

3 Affected Environment

This chapter describes the biological, cultural, and socioeconomic resources most likely affected by expanding the Blackfoot Valley Wildlife Management Area.

BIOLOGICAL ENVIRONMENT

The biological environment studied included climate, geological resources, habitat, and wildlife.

CLIMATE

The climate is generally cool and dry, but there is considerable variability corresponding to the east-west elevational gradient that greatly influences vegetation and habitat. The average maximum temperature is 54°F with the coldest minimum temperatures in January (5°F). July and August are the warmest months with an average high around 81°F and a low near 40°F. On average, the warmest month is July. The highest recorded temperature was 99°F in 2003. January is the average coolest month. The lowest recorded temperature was -48°F in 1982.

The Blackfoot Valley receives between 12 and 16 inches of annual precipitation, while western parts of the Flathead/Mission Valley tend to be drier. The Ovando area receives an average annual precipitation of 17 inches, with average annual snowfall of 79 inches.

GEOLOGICAL RESOURCES

Glaciation strongly influenced the current watershed landscape as evidenced by numerous moraines and associated hummocky topography, glacial pothole lakes, and broad expanses of flat glacial outwash (Whipple et al. 1987, Cox et al. 1998). The watershed was subjected to two major periods of glaciation, the Bull Lake glaciation (~70,000 years ago) and the Pinedale glaciation (~15,000 years ago). During these periods, large continuous ice sheets extended from the mountains southward into the Blackfoot and Clearwater River Valleys (Witkind and Weber 1982). During the latter part of the Pleistocene Era, the Blackfoot Valley was further shaped by the repeated filling and catastrophic draining of Glacial Lake Missoula, a massive lake formed by a series of ice dams that impounded the Clark Fork River downstream of Missoula. In the Blackfoot Valley, Glacial Lake Missoula extended upstream as far as Clearwater Junction (Alt and Hyndman 1986).

When the glaciers receded, large deposits of glacial till, glacial outwash, and glacial lakebed sediments were left behind. These deposits cover much of the Blackfoot Valley floor, shaping the topography of the valley, the geomorphology of the Blackfoot River, and the lower reaches of most tributaries. Glacial features evident on the landscape today include moraines, outwash plains, kame terraces and glacial potholes. The landscape between Clearwater Junction and Lincoln, for example, is characterized by alternating areas of glacial moraines and their associated outwash plains. In this area, ice pouring down from the mountains to the north spread out to form large ponds of ice several miles across, known as piedmont glaciers. Muddy melt water draining from these piedmont glaciers spread sand and gravel across the ice-free parts of the valley floor to create large outwash plains. The town of Ovando sits on one of these smooth outwash plains (Alt and Hyndman 1986).

HABITAT

Geologic, hydrologic, and geographic features in the Blackfoot River watershed combine to produce a diversity of vegetation communities including prairie grasslands, sagebrush steppe, coniferous forest, and extensive wetland and riparian areas. Over 80% of the watershed is covered with mixed species conifer forests dominated by ponderosa pine, lodgepole pine, Douglas-fir, and western larch at the lower elevations, and subalpine-fir and spruce in the higher regions, especially on cool, moist, northerly aspects. The remaining portions of the watershed consist of native bunchgrass prairie (10%), agricultural lands (5%), and a combination of shrublands, wetlands, lakes, and streams (5%). Less than 1% of the watershed is developed (Blackfoot Challenge 2005). The greatest source of biological diversity in the watershed arises from wetland features such as glacial lakes, vernal ponds, fens, basin-fed creeks, spring creeks, marshes, and riparian areas (USFWS 2009a). Lesica (1994) estimates that 600 vascular plant species occur within the watershed of which nearly 30% are associated with wetlands. The Blackfoot River watershed supports a number of rare plant communities. The three-tip sagebrush/rough fescue plant association is common in the Ovando area, yet found nowhere else in the world. The big sagebrush/rough fescue plant association, endemic to west- and north-central Montana, is common in the Kleinschmidt Flat area. Expanses

