

RAPTOR NESTS IN
THE FRANK CHURCH-RIVER OF NO RETURN WILDERNESS

RESEARCH SUMMARY FOR SUMMER INTERNSHIP PROGRAM
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Lisa J. Bate

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INTRODUCTION

^ Taylor Ranch Field Station

~~The Wilderness Research Institute~~ (formerly referred to as ~~Taylor Ranch~~), located on Big Creek, seven miles west of the Middle Fork of the Salmon River, occupies a unique site in the heart of the Frank Church-River of No Return Wilderness in Idaho. Protected from extensive human-caused habitat alterations, this area provides an unusual setting for wildlife research.

A study was begun in May of 1991 collecting baseline data on the raptor populations that nest in this wilderness setting. Information gathered will hopefully provide a foundation for a long-term study on raptors in their nesting habitats. Awareness of the health and stability of these raptor populations is important because of their position at the top of a food chain; they are "bellwethers of environmental pollution and habitat disturbance and destruction" (Wilcox 1987). While certain raptor species are year-round residents in this area, others migrate, leaving shortly after their young have fledged. The information gathered here can perhaps help humans to understand the factors regulating different raptor populations in an area devoid of major human-caused habitat alterations, and to use this information to manage populations outside of wilderness settings. Also, because the information gathered here represents a foundation at most, other studies can be initiated over time to further increase our understanding of these magnificent birds.

In 1976, Tom Thurow, a ^{wilderness} research intern at ~~the Wilderness~~ ^{Taylor Ranch Field Station} Research Institute, conducted a preliminary raptor survey in the

Big Creek drainage. His study listed raptor species sighted along the entire length of Big Creek from the Big Creek Ranger Station to the Middle fork of the Salmon River. He attempted to estimate home range areas for kestrel (Falco sparverius) and sharp-shinned hawks (Accipiter striatus) based on a few² sightings for each pair. In his review Thurow makes mention of numerous nests found, however, the exact locations of these nests were not recorded.

Open country, diurnal raptors were the main focus of this study. The rough, forested terrain, and inaccessibility due to the flow of Big Creek, precluded extensive searches for woodland species. However, at times considered optimum, i.e., the during the nestling period, efforts were made to locate nests of the woodland raptors also.

METHODS

The main study area was centered around the ranch (Wilderness Research Institute) with a radius of approximately ten miles. Foot trails provided access to some of the areas, but cross-country travel proved necessary for searches into some of the more remote areas. Initially, all raptor observations were recorded, using UTM coordinates on USGS topographical maps (held at the Wilderness Research Institute). Areas with numerous observations were then returned to for a more intensive search for a nest site. Effort was spent in trying to follow individual birds while within visual sight; binoculars were used consistently. White[^] wash on rocks and cliffs provided evidence of raptor use within an area.

Considerable time also was spent looking in trees and along cliff faces for possible eyries. Within the forested regions, feathers and pellets were looked for at the base of trees to indicate possible use, as were actual nests up against the trunk of a tree.

Other data collected for each sighting were: date, time of day, species, sex and age if possible, habitat, weather, behavior, and additional comments of interest. All this information is listed on a Lotus 1-2-3 spreadsheet under the file name RAPT.WK1. Nest locations were precisely recorded, again using UTM coordinates. In addition, compass bearings from known fixed places were taken on the nest, and a visual description was also included. Where possible, the number of nestlings was recorded with the use of a spotting scope. Approximate fledging dates were recorded based upon the fledglings' absence from the nest, or as evidenced by termination of parental feeding and/or nest defense. Slide photographs of the nests are included with this report.

Sharp-shinned hawks were the focus of the woodland raptor species searches. Based on advice given by Pat Kennedy (pers. comm. 1991, Kennedy and Stahlecker 1991), a recording of the sharp-shinned hawk alarm cry was made on a transportable tape player. This recording lasted approximately 10 seconds, followed by a 30 second period of silence, ending with the recording of their 10 second alarm cry again. Imitation great-horned owl hoots were also vocalized in areas, and at times when use of the tap^u player was not possible. The alarm calls were played approximately every 200 m. Both riparian woods, and woods higher in elevation were explored

looking for nests.

RESULTS

A total of ten confirmed nests were found with three others being strong possibilities: kestrel, golden eagle (Aquila chrysaetos), and sharp-shinned hawk nests. Other raptors that had confirmed sightings, but for which no nests were found, include bald eagle (Haliaeetus leucocephalus), prairie falcon (Falco mexicanus), red-tailed hawk (Buteo jamaicensis), Cooper's hawk, (Accipiter cooperii), northern goshawk (Accipiter gentilis), saw-whet owl (Aegolius aedificus), and western screech owl (Otus asio).

Certain areas appeared to be "hot spots," that is, repeated sightings would occur in particular areas even though no actual nest was ever found.

DISCUSSION

Locating raptor nests in the rough, rugged terrain of central Idaho is challenging, to say the least. Many observations were made only to lose sight of the bird in a matter of moments. Success in finding nests increased with the age of the nestlings, most likely because of the increase in prey deliveries and nest defense.

