Multiple Use in the Snake River Birds of Prey Area

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Ecological Relationships in the Area

The Snake River Birds of Prey Area, which is managed by the U.S. Department of the Interior, Bureau of Land Management's (BLM) Boise District, contains the greatest concentration of noncolonial nesting raptors (hawks, eagles, falcons, vultures, and owls) in the world. Each spring more than 1,500 raptors congregate to nest and raise their young in the sheltered canyons along this 80-mile stretch of the Snake River Canyon located south of Boise, Idaho. The Prairie Falcon, Golden Eagle, Red-tailed Hawk, Ferruginous Hawk, American Kestrel, Northern Harrier, Great Horned Owl, Common Barn-owl, Western Screech-owl, and Long-eared Owl nest in this area at unequalled densities. The Short-eared Owl, Burrowing Owl, Swainson's Hawk, and Turkey Vulture are less abundant. Bald Eagles and Rough-legged Hawks commonly winter in the area, and 9 other species use the area during the non-nesting season. Many other uses, including livestock grazing, occur with this raptor concentration.

The mix of geological features, soils, vegetation, and animal communities is found nowhere else in the world, and is ideal for supporting such a profusion and variety of raptors. The towering canyon walls provide a nearly endless supply of nesting sites, and the surrounding desert furnishes an abundant food supply.

In addition to the unique raptor population, the area supports a large diversity and abundance of wildlife consisting of more than 250 bird, mammal, reptile, amphibian, and fish species. It also contains one of the highest badger population densities recorded, with as many as 13 badgers per square mile.

The area is in the Upper Sonoran Life Zone with hot, dry summers and mild winters. Annual precipitation averages between 8 inches near the river and 12 inches towards the foothills. North of the canyon, soils consist of deep, finely textured loess deposits brought in from the west by Pleistocene winds. These deep, silty soils provide excellent substrate for burrowing rodents. South of the river, soils are primarily alluvial deposits, typified by outwash plains and "badlands." These soil differences result in variations in vegetation and prey.

Vegetation in the area is typical of the shrub steppe, consisting of both pure stands and mosaics of big sagebrush, winterfat, shadscale, rabbitbrush, black greasewood, grass and riparian vegetation types. In 1980 shrub vegetation types

The Prairie Falcon is the most abundant nesting raptor in the BOPA. More than 200 pairs, perhaps 5% of the world's population, nest in the cavities, crevices, and ledges of the towering cliffs. (Photo by M.N. Kochert)

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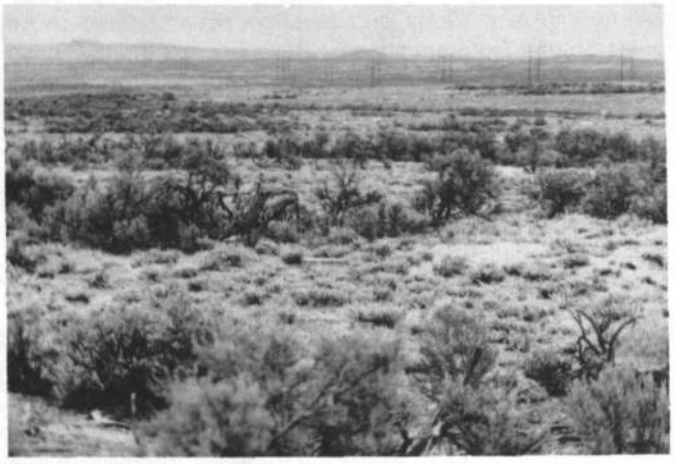

The discrete vegetation types support a wide diversity of prey species. This big sagebrush-winterfat mosaic is one of 20 vegetation types identified in the BOPA. Winterfat stands are quite old, with plants averaging 70 years (Yensen and Smith 1984). (Photo by L.O. Oftedahl)

(primarily big sagebrush types) comprised 74% of the rangeland. Numerous wildfires since 1980 have destroyed nearly 50% of the shrub habitat, converting it to areas dominated by annual and perennial herbaceous species. Alien plant species such as cheatgrass, Russian thistle, and annual mustards invaded the area about 1900 and are now common (Yensen 1980). White top, bur buttercup, and halogeton are also common in some areas.

