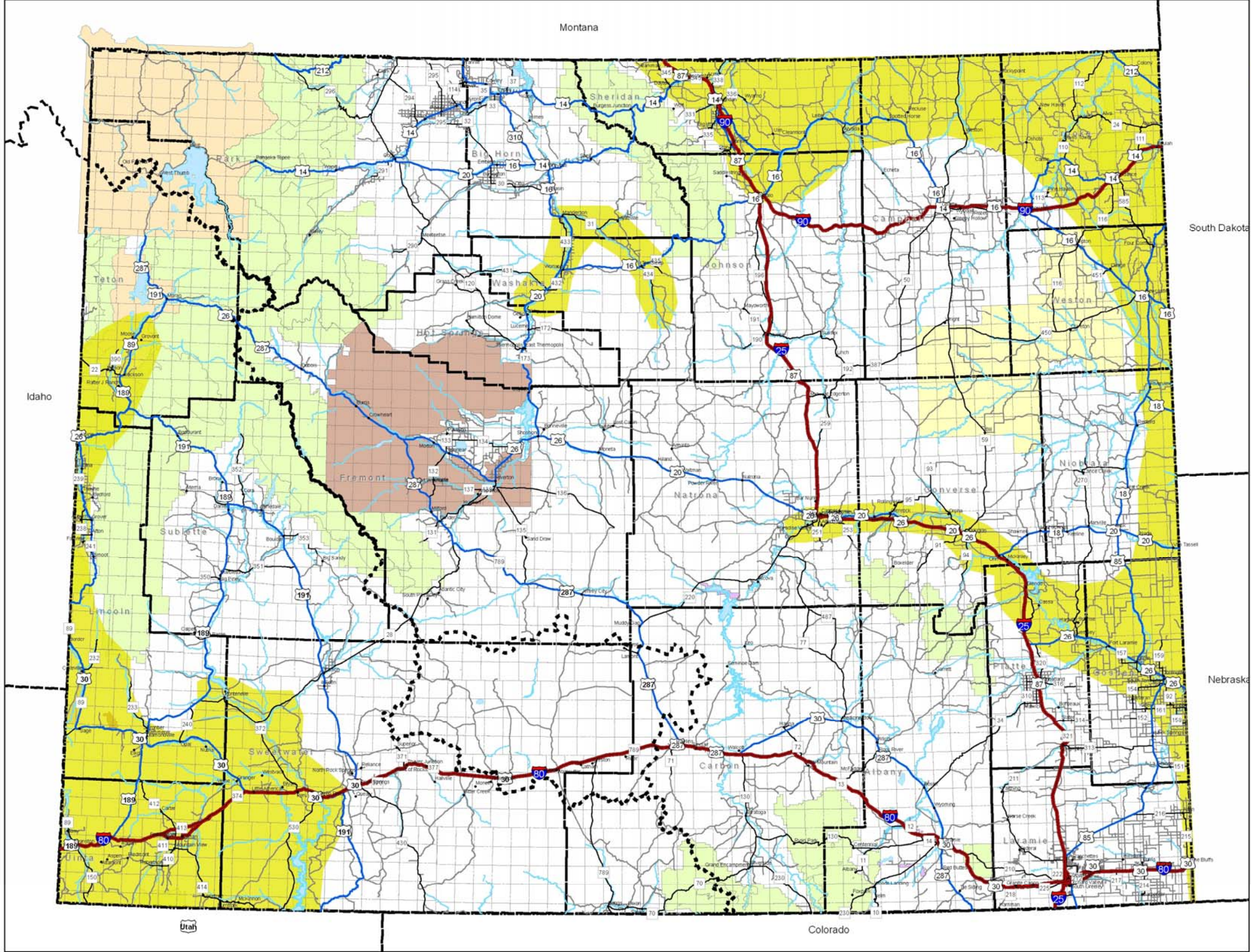
**Wet meadow** - grassland with waterlogged soil near the surface but without standing water for most of the year.

**Wetland** - an area characterized by waterlogged soil with vegetation adapted to wet conditions and a water regime that insures that the soils are inundated during a substantial portion of the growing season.