of the Drummond's willow plant association occur in riparian swamps along Monture Creek and mud sedge, sharp bulrush, mannagrass, and fen peatland plant communities are unique to the area's glacial pothole wetlands (USFWS 2009a, MTNHP 2009b). According to Montana Partners in Flight (PIF 2000), the watershed contains all of the highest priority habitats for bird conservation in Montana. These habitats include mixed grassland, sagebrush steppe, dry (ponderosa pine/Douglas-fir) forest, riparian deciduous forest, and prairie pothole wetlands. The watershed also contains four of the seven community types in greatest need of conservation, according to Montana's Comprehensive Fish and Wildlife Conservation Strategy (MFWP 2005). These include grassland complexes, mixed shrub/grass associations, riparian and wetland communities, and mountain streams.

WILDLIFE

The Blackfoot River watershed is one of the most biologically diverse and intact landscapes in the western United States. The watershed supports an estimated 250 species of birds, sixty-three species of mammals, five species of amphibians, six species of reptiles, and twenty-five species of fish (MTNHP 2009a) (See appendix A).

Mammals

Because of its rural and largely intact nature, the watershed retains the full complement of large mammals, many of which have been extirpated from portions of their historic ranges. The Blackfoot River watershed provides excellent habitat for grizzly bear, black bear, elk, mule deer, white-tailed deer, mountain lion, Canada lynx, bobcat, gray wolf, coyote, wolverine, fisher, and a wide variety of small mammals.

Amphibians and Reptiles

There are currently six reptile species in the Blackfoot Valley including common garter snake, eastern racer, northern alligator lizard, painted turtle, rubber boa, and terrestrial garter snake. (MTNHP 2009a)

There are currently five amphibians that have been documented in the Blackfoot Valley including Columbia spotted frog, long-toed salamander, Pacific tree frog, Rocky Mountain tailed frog, and western toad.

Fish

There are currently twelve native fish species and thirteen nonnative fish species in the Blackfoot Valley watershed, as well as several hybrid salmonids (MFIS 2009).



Garter snake.

USFWS

Migratory and Other Birds

The Blackfoot River watershed also provides high quality breeding, nesting, migratory, and wintering habitat for a diversity of bird species. Wetland complexes in the watershed provide important breeding habitat for twenty-one species of waterfowl: northern pintail, mallard, lesser scaup, wood duck, redhead, ring-necked duck, canvasback, American wigeon, Canada goose, green-winged teal, blue-winged teal, cinnamon teal, northern shoveler, gadwall, common goldeneye, Barrow's goldeneye, harlequin duck, bufflehead, hooded merganser, common merganser, red-breasted merganser, and ruddy duck.

During the nesting season in 1995, 1996, and 1997, the University of Montana Wildlife Cooperative Unit and the Service conducted breeding-bird productivity studies in three separate properties within the Blackfoot Valley watershed, including the Blackfoot Waterfowl Production Area (WPA). Nest success for upland nesting waterfowl (measured by the Mayfield method), including pintail, mallard, and lesser scaup, was found to be 49, 30, and 45 percent, respectively (Fondell and Ball 1997). These nest success estimates are some of the highest in North America for upland nesting ducks. Fondell and Ball (1997) stated that "Because the [Ovando] Valley is relatively undisturbed these estimates may reflect nest success over large areas of the watershed."

Brood surveys of northern shoveler, gadwall, American wigeon, cinnamon and blue-winged teal, canvasback, redhead, ring-necked, ruddy, and Barrow's goldeneye ducks in 1995 and 1996 on the Blackfoot Valley WPA averaged sixty-three broods on five wetlands totaling 104 acres, or 0.62 broods per acre, with pre-fledge brood sizes of 5.2 in 1995, and 5.9 in 1996, higher than brood sizes reported in studies conducted at Freezeout Lake WMA and at Benton Lake NWR on the east side of the Continental Divide (Fondell and Ball 1997). This high productivity is due to the large expanses of relatively

undisturbed native grassland in association with wetland habitat, a coyote-dominated predator base, and a high concentration of glaciated wetlands.