The Snake River Canyon is the principal geological feature of the area. The cavities, crevices and ledges of the canyon provide a nearly endless supply of nesting sites for the raptors. The Swan Falls Dam (in the lower left corner), completed in 1901, is one of 7 sites within the BOPA that are on the National Register of Historic Places. (BLM photo).

Without the diversity and abundance of prey, the raptors would not occur at such high densities. Townsend ground squirrels and black-tailed jack rabbits are particularly important species. Townsend ground squirrels, the principal prey of prairie falcons, are most abundant in the grass and winterfat vegetation types. These squirrels exist almost entirely north of the canyon where the deep, silty soils occur and are

Wildfires are a recurring problem because of the abundance of annual plants such as cheatgrass. Fire converts shrub habitat to range dominated by herbaceous species, which is poor jack rabbit habitat. Efforts are being made to re-establish shrub species in critical raptor foraging areas (BLM photo)

almost nonexistent to the south. Prairie falcon hunting areas and reproduction are closely tied to ground squirrel distribtuion and abundance (U.S.D.I. 1979). Jack rabbits, the main prey of Golden Eagles, are found throughout the area with the greatest numbers in the big sagebrush and greasewood types. Eagle reproduction is closely related to jack rabbit abundance (U.S.D.I. 1979). Other important prey species include cottontail rabbits, ring-necked pheasants, yellow-bellied marmots, kangaroo rats, voles, and pocket gophers, as well as many species of snakes, lizards, and passerine birds. Some are secondary prey which serve as important buffer species for the raptors when their principal prey is scarce.

In addition to its rich raptor resource, the Birds of Prey Area is also noted for geological, paleontological, and cultural values. The geological features, of which the Snake River Canyon is foremost, are mostly of the Pleistocene Bruneau Formation which consists of basalt rocks, lake beds and alluvial fans. Extinct ancient volcanos dot the area, and vents and dikes can be easily seen throughout the canyon. The area teems with numerous and varied fossil specimens of seeds, leaves, fish, molluscs, and large mammals. More than 200 prehistoric sites associated with aboriginal Americans have been identified within the area. These sites range from

small camp and tool manufacturing sites to a 20-acre boulder field along the Snake River with petroglyphs or rock etchings.

Establishing the Area

The BLM became actively involved in raptor habitat management in 1971 with the establishment of the Snake River Birds of Prey Natural Area. This administrative withdrawal protected nesting habitat in a quarter to half-mile wide belt along 33 miles of the Snake River Canyon. It quickly became apparent that the narrow strip formed by the Natural Area protected the nesting habitat but not the critical foraging habitat. Also some of the foraging area was being converted to irrigated agriculture. Preliminary investigations showed that the Natural Area contained only about half of the unique nesting population. In light of these problems, the BLM initiated a team research project of BLM and university contract researchers to answer the following questions about the ecosystem:

- How large an area was needed to maintain the unique populations including their nesting and foraging areas?
- What were the effects of converting native range to intensive irrigated agriculture?
- What boundary was needed for the area?

The project, the first of its kind in the world, described the relationships among raptors, prey, and their habitats. Studies dealt with the reproductive biology and food requirements of the raptors as well as the abundance and distribution of the major prey species in relation to vegetation and land use. Radio telemetry was used to determine where raptors went and how large an area they used. The research found that conversion of additional shrub-grasslands to intensive large-scale irrigated agriculture was not compatible with maintaining the unique raptor population.

In 1979 research results were integrated in a comprehensive Special Research Report (U.S.D.I. 1979) which was delivered to the Secretary of the Interior with an Environmental Impact Statement and a proposed new boundary for the area. The present Birds of Prey Area was established in November 1980 by the Secretary of the Interior through an administrative withdrawal under Section 204 of the Federal Land Policy and Management Act. This 20-year withdrawal encompasses 482,640 acres of public land. Public land in the area is no longer available for agricultural entry through the Desert Land Entry or Carey Acts. Also, 65,000 acres extending a half to a quarter mile from the canyons are withdrawn from provisions of the Mining Law of 1872.