## **Appendix A – Range Maps for Threatened, Endangered and Candidate Species in Wyoming**







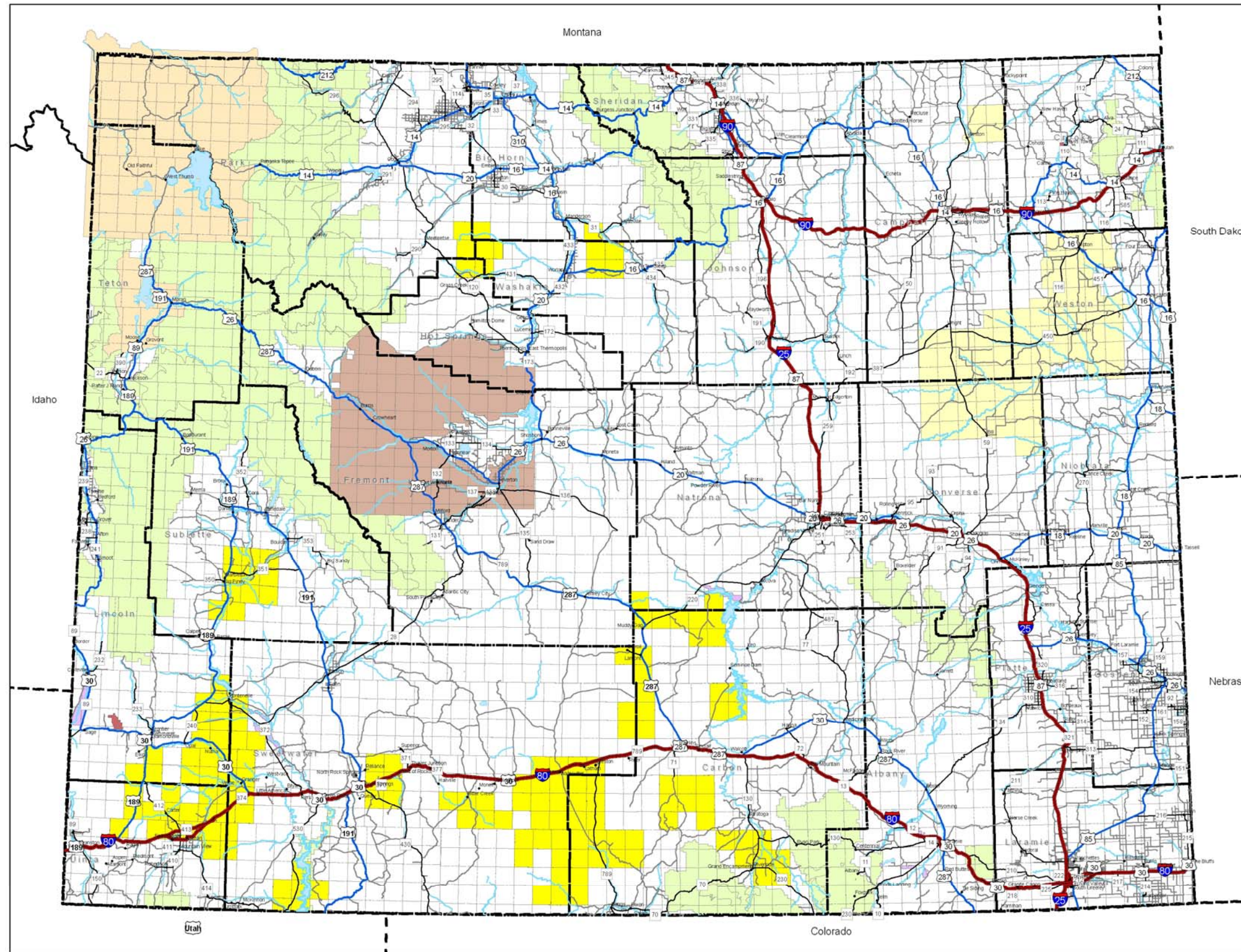
Yellow-billed Cuckoo

----- Continental Divide

Only Yellow-billed cuckoos west of the Continental Divide are candidates for ESA listing.

**Federal Land Mgmt.**

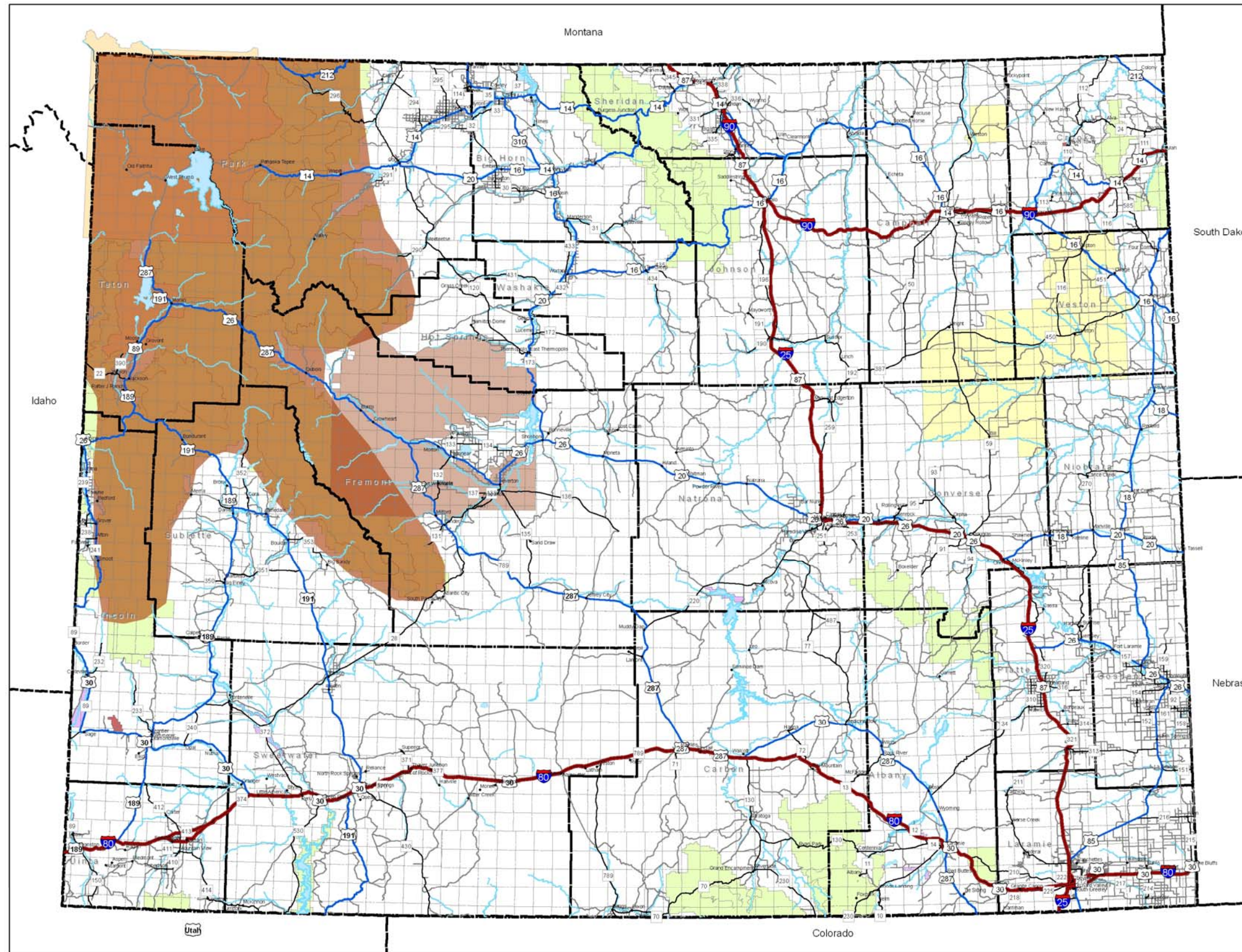
- Indian Reservation
- National Forest
- National Grassland
- National Monument
- National Park
- National Recreation Area
- National Wildlife Refuge



