

## Species Accounts

We provide a literature review account of overall range and status and currently known local information on the occurrence, productivity and habitat use for each species of raptor which occurs in the Snake River study area. In addition, we provide an account of species-specific detection methods.

### Bald Eagle (*Haliaeetus leucocephalus*)

Bald eagles were once widespread throughout North America, but were extirpated from much of their historical range over the past century by habitat loss and direct, human induced mortality (Lincer et al. 1979). Today the Greater Yellowstone Ecosystem supports one of the larger breeding bald eagle populations in the Northern Rockies, with over 90 breeding pairs in the tri-state area around Yellowstone National Park (Swenson et al. 1986, Greater Yellowstone Bald Eagle Working Group 1994). The bald eagle is federally listed as an endangered species in the region of Idaho and Wyoming, and as an endangered species by both states. However, dramatic population recovery in most areas of the United States, including Greater Yellowstone, has led management agencies to promote downlisting to threatened status.

### Local Occurrence

Bald eagles of the Greater Yellowstone Ecosystem have recovered dramatically from historic low levels in the 1950s and 1960s. Most of this recovery followed cessation of DDT use in the region (Swenson et al. 1986). Today, Southeast Idaho's 39 active bald eagle nesting territories, 14 in the smaller study area, are among the most productive in the region (Whitfield et al. 1994).

Bald eagles may be seen within the entire study area, particularly along the river margins, during some portion of the year. Nests occur within 3 of the raptor sample areas. Bald eagles may forage within every sample unit, and were

seen in multiple quadrats within six sample sections.

### Reproductive Biology

Bald eagles on the Southeast Idaho begin nesting in late February to late March (Whitfield 1993). Incubation lasts for about 32-35 days (Herrick 1932), with fledging at about 10-12 weeks after hatching (Stalmaster 1987). Young immatures may remain in the vicinity of the nest up to 6-8 weeks after fledging before migration to winter areas outside the region (Whitfield 1993). Between 1988-1994 in southeast Idaho, advanced young/occupied nest averaged at 1.31, although productivity dipped to a low of 0.69 advanced young/occupied nest in the cold wet spring of 1993 (Whitfield et al. 1994).

### Ecology and Habitat Relationships

Bald eagles typically nest, perch, and hunt along major waterways. They require habitats that offer a diverse and abundant prey base, relative freedom from disturbance, particularly in nesting areas, and trees of suitable size for nesting, perching and roosting (Greater Yellowstone Bald Eagle Working Group 1983). Suitable habitat in the study area is found along the South Fork and Henry's Fork of the Snake River. The confluences of major tributaries are often favored nesting and foraging areas.

Bald eagles require large trees to support their heavy nest structures. Bald eagles will nest on artificial support structures placed in conifer or cottonwood trees for their use; bald eagles have nested on five such structures that we have placed in existing southeast Idaho nesting areas. In Southeast Idaho, most bald eagle nests are in cottonwoods and Douglas-fir, with one nest in an aspen. Nesting areas must also offer relative freedom from human disturbance within at least the first two months of the long nesting season. Bald eagles in Southeast Idaho forage upon a variety of prey items, but fish are by far the predominant prey taken (Whitfield et al. 1991, Whitfield 1993).

Winter bald eagle habitat is dependent upon healthy fish and waterfowl populations and secure perches and roosts. An important communal winter roost is known in the Deer Parks area (J. Gardetto pers. comm.).

#### Detection Methods

Bald eagles typically build very large stick nests in the largest trees available within proximity of foraging habitat. These nests are usually very visible, particularly those in cottonwoods. However, some conifer window nests can be difficult to detect when in forested areas far from water. Surveys for new bald eagle nests are best done by a combination of aerial and ground surveys to detect nests.

Bald eagle vocalizations can lead observers to new nest sites. Adults are very vocally defensive within the vicinity of nest sites, usually when people on the ground approach within 1/4 mile of an active nest, and sometimes at much greater distances (Whitfield et al. 1991). A less intrusive, but more time consuming means of locating new nests is to visually track foraging adults from foraging areas back to nest sites with spotting scopes.