Breeding waterfowl pair counts have indicated relatively high pair densities per square section for redhead and canvasback ducks. Redhead duck numbers over the past 15 years have averaged twelve pairs per section and canvasback ducks at nine pairs per section.



Mike Parker/USFWS

Long-billed curlew.

Species of Special Concern

According to the Montana Natural Heritage Program database (MTNHP 2009a) there are forty-one animal species of concern in the Blackfoot River watershed. These include invertebrates, birds, fish, mammals, reptiles, and amphibians. Eight of the fourteen bird species ranked by Montana Partners in Flight (PIF 2000) as Level I priority species in the state are found in the watershed: common loon, trumpeter swan, harlequin duck, Columbian sharp-tailed grouse, black-backed woodpecker, flammulated owl, olive-sided flycatcher, and brown creeper.

Black terns are considered a species of special concern by the Service in region 6 and on the Montana Priority Bird Species List, they are listed at a Level II which dictates that Montana has a high responsibility to monitor the status of this species, and design conservation actions. The Blackfoot River watershed hosts the largest black tern colony documented in Montana.

The Blackfoot River watershed supports western Montana's largest population of Brewer's sparrow, one of the highest priority songbirds in Montana (Casey 2000). This sagebrush obligate was the most abundant breeding species found at sagebrush sites on the Blackfoot and Kleinschmidt WPAs during Service productivity surveys in 1996 (Fondell and Ball 1997). The long-term viability of Brewer's

sparrows in Montana will depend on the maintenance of large stands of sagebrush in robust condition (PIF 2000).

The watershed is perhaps also the best breeding and nesting area for the long-billed curlew in western Montana. This species is declining nationally and has been identified as a priority in both the shorebird and PIF conservation plans. Local surveys on Kleinschmidt Flat in 1997 found thirty-one pairs on 3,840 acres, or greater than eight pairs per 1,000 acres. Production was not monitored, but many broods were noted. This species is highly reliant on grassland nesting habitat, will also nest in sagebrush steppe, and relies more heavily on wetlands during migration. Small population size and negative population trends, combined with threats of habitat degradation on both breeding and wintering grounds, make the long-billed curlew a high conservation priority (National Audubon Society 2007).

Federally listed animal species found in the Blackfoot River watershed include the threatened bull trout, grizzly bear, gray wolf, and Canada lynx (see appendix B, "List of Endangered and Threatened Species"). The gray wolf, which was delisted from endangered status in March 2009, was relisted in August 2010. The bald eagle was delisted from threatened status in July 2007. The fisher, a candidate for listing, occurs in the watershed (USFWS 2009c). The relationship of the watershed to Endangered Species Act planning units is as follows:

Bull Trout

For listing purposes, the Service divided the range of bull trout into distinct population segments and twenty-seven recovery units. The Blackfoot River watershed lies within the Clark Fork River Recovery Unit and the Upper Clark Fork Recovery Subunit. Within this subunit, the watershed has been identified as a core recovery area (USFWS 2002). The watershed has been proposed as critical habitat within the Clark Fork River drainage (USFWS 2010).

Within the watershed, bull trout densities are very low in the upper Blackfoot River, but increase downstream of the North Fork. Streams that appear to be particularly important for the spawning of migratory bull trout include Monture Creek, the North Fork Blackfoot River, Copper Creek, Gold Creek, Dunham Creek, Morrell Creek, the West Fork Clearwater River, and the East Fork Clearwater River. Bull trout spawner abundance is indexed by the number of identifiable female bull trout nesting areas (redds). Data indicate that Monture Creek has an upward trend from ten redds in 1989 to an average of fifty-one redds in subsequent years (Pierce et al. 2008). The North Fork also shows an upward trend from eight redds in 1989 to an average of fifty-eight redds between 1989 and 2008. The Copper Creek drainage (including Snowbank Creek)