T & R NOT block- cleared for black-footed ferret surveys

**Federal Land Mgmt.**

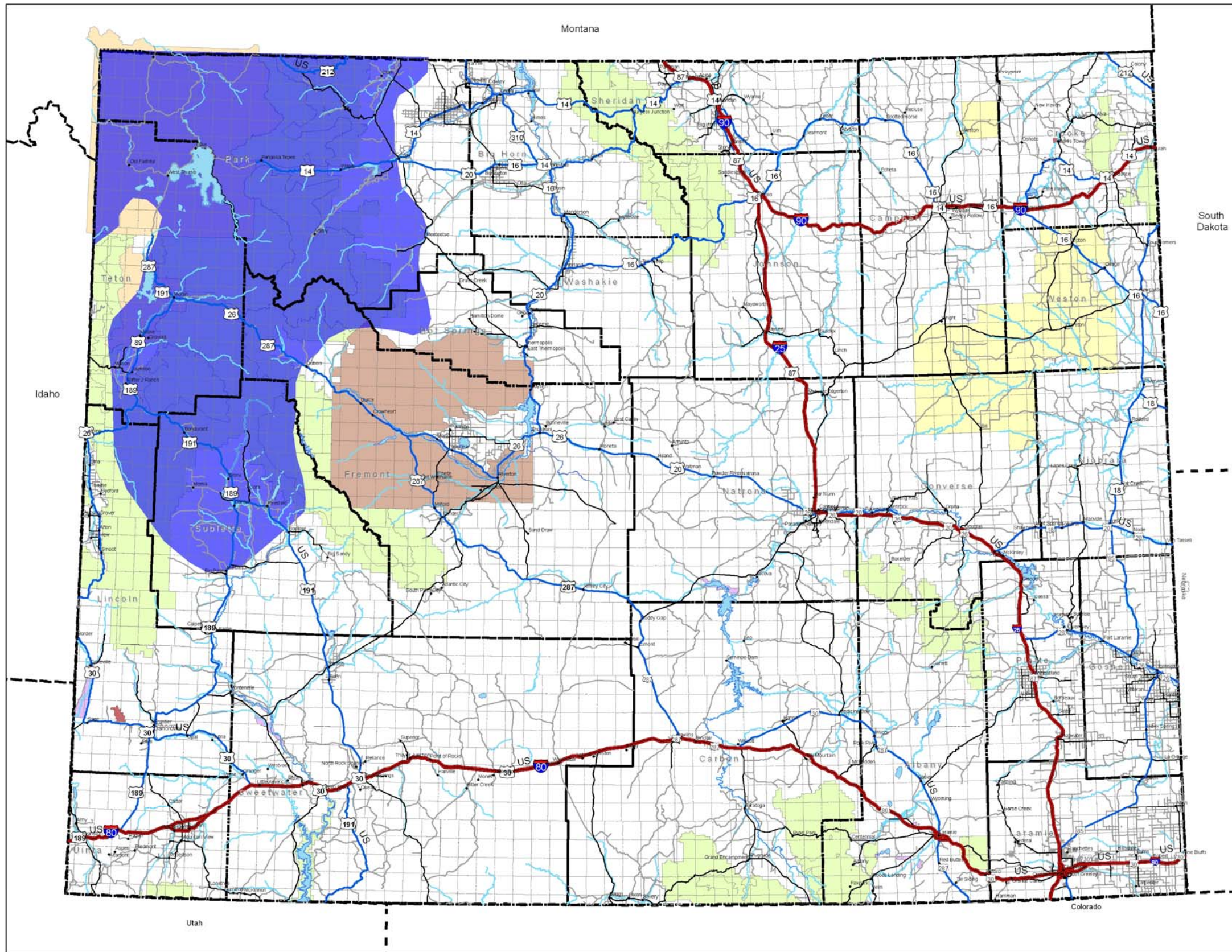
- Indian Reservation
- National Forest
- National Grassland
- National Monument
- National Park
- National Recreation Area
- National Wildlife Refuge



 Grizzly Bear

**Federal Land Mgmt.**

-  Indian Reservation
-  National Forest
-  National Grassland
-  National Monument
-  National Park
-  National Recreation Area
-  National Wildlife Refuge

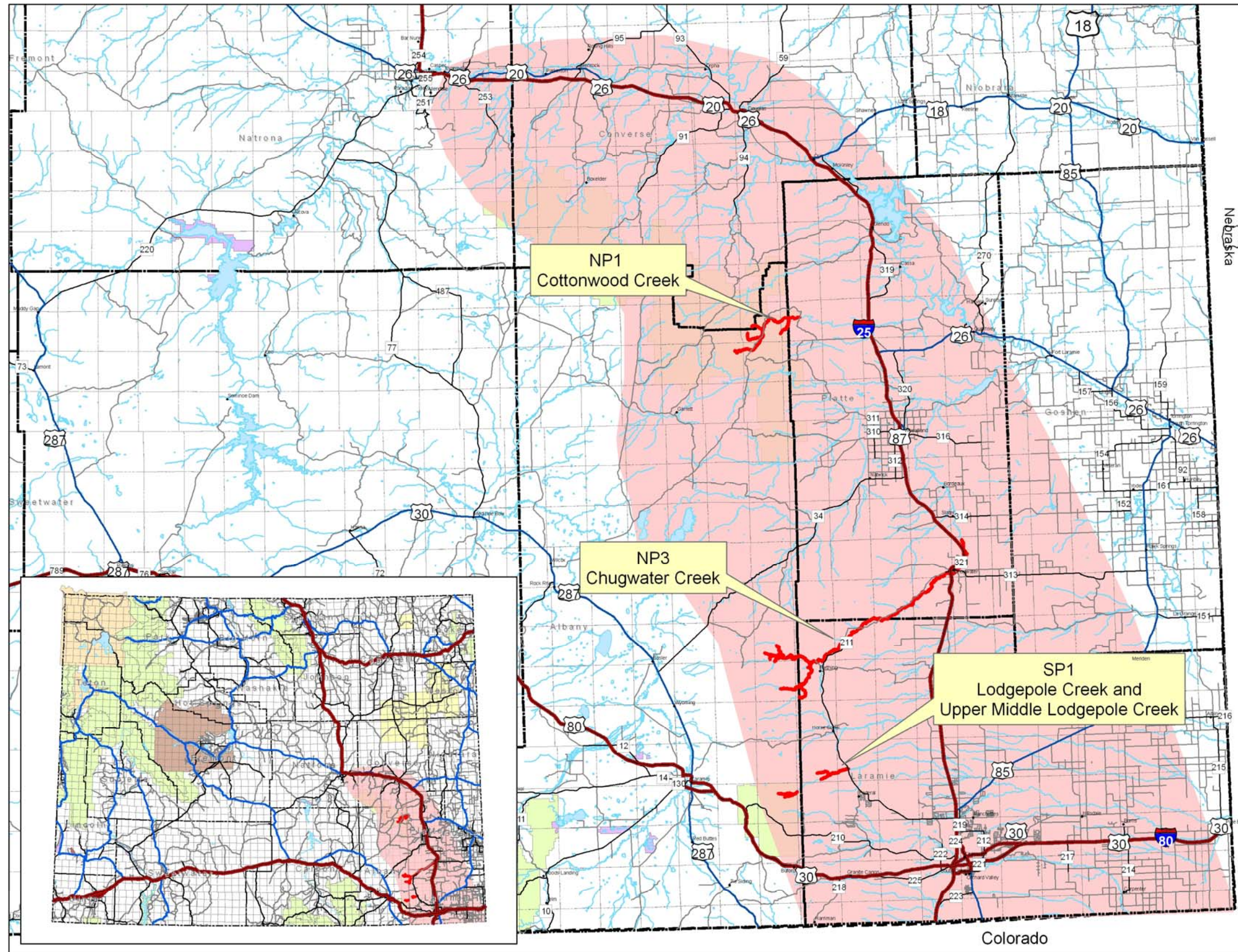


**Gray Wolf**

This map indicates the core range, in the general area of pack territories.