Multiple Use Management and Research

The Birds of Prey Area is significant because it is one of the few reserves whose boundaries were established based on ecological criteria. It is managed under a sustained yield and multiple use concept for those uses which are considered compatible with the raptors. The main uses identified in the BOPA Management Plan (U.S.D.I. 1985) are livestock grazing, recreation, and military training. Many other uses are allowed in the area, but the well-being of the raptors is foremost. Leasing and/or development for geothermal power, oil and gas, gravel, and power lines contain safeguards and stipulations to protect raptors.

Most of the public land within the area has been traditionally grazed by domestic livestock. Grazing began in the 1860's and boomed in the 1880's and 1890's. By 1900 the range was in extreme deterioration accompanied by the invasion of alien plant species such as cheatgrass (Yensen 1980). Severe droughts and harsh winters caused massive losses of cattle and sheep on the depleted range during the 1890's. With legislation such as the Taylor Grazing Act and subsequent improved management, the range has partially recovered, although it is currently in poor to fair ecological condition and may never improve to its original condition. Range improvement projects, better distribution of water, and more timely grazing were some of the factors contributing to this improvement. For example, prior to 1966 winterfat stands in the Birds of Prey Area were in poor vigor from winter-spring grazing. Since 1966 they have been grazed only in the winter, and conditions have improved markedly.

Presently 70 livestock operators are licensed in 24 allotments which are partially or entirely within the Birds of Prey Area. Prior to 1950, cattle and sheep were of equal importance; however, permits have been steadily converted from sheep to cattle. Presently 46,000 animal unit months are licensed annually. Spring and fall are the most common use periods in areas away from the Snake River, while the lower elevation shrub communities near the canyon are grazed during winter. Because natural water sources are rare, water must be hauled. Fire rehabilitation seedings, are usually fenced and managed separately from native rangelands or post-fire annual grasslands.

The area offers opportunity for a wide variety of recreationist uses. Visitors use the area mainly between March and July primarily for fishing, bird watching, and sight-seeing. To protect raptors in the canyon the BLM does not allow firearm shooting from March 1 to August 30, or driving vehicles off designated roads all year. Human activity near nests during incubation and early broodrearing (early spring) is also discouraged. The staff conducts information and education programs to increase public awareness of the regulations and unique values of the area.

Approximately 130,000 acres of public land north of the canyon are used for military training maneuvers, primarily by artillery and tanks, under a 25-year Memorandum of Understanding between the BLM and the Idaho National Guard. The Birds of Prey Area Environmental Impact Statement considered levels of military activity in 1979 compatible with the raptors, but if certain activities were later found to be detrimental they would be modified or curtailed. The BLM and the National Guard are engaged in cooperative management efforts within the maneuver area including a cultural resources inventory, fire suppression, and rehabilitation of burned rangeland.

Although fire has been a normal component of this environment, the invasion of alien annual plant species such as cheatgrass has changed the situation in terms of the effects of fire. Studies in the area show that big sagebrush and shadscale do not survive intense fires nor do they resprout; winterfat survival and resprouting is less than 5%. Herbaceous species, primarily cheatgrass, annual mustards, and six weeks fescue, dominate most burns if they are not rehabilitated. These annual plant species are highly combustible, thus increasing future wildfire size and frequency. Fire suppression costs escalate, adjacent unburned shrub habitat is burned, and livestock carrying capacity is lowered. Most of

the soils in the area are highly erosive, and the potential for wind eroison is high when the vegetative cover is lost. Most importantly, habitat for some major prey species is lost. For example, 90,000 acres or one-third of the big sagebrush-dominated rangeland in the Birds of Prey Area have burned since 1975. Because big sagebrush is prime jack rabbit habitat and Golden Eagles appear to depend on jack rabbits, BLM managers are concerned about the long-term effects of extensive losses of big sagebrush habitat on both rabbit and eagle populations.