has experienced a resurgence of bull trout redds—from eighteen in 2003 to 117 in 2008—since the 2003 Snow Talon Fire. The total number of redds counted in these three streams (Monture Creek, North Fork, and Copper Creek) increased from thirty-nine in 1989 to 217 in 2000. With the onset of drought, bull trout redd counts then declined to 147 in 2008. These changes are attributed to protective regulations first enacted in 1990, restoration actions in spawning streams during the 1990s and a period of sustained drought between 2000 and the present (Pierce et al. 2008).

Grizzly Bear

Grizzly bears are currently listed as a federally threatened species in the Northern Continental Divide Ecosystem (NCDE)(USFWS 2009c). Many scientists recognize the grizzly bear as an “umbrella species,” as the preservation and management of good-quality grizzly bear habitat will benefit many wildlife resources and plants. Grizzly bears require large amounts of land to roam in search of food and mates. The population numbers of grizzly bears are a publicly and scientifically recognized indicator of the health of many ecosystems. The NCDE is an area of the northern Rocky Mountains with large blocks of protected public land containing some of the most pristine and intact environments found in the contiguous United States. The NCDE supports the largest population of grizzly bears in the lower 48 states. Despite dramatic losses of habitat throughout North America, the grizzly bear has maintained a presence in Montana and occurs in portions of the Blackfoot Valley watershed. The watershed is



Collared grizzly bear movement data is used to assess populations.

the southern boundary for the NCDE grizzly bear recovery zone. The Grizzly Bear Recovery Plan (USFWS 1993) includes most of the watershed as suitable or occupied habitat.

The U.S. Geological Survey (USGS) Northern Divide Grizzly Bear Project, designed to estimate population size and distribution, confirmed the presence of twenty-nine individual grizzly bears in the Blackfoot River watershed in 2003 and 2004. The USGS estimates that at least forty bears are present during all or part of the year in the watershed (USGS 2004). In recent years, grizzly bear activity has increased in the watershed. This area appears to be an important habitat link for grizzly bears that are re-colonizing historical ranges to the south. Maintaining habitat connectivity is critical for maintaining sustainable subpopulations of grizzly bears within the southern portion of the NCDE.

Grizzly bears breed, forage, and migrate throughout the watershed and den above 6,500 feet. They move from high mountain elevations to lower valley bottoms to forage seasonally for available food. Lakes, ponds, fens, and spring-fed creeks, common in portions of the valley floor, provide excellent bear habitat. Additionally, the vegetation found along certain reaches of the Blackfoot River and its tributaries provide bears with cover, food, and natural movement corridors.

Canada Lynx

The Canada Lynx Recovery Outline categorized lynx habitat and occurrence within the contiguous United States as (1) core areas, (2) secondary areas, and (3) peripheral areas. Core areas are defined as the areas with the strongest long-term evidence of the persistence of lynx populations. Core areas have both persistent verified records of lynx occurrence over time and recent evidence of reproduction. Six core areas and one “provisional” core area are identified within the contiguous United States. The Blackfoot River watershed is located within the Northwestern Montana/Northeastern Idaho Core Area (Ruediger et al. 2000). The watershed is a stronghold for the Canada lynx in the northern Rocky Mountains. Based on ongoing research in the upper and middle Blackfoot areas, lynx populations appear stable, although low reproductive rates are characteristic of this population. Since 1998, over eighty lynx have been monitored in the watershed, providing information on habitat use, reproduction, mortality, and movement. This research has shown that the watershed contains some of the most critical habitat for lynx in the continental United States. Large, intact spruce/subalpine fir forests above 4,000 feet in the watershed provide high quality habitat for lynx and for snowshoe hares, the primary lynx food source. Regenerating forest stands are often used as foraging habitat during the snow-free months while older, multi-storied stands serve as denning and year-round habitat (Blackfoot Challenge 2005).