**Federal Land Mgmt.**

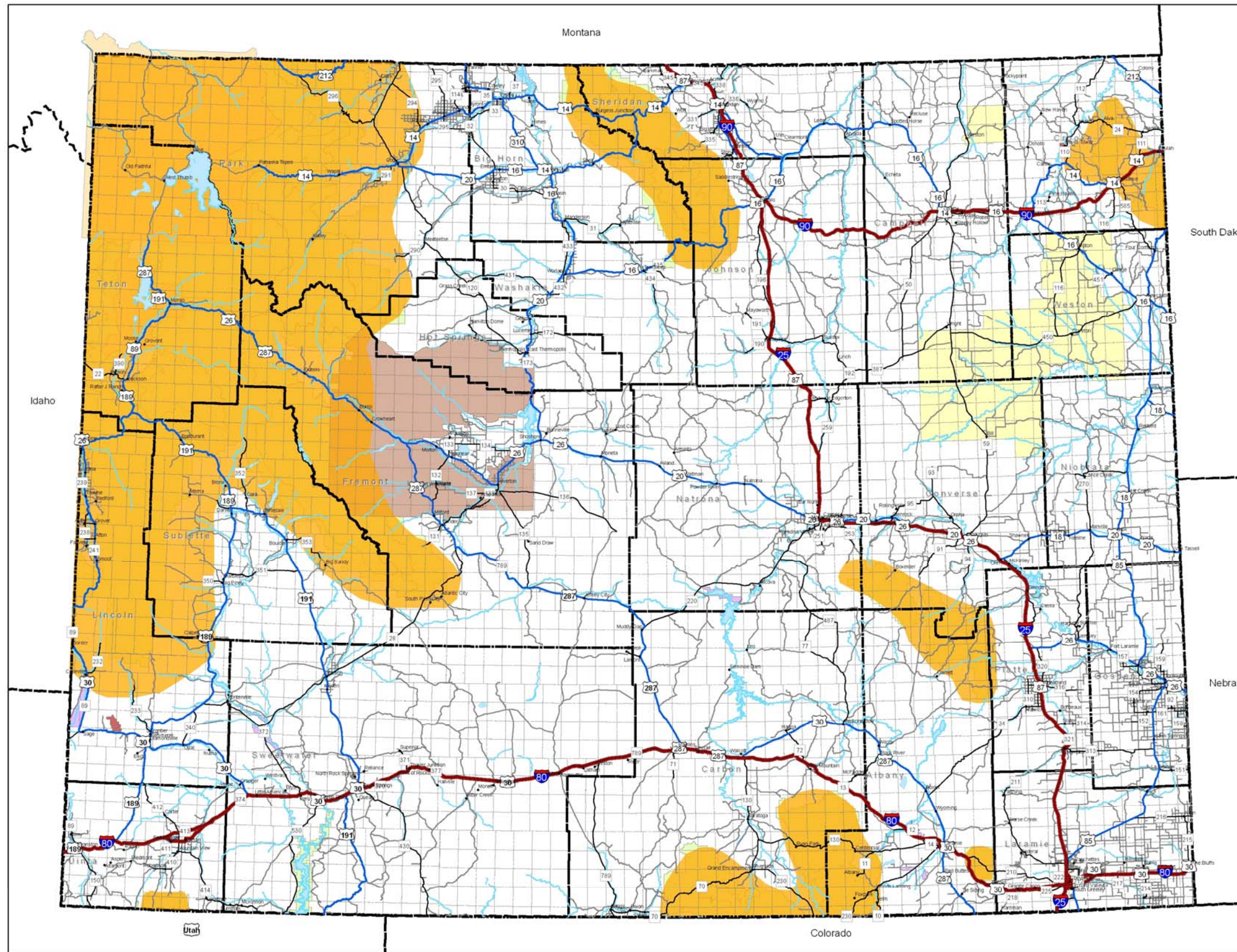
- Indian Reservation
- National Forest
- National Grassland
- National Monument
- National Park
- National Recreation Area
- National Wildlife Refuge



- Preble's Mouse Potential Habitat
- Preble's Mouse Critical Habitat

Critical habitat is designated 110 meters on each side of streams, except Chugwater Creek where critical habitat is 120 meters on each side of the stream.

- Federal Land Mgmt.**
- Indian Reservation
  - National Forest
  - National Grassland
  - National Monument
  - National Park
  - National Recreation Area
  - National Wildlife Refuge

