

VI. Raptor presence and habitat use

In prior years, we searched randomly selected quadrats to detect the presence or absence of raptor species (Whitfield and Maj 1996). Habitat associations in these searches were derived from general vegetation cover type as developed by Ulliman et al. (1991), which includes 30 general types. However, as indicated in our reports, most of the quadrats sampled actually feature a complex mosaic of vegetative cover.

Our presence/absence surveys did not differentiate raptor habitat use by type of use, foraging, roosting or nesting. Most of the raptor species observed here appear to use different habitats for these different types of use. Our observations, and literature accounts for raptor species which use forested habitats, indicate that stand structure, as indicated by tree height, diameter, canopy cover and density, is often a more important determinant of raptor presence than tree species.

In 1994 and 1995, we recorded presence/absence surveys in 437 randomly selected sample quadrats, with at least one raptor detected in 179 sample quadrats, and no birds seen in 258 sample quadrats (Whitfield and Maj 1996). We detected 20 raptor species within the study area, and summarized the raptor occurrences by general vegetative cover type. In 1996 and 1997, we continued to record raptor occurrences as we refined our habitat descriptions. We revisited previously sampled quadrats to refine our descriptions of habitat features selected by individual raptor species.

Species Habitat Accounts

We earlier provided a tabulation of general vegetation types used by raptors within our study area (Whitfield and Maj 1996). Below we summarize species-specific breeding raptor habitat relationships learned to date.

Bald Eagle, *Haliaeetus leucocephalus*

Bald eagles typically nest and forage along major waterbodies. Breeding areas are selected for three primary habitat features: a diverse prey base, relative freedom from human disturbance, and trees of suitable size to support very large nest structures (Swenson et al. 1986, Harmata and Oakleaf 1992, Whitfield 1993).

As of the 1997 nesting season, there were 17 known bald eagle breeding areas within the Snake River study area. Among the occupied nests in 1997, 15 were in cottonwoods and 2 in Douglas fir. Nest trees are usually the largest, tallest trees available within the breeding area. Nest sites are often near the mouth of a tributary stream or areas with multiple channels, both of which may contribute to a locally enhanced fishery. Nests are usually located on shorelines or islands where human activity is deterred by vegetation or topography.

Bald eagles were detected in 63 of the sample quadrats examined in 1994-1995. Of this total, 46 were in cottonwood habitats, 2 over sagebrush, 3 over river, 7 in Douglas-fir, 2 over plowed fields, 2 over permanent pasture, and 1 in cliffs. In the past two years, we have noted bald eagle use of almost all reaches of the river system during some season. These large, dominant raptors use very large breeding areas, often several km in length, and appear most limited by the three primary factors mentioned above.

Golden Eagle, *Aquila chrysaetos*

Golden eagles prefer hilly or mountainous country where takeoff and soaring are enhanced by updrafts, and open country for hunting (Beecham and Kochert 1975, Hobbie and Cade 1962, McGahan 1968, Smith and Murphy 1973). Golden eagles forage over open fields and dry pasture lands. Nests are typically found on cliffs, and secondarily in trees (cottonwoods and Douglas-fir), on the ground or on man-made structures. Repeated human disturbance at nest sites and habitat modification are significant current impacts to the golden eagle (Steenhof et al. 1991).

We have detected golden eagles in 11 records within the nesting season, 7 over sagebrush-bitterbrush habitats, 2 over an upland grassland, and 2 over a cliff. We are aware of 5 historic golden eagle nest sites within the study area, all on cliff ledges between Pine Creek and Heise. However, none of these sites were noted as active during 1996 and 1997 nesting seasons. Habitats at all of these nest sites includes sagelands above the nest cliff, with cottonwood bottomlands below. Golden eagles have been seen foraging in open areas in both of these primary habitats.

Osprey, *Pandion haliaetus*

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 (Swenson 1981, Van Daele et al. 1980). They may be found in greater densities around reservoirs than most streams (Swenson 1981), perhaps because of the abundance of readily available fish. Nests are built upon almost any structure that will support a large pile of stick material. Osprey nest on the top of broken topped trees, man-made structures (including telephone poles), rock pinnacles, and many other structures. Although notably tolerant of human activity and structures, osprey are disturbed by activities that are directly threatening.

During our sampling in 1994-95, osprey were seen in 3 samples, 2 over cottonwoods and 1 in Douglas fir. In the subsequent years we have seen osprey coursing through the South Fork Canyon, including locations in Conant Valley, near the mouth of Pine Creek, and below Clark Hill. The only osprey nest sites we have discovered are at the trestle below Heise, along the lower river below the confluence and on the lower Henry's Fork. We suspect a nest in the Conant Valley area some distance from the river. Most known nests are on man-made structures, and do not appear to be associated with any specific

vegetative features. Prey availability appears to be the primary determinant of osprey occurrence.