#### Golden eagle (*Aquila chrysaetos*)

Golden eagles occupy nearly all habitats in western North America, including desert grasslands to above timberline (Johnsgard 1990). Locally we find goldens along the Snake River in cliffs to high in the mountains above timberline. This species prefers hilly or mountainous country where takeoff and soaring are enhanced by updrafts, and open country for hunting. The golden eagle does not have any specific state or federal status in the United States; it is protected under the Eagle Protection Act of 1956.

#### Local Occurrence

Breeding densities are relatively low everywhere that the species is found, with breeding pair densities of from 26 to 32 square miles per

pair in suitable habitat (Smith and Murphy 1973). We are aware of five golden eagle eyries within the study area, all within the canyon segment of the South Fork. All of the known nest sites are on ledges in cliff faces. We saw golden eagles in two of the 1994 sample sections. Golden eagles are common winter residents of the entire study area.

#### Reproductive Biology

Egg laying could be expected in this area from mid-March to mid-April (Steenhof et al. 1991). Typical clutch sizes average about 2 eggs/nest (McGahan 1968, Beecham and Kochert 1975). Incubation is relatively long in this species, with a minimum of 41 days (Hobbie and Cade 1962). Nestlings fledge at about 72-84 days, and may remain with the adults for 11 weeks or longer (Hobbie and Cade 1962).

#### Ecology and Habitat Relationships

Golden eagles forage over open fields and dry pasture lands. Nesting typically occurs in cliffs around this region (e.g. South Fork of the Snake River). Historically, direct loss through trapping, shooting and poisoning has occurred throughout the western United States. Repeated human disturbance at nest sites and habitat modification are significant current impacts to the golden eagle. This mortality is directly tied to the perception of this species as a significant predator of domestic livestock. Predation upon livestock by golden eagles can be significant in some situations (Matchett and O'Gara 1987). In some localized areas, golden eagles have incurred significant losses from electrocution on powerlines (Phillips 1985). Nest disturbance may be a leading cause of golden eagle declines in some areas (Scott 1985).

#### Detection Methods

Given their large size, golden eagle nests are relatively easy to survey from the ground or the air. Large woody nests and whitewash ex-

crément on rock escarpments are good visual indicators of nesting golden eagles. Because of the openness of golden eagle country, nests may be detected in any season. Nests are typically found on cliffs, and secondarily in trees (cottonwoods and Douglas-fir), on the ground or on man-made structures (Call 1978, Kochert 1987, Johnsgard 1990). All golden eagle nests located within the study area have been located on rock cliffs or escarpments within sage/juniper habitat types on south facing slopes. Occupancy should be monitored annually since golden eagles will build and use alternate nests. Occupancy surveys can be initiated during courtship and the nest building phases which start around February in southeastern Idaho.

### Osprey (*Pandion haliaetus*)

The osprey is one of the more cosmopolitan and adaptable of the birds of prey. Osprey breed in North America, Europe, northern Asia, Australia and many islands to the north and east, and migrate to all other continents but Antarctica in winter (Poole 1989). The Greater Yellowstone Ecosystem features notably large osprey populations, but mostly around natural lakes and reservoirs rather than rivers (Swenson 1979, 1981). In the 1950s and 1960s, DDT caused osprey population declines in much of North America that persisted into the early 1980s (Henny 1986), but today the osprey is successful in most of its range. Greater Yellowstone populations appear to be expanding.

#### Local Occurrence

Numerous osprey nests are located along the lower Henry's Fork within the study area. Many of these pairs nest upon artificial structures placed specifically for their use. Fewer pairs are found along the South Fork, primarily in the lower reaches. Osprey have been more frequently seen within the canyon segment of the South Fork in recent years, with a suspected nest site in the Conant Valley area and another in the Stinking Springs area. Historic nest sites were found near

the mouth of Falls Creek on the South Fork. Palisades Reservoir features approximately 25 active nest sites annually, with osprey from the reservoir often seen over the South Fork below Palisades Dam. We detected osprey in two sample sections.