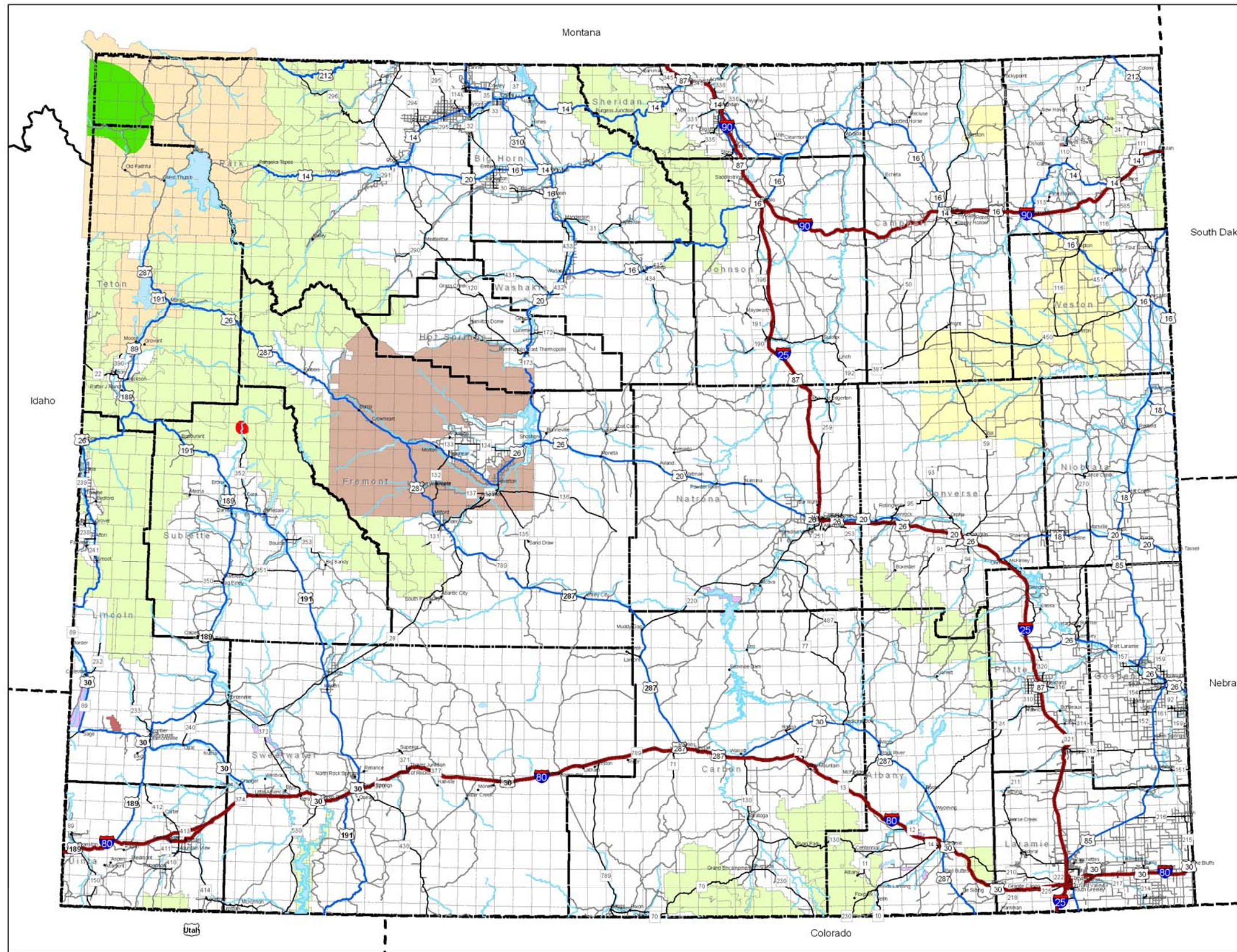


**Canada Lynx**

All National Forest land in Wyoming is considered lynx habitat, but they are only known in the GYE area and Snowy Range/ Sierra Madre Range.

**Federal Land Mgmt.**

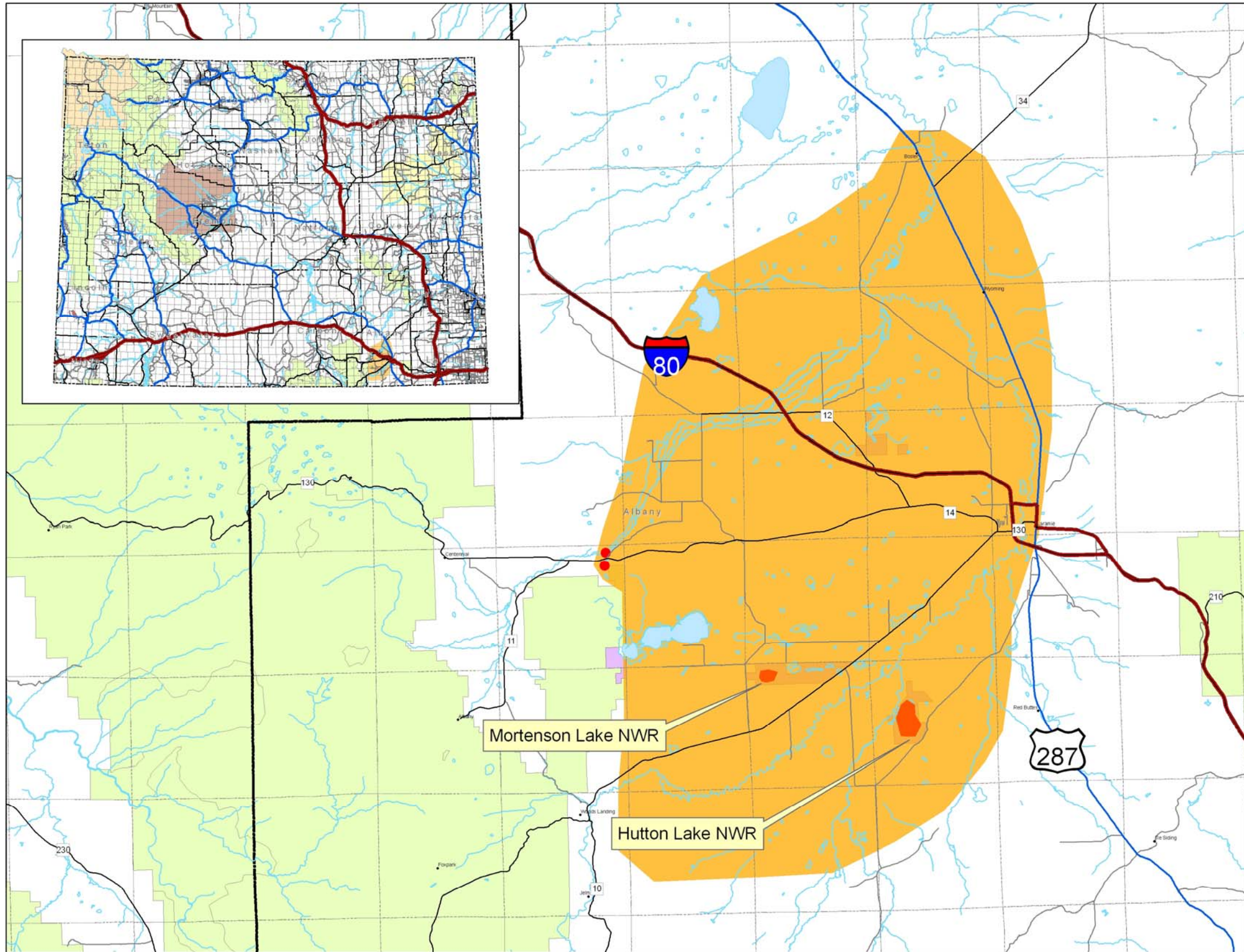
- Indian Reservation
- National Forest
- National Grassland
- National Monument
- National Park
- National Recreation Area
- National Wildlife Refuge



- Arctic Grayling
- Kendall Warm Springs Dace

**Federal Land Mgmt.**

- Indian Reservation
- National Forest
- National Grassland
- National Monument
- National Park
- National Recreation Area
- National Wildlife Refuge