Northern Goshawk, *Accipiter gentilis*

The northern goshawk is most often associated with mature and old growth forests, relatively open forests with flight alleys below the canopies (Reynolds et al. 1982). Most nest sites found on the nearby Targhee National Forest are in mature Douglas fir, with some sites in aspen and lodgepole (Patla 1991). This species is intolerant of human disturbance, and requires nesting areas that are relatively free of human activity. Goshawks forage in many habitats for a variety of birds and mammals, including open pastures, sagelands, and a variety of forested habitats.

We have seen goshawks on six occasions within the Snake River study area, three observations in Douglas fir, two in aspen forests, and one in a cottonwood stand. One goshawk nest site is known in a large, mature cottonwood stand on the lower South Fork. Another is located in a mature, open-grown Douglas fir stand on a north exposed South Fork tributary. Both of these stands are adjacent to undeveloped open habitats, wet meadows in the case of the cottonwood nest, sagelands near the Douglas fir stand. Within mature aspen stands in the Rocky Canyon area above the river canyon rim, we found five old goshawk nests. Among these aspen nest trees, average tree height was 58 feet, nest height 40 feet, and DBH 12.9 inches. All five aspen nests were in areas with dense shrub understory 3 to 6 feet tall. Expansive shrublands surround these aspen stands. We have seen adult goshawks in this general area predating upon waterfowl in early spring.

Cooper's Hawk, *Accipiter cooperii*

The Cooper's hawk nests within deciduous and mixed forests such as those found along riparian zones, and within small woodlots or in semiarid stands (Reynolds 1989). More so than other accipiters, Cooper's hawks will utilize open, small forested stands and second growth forests (Beebe 1974, Reynolds et al. 1982, Moore and Henny 1983). When found in large continuous forests, Cooper's hawks often nest near the edge of the stand. Cooper's tend to build nests within the tree crown canopy or on mistletoe growths. Both strategies are thought to provide more cover and security from predators (Moore and Henny 1983). Cooper's hawks tend to nest in conifer stands intermediate in age and tree density to areas selected by sharp-shinned hawks and goshawks, with sharp-shinned hawks in the younger, denser stands (Reynolds 1983).

We have thus far recorded five occurrences of Cooper's hawk, 3 in cottonwood forests, and 2 in Douglas fir. Two Cooper's hawk nest sites were recorded in cottonwoods within the study area. The nest sites were in relatively large, mature cottonwood stands with canopy closure averaging 70% and moderate shrub understory. The Douglas fir forests where nests were located were of mixed age, with interspersed aspen. Canopy coverage around the nests was 100%, but varied greatly in the near vicinity.

Sharp-shinned Hawk, *Accipiter striatus*

Sharp-shinned hawks use the youngest, most dense forest stands of the three accipiter species. Cover from predatory raptors is important to this small accipiter. Sharp-shinned hawks nest in the thick foliage of dense conifer stands and some mixed deciduous forests (Reynolds et al. 1982, Moore and Henny 1983, Reynolds 1989). The combination of a conifer patch within a larger deciduous stand is thought to provide preferred nesting habitat (Platt 1976, Reynolds 1989, Joy et al. 1994). Sharp-shinned hawks may prefer north facing conifer stands thought to represent more mesic habitat (Reynolds and Wight 1978). Foraging occurs in a variety of habitats, including shrub communities, deciduous and conifer forests and open habitats adjacent to nesting habitat. Conifer stands are identified as important in providing a diversity of passerine bird species, the primary prey of this highly specialized, bird-catching predator (Joy et al. 1994).

All five of our sharp-shinned hawk observations within the Snake River study area were in Douglas fir habitats above the river bottom. The Douglas fir stands were mature but stagnant with relatively small diameter, densely-grown trees. Slopes were relatively steep, about 40%, and north exposed. Canopy closure averaged 75%. Shrub understory was dense, with lots of ninebark in several locations.

Red-tailed Hawk, *Buteo jamaicensis*

Red-tailed hawks are diverse in nest site selection; conifers and hardwoods or on cliffs or other elevated sites where trees are lacking (Smith and Murphy 1973, Johnson 1975). In forested areas, nests are typically in the crowns of tall trees or in trees on high points (Titus and Mosher 1981). Nests are usually at the edge of dense stands or within open canopy forests in tall trees, not in the interior of dense forest (Gates 1972), although they will occasionally nest in large tracts of unbroken forest. Red-tailed are associated with grasslands that feature more tall trees (perch sites) than are sympatric Swainson's and rough-legged hawks (Cottrell 1981, Janes 1985). In forested settings, red-tailed hawks nest and perch in forest edges near open areas. Red-tailed hawks are often found in upland hardwood forests, aspen and cottonwoods in the northern Rockies, and grass dominated cover types. Most of the hunting is in short grass areas (Peterson 1979). Howell et al. (1978) noted that breeding areas with high proportions of fallow pasture relative to crop pasture had greater productivity. Roosting is most commonly in groups of trees with dense foliage.