It appears that the primary indicator of osprey habitat within the study area is the proximity of fishable water. Osprey are found historically or currently nesting within Douglas fir, on train trestles and bridges, and numerous artificial structures within the cottonwood forests of the lower river.

#### Reproductive Biology

Osprey typically return from southern winter ranges to this locale in early April, with an incubation period of approximately 39 days. Clutch sizes for a 3-year study of an expanding osprey population in central Idaho averaged at 2.58 eggs/nest (Van Daele et al. 1980), with an average of 2.0 young/successful nest for 96 successful nesting attempts. Swenson (1975) found an average clutch size of 2.23 eggs and brood size of 1.55 young for Yellowstone Lake's stable population.

#### Ecology and Habitat Relationships

Osprey forage almost exclusively on fish (Poole 1989). Thus, nest sites and perches are most often associated with water bodies, although nest sites may be several miles from water. Nests are built upon almost any structure that will support a large pile of stick material. Osprey are notably tolerant of human activity and structures. They are disturbed, however, by activities that are directly threatening.

#### Detection Methods

As with golden and bald eagles, the size and location of osprey nests make this species relatively easy to census and monitor. The tendency to nest on the top of broken topped trees, man-made structures (including telephone poles)

or rock pinnacles, enhances the delectability of nests. Both aerial and ground surveys can be used in censusing. Survey priorities are along waterways, lakes and reservoirs and secondarily up to 3 miles from water where osprey may occasionally select nest sites. Though osprey have a strong fidelity to historic nest sites, nests are occasionally usurped by other species and should thus be surveyed annually for occupancy.

### Turkey Vulture (*Cathartes aura*)

The turkey vulture is migratory throughout much of its range, which is most of the United States at about 50 degrees latitude (Jackson 1983). Turkey vultures breed from Canada to southern South America, and from the east to the west coasts of North America. The distribution of the turkey vulture in the western United States is thought to have remained the same from historic to current times. Turkey vultures are commonly seen soaring around human residents which gives the impression that this scavenging bird is common. A number of recent reports suggest the decline of turkey and black vultures (*Coragyps atratus*) in certain regions (Wilbur 1983, Tate and Tate 1982, and Brown 1983) with an overall stable national population (Robbins et. al. 1986). Population trends based upon cursory observations (little quantitative data) suggest increases in Montana, decreases in Oregon and California populations, and an stable national population (Robbins et. al. 1986). Significant population increases in the eastern United States are thought to be responsible for increases suggested in Montana. Expanding urbanization along the west coast is thought to be responsible for population decreases observed in Oregon and California.

#### Local Occurrence

Turkey vultures were commonly observed throughout our study area this past season. The majority of observations are of birds soaring high above the river corridor and over agricultural lands. No nests or roosts sites have

been located in the study area. Many of the same areas used by golden eagles may also provide suitable turkey vulture habitat. Turkey vultures were recorded in two sample sections.

#### Reproductive Biology

We lack specific information on the nesting chronology of turkey vultures for the study area. Jackson (1983) summarized the reproductive success, nesting phenology and nest site selection for turkey vultures from throughout North and South America. Many studies of this species are based upon the observation of a single pair or territory.

Turkey vultures return to southeast Idaho around the end of March. Observations of "dual sitting" by adults during the pre-nesting period of March to mid-April occurs near what may become the eventual nest site (Davis 1979). Egg laying is estimated to occur in mid-April, with an average of 2 eggs per nest. Clutches may range from 1-4 eggs. The incubation period has been documented from 28-42 days. Data supporting the longer incubation period is better substantiated. The prolonged incubation period is thought to be in response to the cold microclimate of caves turkey vultures often use as nesting sites. Renesting, though known to occur with black vultures, is thought to rarely occur with turkey vultures. Hatching may occur on the same day or be delayed over a 2-3 day period. The nestling period, in which young have not yet left the nest, varies considerably in the literature from 56-88 days (Jackson 1983). There is little information on the length of the post-fledging period though it too is expected to be prolonged (Jackson 1983). Based upon the above mentioned nesting chronology, fledging is expected from late July to late August (Brown and Amadon 1968). Coleman and Fraser (1989) estimated a reproductive rate of 0.42 young per nest.