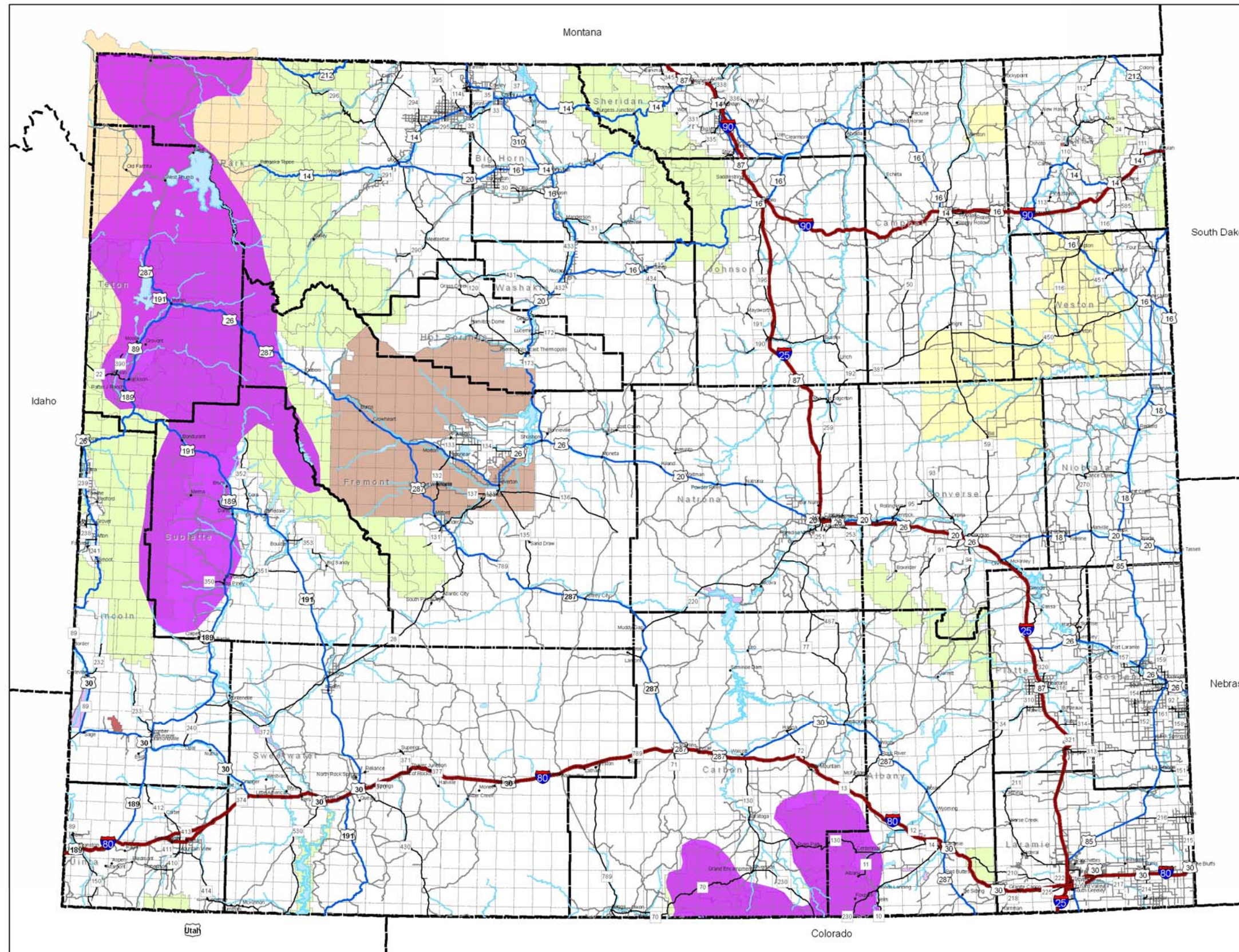


- Wyoming Toad Potential Range
- Wyoming Toad Known Range
- Re-introduction Sites

**Federal Land Mgmt.**

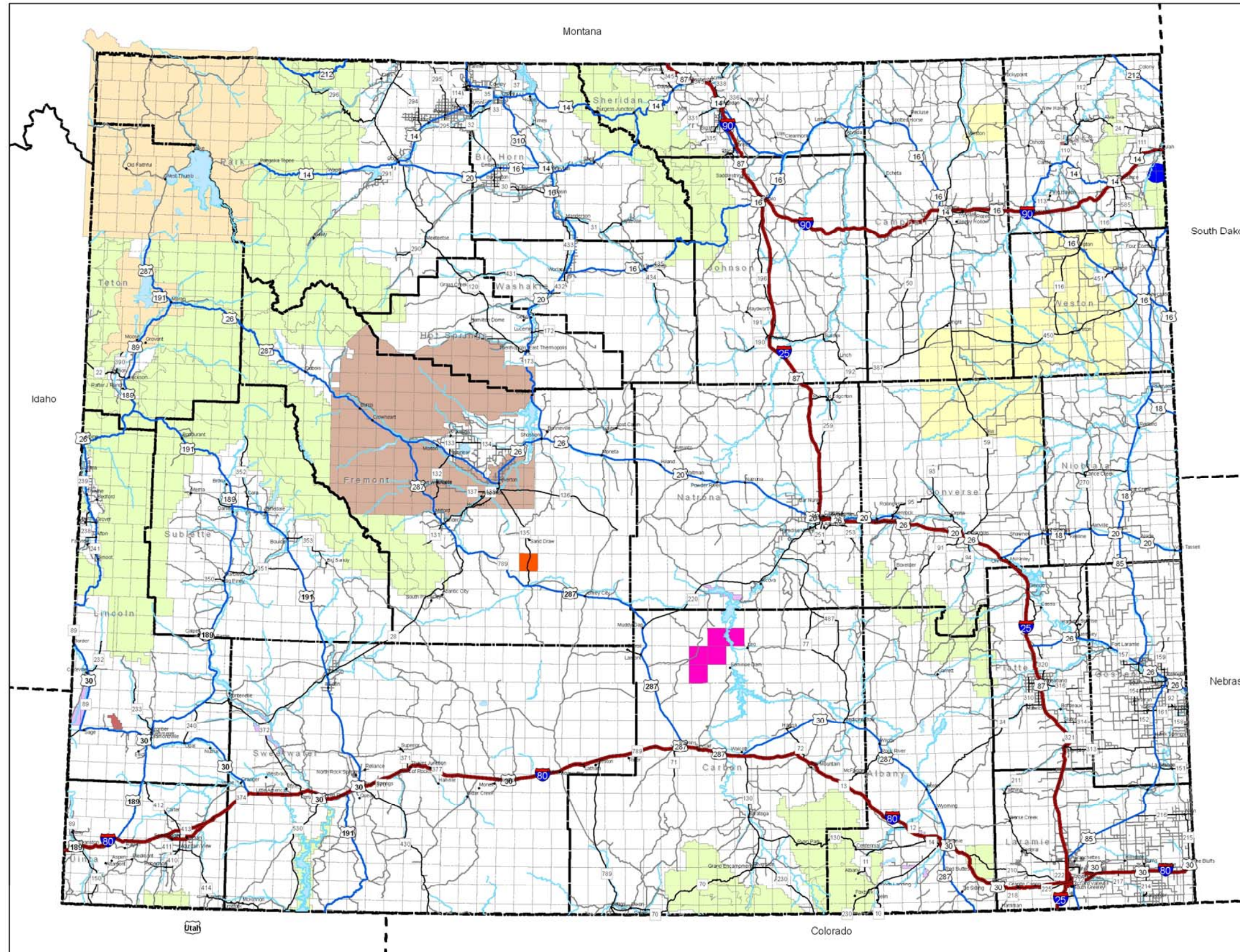
- Indian Reservation
- National Forest
- National Grassland
- National Monument
- National Park
- National Recreation Area
- National Wildlife Refuge