In an effort to reduce shrub loss, fire suppression in the area is a high priority in the Boise District's fire management program. During multiple fire situations in the district, fires occurring in the Birds of Prey Area are fought first with exception of those outside of the area that threaten human life or property. Fire suppression, however, is extremely difficult primarily because of logistics, the abundance of cheatgrass, and erratic weather conditions. A 1985 fire, only 35 miles from Boise, burned 5,200 acres in the Birds of Prey Area even though it was the only fire in the district and all fire fighting forces available in the district were used.

As another means of fire suppression, the BLM is implementing a vegetative fuel break or "greenstrip" program in the Birds of Prey Area. Fire resistant perennial species, such as "Hycrest" crested wheatgrass and "Immigrant" kochia, are being planted around the borders of shrub stands and along well traveled roads to reduce the spread and size of wildfires.

Even with priority fire suppression, habitat losses to wildfires still occur. The district has implemented an emergency fire rehabilitation program in the Birds of Prey Area which includes seeding with multi-species mixtures. Native herbaceous species including Indian ricegrass, bluebunch wheatgrass, and basin wildrye are included with the "standard" seed prescriptions of crested wheatgrass and Russian wildrye. Yellow sweetclover and alfalfa are the most frequently used forbs, and fourwing saltbush is the most commonly applied shrub; it is seeded on former sagebrush areas at rates of 1 to 6 pounds per acre. Most of the seedings have been successful although seeding on the drier sites (8 to 9 inches of precipitation) can be risky because of poor germination and high seedling mortality. Many of the seedings took 2 to 3 years to become established, especially those containing native species.

There is a concentrated effort to re-establish shrub species in critical areas within the Birds of Prey Area. Prior to 1981 winterfat was not considered for fire rehabilitation. With the large losses of winterfat in 1980 and 1981, a fire rehabiliation plan was developed that included winterfat in the precipitation. A modified hydroseeder was first used to seed winterft (Pellant and Reichert 1984); however, seed is now pelleted with a clay coating and aerially applied or broadcast from pick-mounted seeders at half the cost of hydroseeding. In 1985 experimental sagebrush seedings were initiated to evaluate seed application techniques and seeding success in burned jack rabbit habitat.

The effectiveness of these management efforts as well as changes of the raptor population will be monitored in the Birds of Prey Area. The monitoring program focuses on raptors, prey, and vegetation as well as recreational, grazing, and military uses. Some studies also assess vegetation changes related to fire, grazing, and climate. Effects of fire are being assessed at permanent winterfat, big sagebrush, and shadscale study sites. The impacts of livestock grazing are being evaluated at five exclosures (between 40 to 160 acres in size) in the same vegetation types plus a grass site. Cover measurements and frequency of occurrence (U.S.D.I. 1984) are the 2 most common vegetation parameters collected. Livestock use supervision and utilization studies are used to make short-term adjustments in stocking levels.

Research now consists primarily of cooperative studies. A study with Idaho Power Co. and Pacific Gas and Electric Co. focuses on the effects of industrial and recreational disturbance on nesting prairie falcons. One study with Pacific Power and Light Co. addresses the impacts of ravens on a 500 kV transmission line in the area and how industry and ravens can coexist. Another PP&L study assesses nesting use by raptors and ravens on this transmission line and the effectiveness of artificial nesting platforms on the towers. In addition the BLM has begun collecting baseline data for long-term research on the effects of wildfires on the stability of the unique raptor populations.

The public land administered by the BLM in the Birds of Prey Area has captured national and international attention. The area is truly a unique ecosystem which offers challenging multiple use rangeland management opportunities.

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Youth Forum participants should be making plans soon for the SRM Annual Meeting in Boise, Idaho. Sections are urged to enable at least one high school student to have this memorable experience. Names of participants should be sent as soon as possible to: Sherri L. Mauti, P.O. Box 59, Whiteriver, Arizona 85941, (602) 338-4364 day, 338-5237 eves. She'll also have the answers to your questions.