#### Ecology and Habitat Relationships

The turkey vulture participates in a

number of gregarious behaviors. Turkey vultures communally roost throughout the winter months of September to March. They have been observed in numbers of 250-500 birds per winter roost. Roost trees may be either coniferous or deciduous species, and are of a structure that provides a protective micro-climate against wind and cold temperatures (Thompson et. al. 1990). The location of roosts is related to food availability and ease in soaring.

Around March, turkey vultures disperse and are found singly or in fewer numbers at roosts until September. They are also seen soaring in large groups called "kettles". It has been theorized that these gregarious behaviors have the benefit of communicating food resources (Rabenold 1983, 1987; Sweeney and Fraser 1986). Turkey vultures utilize large home ranges ( $x=37,072$  ha) throughout their 6 month nesting season (Coleman and Fraser 1989). Turkey vultures show a lot of variability in their habitat use throughout the west, utilizing forested environments for roosts and nesting and open country for foraging habitat, due to increased food observability and increased food availability in agricultural lands. Turkey vultures may also select areas that have numerous roads, again because of the increased availability of carrion. Turkey vultures scavenge on carrion ranging in size from large domestic animals to small birds and mammals.

Nesting habitat includes arid western plains and mountains, temperate forests and tropical lowlands (Pattee and Wilbur 1989). Nests are located on rock ledges in caves, down trees and buildings. (Davis 1983, Ritter 1983, Coleman and Fraser 1989). These ledges are not necessarily high or large in area. Nest material is not brought in, but a scrape may be made in the ledge substrate. Turkey vultures appear to usually select nest sites that are within a forested environment and that have few roads and no buildings (Coleman and Fraser 1989).

#### Detection Methods

Turkey vultures do not randomly occur over

their large home ranges, but focus their activities around roosts and feeding sites. They also tend to perch and soar near their roosts and perch near nest sites (Coleman and Fraser 1989). Thus observations of soaring and perched birds during the nesting season can narrow the search of roosts and nests. Turkey vulture nests are not easily located for a number of reasons: 1) they do not audibly defend their nests as do most other raptors and 2) to minimize predation of their odiferous nests, vulture nests tend to be obscurely placed on the landscape in a variety of substrates. Pre-field review of topographic maps and aerial photos for arid country with broken topography that create updrafts, cliffs and rock fields near forests in which roosts are often located is the initial step. Field surveys start with an investment of time watching for adults consistently present in an area. Once observed, adults can often be followed to potential nest locations. Otherwise coursing through potential nesting habitat, including surveys of rock outcrops, boulder fields, abandoned buildings and fallen logs, can result in location of active nests (Coleman and Fraser 1989). Assessment of turkey vulture populations in New Mexico have been based upon road transect surveys over several years (Hubbard 1983).

#### Red-tailed Hawk (*Buteo jamaicensis*)

The red-tailed hawk breeds in Western and Central Alaska, throughout Canada and the United States, and into Central America, and winters in southern Canada and south within its breeding range (Johnsgard 1990). It is currently unknown where Snake River red-tailed hawks winter. In contrast to most other North American raptors, the red-tailed hawk is expanding in numbers and distribution. Audubon Society counts suggest a 33% increase from the 1970s to the 1980s (Anonymous 1986). The current and historical distributions for red-tailed hawks in the western United States are identical (Harlow and Bloom 1987). The redtail is North America's most abundant wintering hawk, and one of the most abundant breeding hawks.