Northern Rocky Mountain Gray Wolf

The Northern Rocky Mountain Gray Wolf Recovery Plan established three recovery zones in Montana, Idaho, and Wyoming. The Blackfoot River watershed is in the Northwest Montana Recovery Area (USFWS 1987). In March 2009, the Service removed the gray wolf from the list of threatened and endangered species in the western Great Lakes, the northern Rocky Mountain states of Idaho and Montana, and parts of Washington, Oregon, and Utah (USFWS 2009c). As of 2009, Montana Fish, Wildlife and Parks has confirmed the presence of four resident wolf packs and estimates that at least twenty-five to thirty-five wolves inhabit the watershed. In August 2010, the gray wolf was relisted as an endangered species.

CULTURAL RESOURCES

The Service has a trust responsibility to American Indian tribes that includes protection of the tribal sovereignty and preservation of tribal culture and other trust resources.

Currently, the Service does not propose any project, activity, or program that would result in changes in the character of, or adversely affect, any historical cultural resource or archaeological site. When such undertakings are considered, the Service takes all necessary steps to comply with Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended. The Service pursues compliance with Section 110 of the NHPA to survey, inventory, and evaluate cultural resources.

SOCIOECONOMIC ENVIRONMENT

The Blackfoot River watershed includes the communities of Lincoln, Helmville, Ovando, Seeley Lake, Greenough, Potomac, and Bonner and spans portions of Missoula, Powell, and Lewis & Clark counties. There are approximately 8,100 people and 2,500 households in the watershed. In this 1.5 million-acre watershed, this amounts to less than one person per square mile. The population is spread throughout the valley, with population densities reaching 300 people per square mile in Seeley Lake, Potomac, and Bonner. The middle and high elevation portions of the watershed remain largely undeveloped. In 1995, between 8% and 18% of the current residents of the watershed had their primary residence located out of state (Blackfoot Challenge 2005).

Most of the rural population is involved in ranching and livestock production. Hunting of a wide variety of game species occurs on private lands. A seasonal influx of tourists are attracted to the Blackfoot Valley for opportunities to bird watch, mountain-bike, horseback ride, backpack, camp, canoe, fish, and view archeological and paleontological resources.

AGRICULTURAL RESOURCES

The economy of the Blackfoot Valley is largely agrarian. Large cattle ranches dominate the private lands within the project area. The population is sparse and towns are small and widely-scattered.

LANDOWNERSHIP

Landownership in the watershed is 54% federal (U.S. Forest Service, U.S. Fish and Wildlife Service, Bureau of Land Management), 10% state (Montana Department of Natural Resources and Conservation; Montana Fish, Wildlife and Parks; and the University of Montana), 31% private, and 5% by corporate timber company (Plum Creek Timber Company) (see figure 3). Most of the middle and high elevation forested lands within the watershed are administered by the USFS. Private lands are concentrated in the low elevation portions of the watershed. Landownership patterns in the watershed have changed in recent years due to large-scale transfers of PCTC lands. Project areas where a mosaic of private and public ownership exist are under the greatest threat and are in most need of conservation protection.

PROPERTY TAX

Currently, landowners pay property taxes on their private lands to the counties. The Blackfoot Valley WMA expansion is a proposed conservation easement project; the land does not change hands and therefore, the property taxes paid by the landowner to the county are not affected. No changes to the tax base are anticipated.

PUBLIC USE AND WILDLIFE-DEPENDENT RECREATIONAL ACTIVITIES

Hunting and fishing are very popular throughout the project area. Hunting for a variety of wildlife includes waterfowl, upland game birds, elk, moose, deer, black bear, bighorn sheep, mountain lion, and furbearers. Private landowners often give permission for hunting and fishing on their land. Public access to conservation easement lands would remain under the control of the landowner.