Red-tailed hawks occurred in 44 of our sample quadrats, with 21 in cottonwood stands, 8 over sagebrush, 7 in Douglas fir forest, 3 in aspen, 1 over small lodgepole, and 2 over plowed fields. We detected nesting by red-tailed hawks in 7 cottonwoods, 1 aspen and 2 Douglas fir habitats. All of the cottonwood nests were in tall, prominent cottonwoods in lower river areas, with dense shrub understory in the nest stands, and open areas nearby. The aspen nest was in a small, stunted aspen stand in the middle of cultivated

fields. The Douglas fir nest was in a prominent old-growth tree at the edge of a large stand of mature and old-growth trees.

Swainson's Hawk, *Buteo swainsoni*

Swainson's hawk nesting areas are usually in broken grasslands and cultivated areas with scattered trees (Dunkle 1977). These hawks return to old nests, and also use old magpie nests, or old crow or raven nests (Fitzner 1978). Swainson's hawks commonly forage over hayfields and meadows. Woodbridge (1987) reported that Swainson's hawks in California strongly preferred irrigated alfalfa fields over drier rangelands, probably because of the greater prey base. Bechard (1982) found that cultivated fields were not highly used for foraging until after crop harvest had reduced plant cover. He suggested that vegetative cover may have been more important in foraging habitat selection than relative prey density.

Swainson's hawks were seen 21 times: 8 in cottonwood habitats, 6 over croplands, 3 over grazed grasslands, 2 over plowed fields, and 2 perched at the edge of a Douglas fir forest. We saw this species near residential areas and cultivated fields. Swainson's hawk nests were found in cottonwood (2), aspen (1), and Douglas fir (1). Nests were within the canopies of sub-dominant trees, and, with the exception of one cottonwood nest on the river edge, were difficult to detect.

Feruginous Hawk, *Buteo regalis*

Feruginous hawks are typically resident of wide-open grassland habitats (Thurrow and White 1983). This species generally avoids forested or cultivated areas.

We did not observe feruginous hawks in the study area, although we have seen feruginous hawks in the region.

Northern Harrier, *Circus cyaneus*

The northern harrier nests and forages in marshlands, fields, open shrublands, and dry shrublands. The harrier is specifically associated with mesic grasslands and wetland habitats for nesting. Harriers nest on the ground, where their nests and young are vulnerable to predation. Harriers forage in a diversity of habitats, but use mesic sites and cultivated areas disproportionate to their occurrence. Harriers may also be found in dry shrub steppe habitats, including sage and grassland habitats (Martin 1987). The northern harrier relies on hearing to locate prey to a much greater degree than other diurnal raptors, and thus is able to hunt in habitats with greater ground cover (Johnsgard 1990).

We saw hunting harrier, or marsh hawks on 15 occasions: 7 over sagebrush, 5 over grasslands, 2 over wet meadows, and 1 over willow and other shrubs. We found 3 nesting marsh hawk nests in CRP seeded grasslands on the river rim. We detected this

species only in open habitats, but in a wide range of habitats from wetlands in the river bottom to dry grasslands above the river rim.

Peregrine Falcon, *Falco peregrinus*

Peregrine falcons typically nest on large, dominant cliffs over 150 feet high with prominent views of the surrounding area (Cade 1992). Prey are usually shorebirds, waterfowl, or pigeons, with foraging over a wide variety of habitats (Sherrod 1978).

Peregrine falcons were detected 4 times: 1 flying over and 1 perched in Douglas fir, and 2 in cliffs. One of two known peregrine aeries within the study area fell within a sample quadrat. Both of the known aeries were on cliff ledges, one a very large cliff system overlooking the river bottomlands and adjacent sage and juniper habitats, and the other on a small cliff between a Douglas fir forest and cottonwood bottoms. The great variety of habitats found along the South Fork corridor provides an abundant and diverse prey base for this species.

Prairie Falcon, *Falco mexicanus*

Prairie falcons select nesting aeries in cliffs or escarpments. The landscapes surrounding their nests sites are often semi-arid open lands, sagebrush basins or grasslands (Marti and Braun 1975). They also nest at higher elevations on large cliff systems within montane to sub-alpine forest. Nests are usually in rock cavities in sheer cliffs with overhanging ledges and a broad vista. Most nests are within pothole-like cavities in cliffs about 30 m high (Runde and Anderson 1986). Prairie falcons also nest in rock crevices and old stick nests used by other species.

We twice saw prairie falcons soaring over sagebrush habitats above the river rim near a cliff top. We are aware of three prairie falcon aeries within the study area, all within cliffs overlooking the river bottomlands.

Merlin, *Falco columbarius*

Merlins typically nest in mixed grasslands and deciduous woodlands, and sometimes in dry conifer sites (Sieg and Becker 1990). Foraging occurs in mixed sage and grassland.

We have not seen any merlins in our observations during this study, although we have seen merlins in the study area on two earlier occasions. The observed birds were hunting in open shrublands.

American Kestrel, *Falco sparverius*

The American kestrel is a secondary cavity nester; it uses nesting cavities which were excavated by other species. As such, the kestrel is dependent on the northern flicker over much of its distribution (Balgooyen 1976). Kestrels often displace woodpeckers,