**Boreal Toad**  
 Only Boreal toads in the southern Wyoming population are candidates for ESA listing.

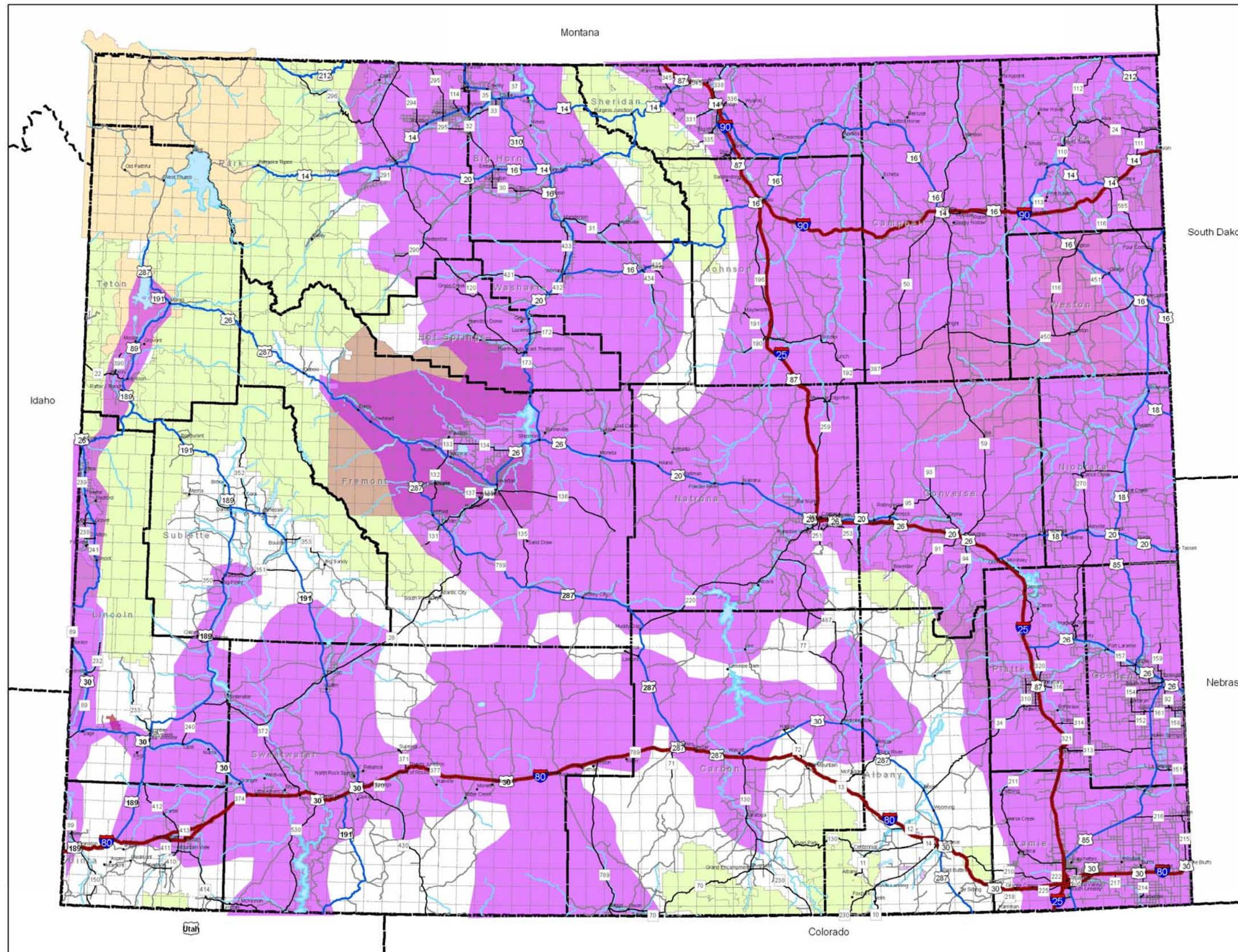
- Federal Land Mgmt.**
- Indian Reservation
  - National Forest
  - National Grassland
  - National Monument
  - National Park
  - National Recreation Area
  - National Wildlife Refuge