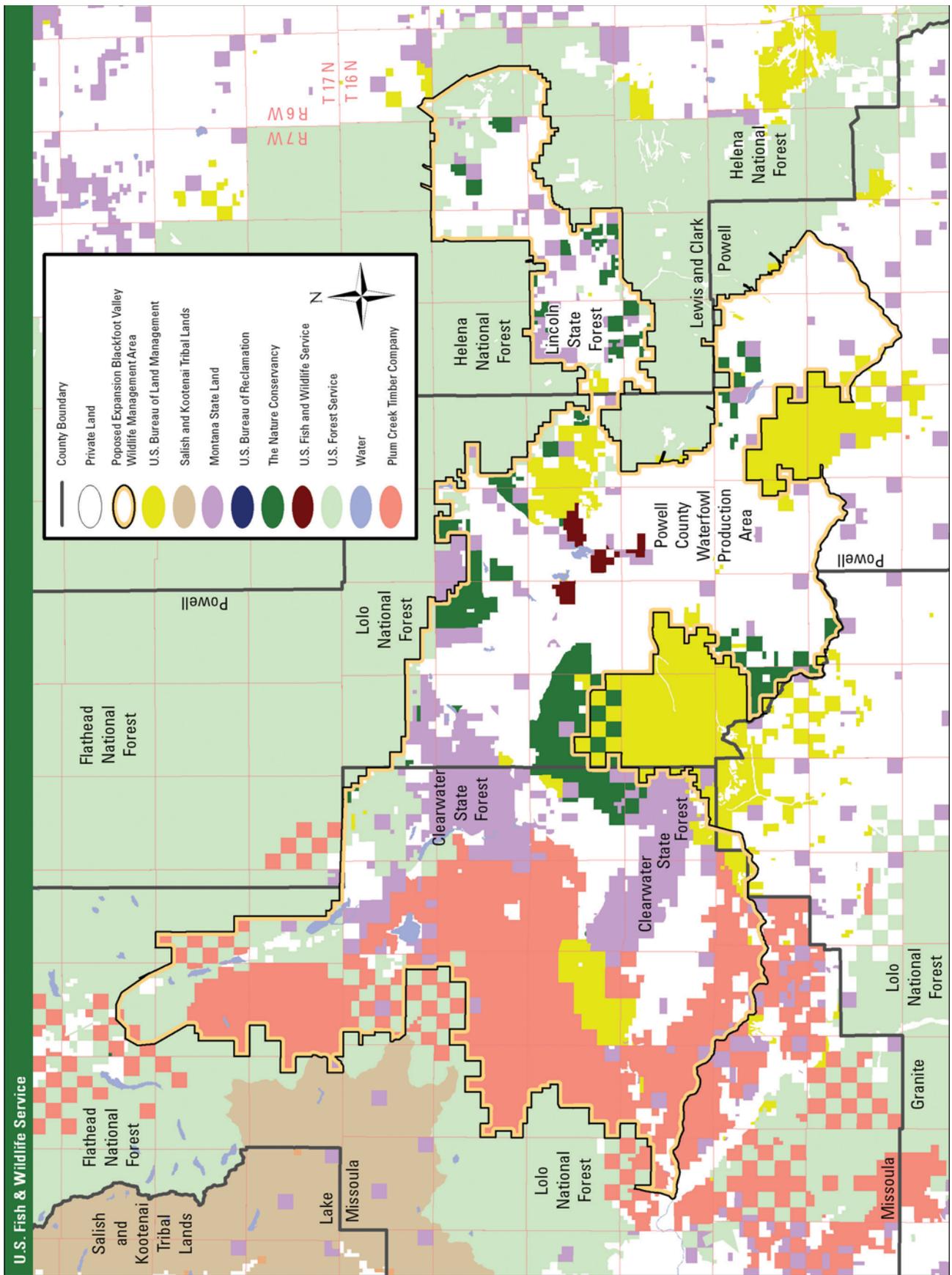


Figure 3. Landownership in the Blackfoot Valley Wildlife Management Area project area.