- Desert Yellowhead
- Blowout Penstemon
- Slender Moonwort

**Federal Land Mgmt.**

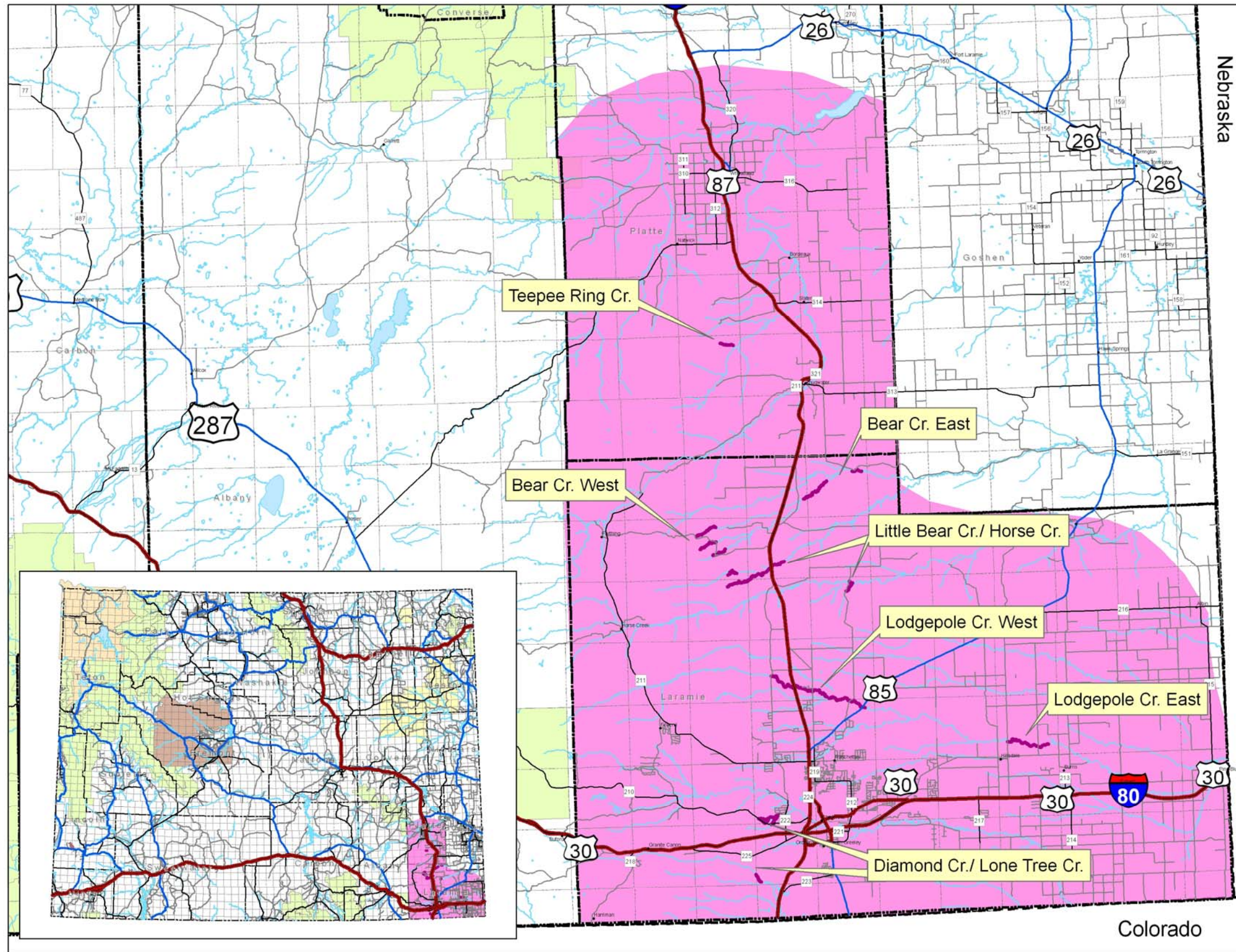
- Indian Reservation
- National Forest
- National Grassland
- National Monument
- National Park
- National Recreation Area
- National Wildlife Refuge



**Utes Ladies'-tresses**  
(moist, non-saline  
soils <7000ft)

**Federal Land Mgmt.**

- Indian Reservation
- National Forest
- National Grassland
- National Monument
- National Park
- National Recreation Area
- National Wildlife Refuge

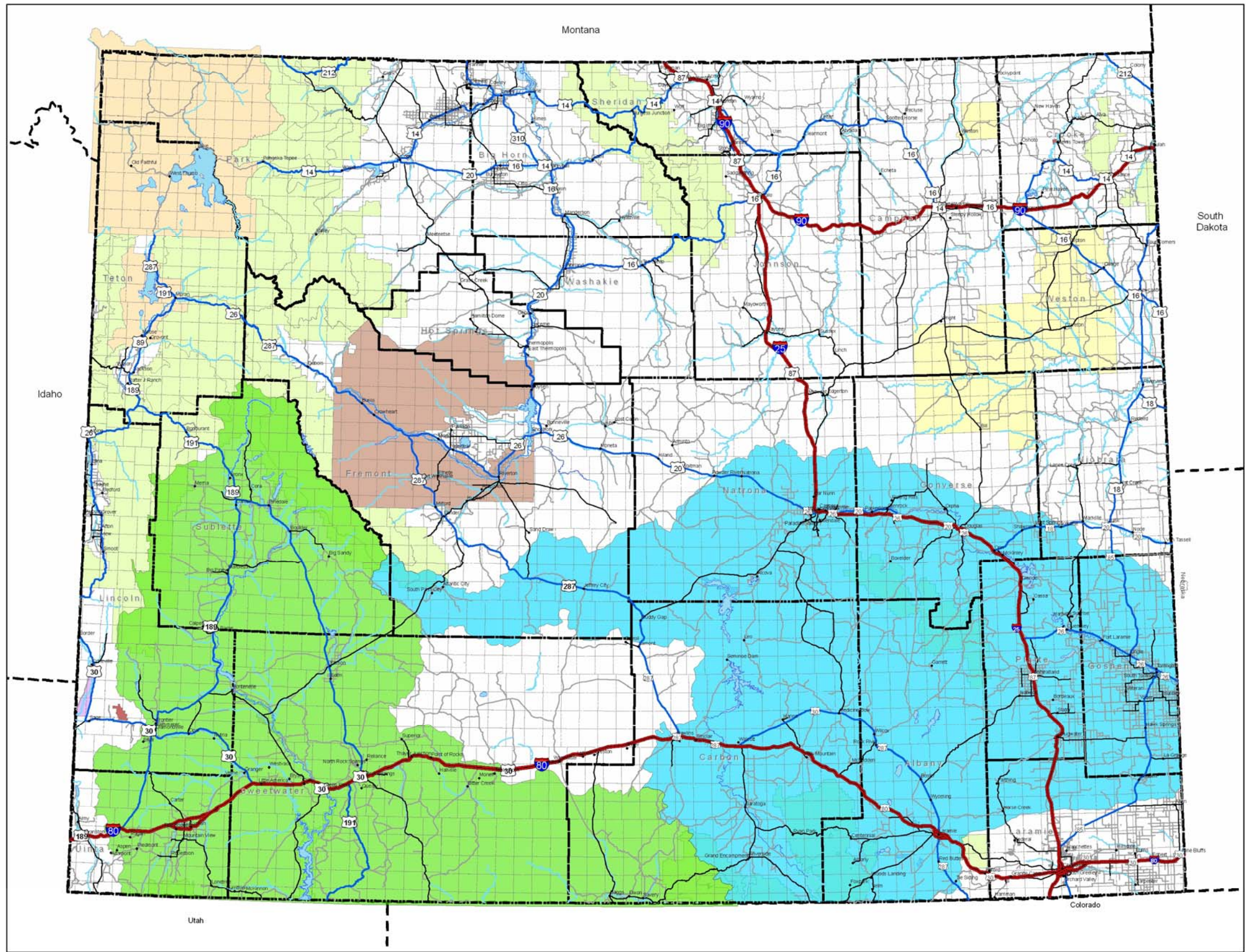


- Colo. Butterfly Plant Potential Range
- Colo. Butterfly Plant Critical Habitat

- Federal Land Mgmt.**
- Indian Reservation
  - National Forest
  - National Grassland
  - National Monument
  - National Park
  - National Recreation Area
  - National Wildlife Refuge

Nebraska

Colorado



- Green River and Upper Colorado Drainage
- Platte River Drainage

**Federal Land Mgmt.**

- Indian Reservation
- National Forest
- National Grassland
- National Monument
- National Park
- National Recreation Area
- National Wildlife Refuge