KESTRELS

Kestrel nests proved to be the easiest to find because of their abundance, loud vocalizations, and more frequent prey

deliveries to the nest once the nestlings were near fledging age. Nests were found in a variety of areas: cliffs, snags high upon cliffs, snags just above the riparian areas, a live Douglas fir on a north slope near the creek, and in one instance, in a large snag high up on the east ridge of Cliff Creek.

Based on my experience locating nests in this country, the two most common ways kestrel nests were found were either by listening for alarm cries of one or both of the parents, or by locating a female and keeping her in sight until she returned to the nest. Males are more likely to actively defend a nest (see UTM 61.18, 99.4) whereas the females are responsible for the majority of prey deliveries (Marc Bouchard pers. comm.). This general trend was witnessed with the notable exception of the Taylor Ranch nest (UTM 68.8, 96.6), where the female's apparent absence in the later stages of nesting resulted in the male delivering prey and defending the nest (based on approximately 20 observed prey deliveries).

It was difficult determining when incubation began for kestrels. The spring of 1991 was one of the wettest on record. Whether or not this influenced the nesting dates is uncertain, but many nestlings had not fledged by the end of July, although young were old enough to be seen with their heads hanging out of cavity openings. For example, hiking out of Taylor Ranch up to Big Creek Ranger Station on August 2, 1991, the Cabin Creek kestrel nest was observed to still be active, with the female delivering prey (see UTM 61.18, 99.4).

Population (handwritten note in margin)

The density of territorial pairs is highly dependent on spring rainfall and winter temperatures. Population densities also vary, depending on habitat quality (Smith et al. 1972). In this area, the territorial size for a breeding pair of kestrels appeared to be approximately 1 mi².

Food supply has also been shown to be positively correlated with nesting dates for kestrels in other areas. Fledging success is linked more to temperatures than rainfall; the most critical period being the hatching period and the following two weeks (Kostrzewa and Kostrzewa 1990). Average clutch size varies among locations; 4 to 5 are average (Smith et al. 1972).

GOLDEN EAGLES

The only active golden eagle nest found was located on the cliffs of Cabin Creek on June 8, 1991. One nestling was confirmed in white down with binoculars on this date and reconfirmed with the spotting scope on 11 July. Based on personal communications with Maurice Hornocker and Lori Hunter, both of whom have spent time at the ranch in past years, the "blue cliffs" up Cliff Creek on the east side of the creek also had an eagle nest. No active nest was found in this area but what may be a nest on the west cliffs was located. It is possible, though, that this investigation occurred after fledging time. Important to note are the numerous sightings of eagles in this area. Further investigation into this area would be highly recommended.

Immature golden eagles were also present within this study

area; these individuals should not be dismissed as breeders. Apparently 28 species in Falconiformes have records of "subadults" successfully breeding (Newton 1979). In southern Idaho, golden eagles will retain their immature white feathering up until the fourth year and have been known to actively pair and breed in certain years (Steenhof 1983). In contrast to immature Accipiters and kestrels, who are most likely to breed during years of high prey abundance, subadult golden eagles only nested when an territorial range became vacant (Steenhof et al. 1983). Notice should be taken of the interaction of an immature and an adult golden eagle in the Breeching Creek area. Numerous sightings occurred here with the eagles often disappearing up Breeching Creek.

The incubation period for golden eagles is 43 days. The female does the majority of the incubation but the male has also been observed on the nest. Adults brood the chicks up until two weeks of age, after which brooding takes place only in bad weather or at night (Beecham 1970).

A clutch size averaging two eggs is most common in Idaho. In the Snake River canyon, hatching dates peaked during the period of 9 April to 14 April, spanning the time period from 18 March to 21 April (Beecham 1970).

Fratricide commonly occurs in all eagle species. Size difference between siblings is a major factor leading to fratricide and is thought to be an adaptive occurrence to increase parental reproductive success during periods when food supplies are low

(Edwards and Collopy 1983).

The single golden eaglet in the Cabin Creek area appeared to have fledged some time between 15 July and 23 July. Mid-July was the approximate fledging date for eagles in the Snake River Canyon also (Beecham 1970).

SHARP-SHINNED HAWKS

Whereas sightings of sharp-shinned hawks were common throughout the summer, locating active nests proved unsuccessful. However, the quality of the tape and tape player made it questionable whether or not the techniques used were efficient even within the range of a nest.

A pair of protective adult sharp-shinned hawks and one other immature hawk were found off the trail leading up to Soldier's Bar. Sharp-shinned hawks and their young will stay near their actual nesting area for a short period after fledging and this can be one of the easiest times to locate these accipiters, along with the nestling period (Kennedy and Stahlecker 1991). Based on personal experience, the easiest time to find sharp-shinned hawks is the "fledgling-dependency" period because of their frequent vocalizations. Unfortunately, this time period occurs usually in late July or August, when the internship program is ending.

In the area where the sharp-shinned hawks displayed defense behavior, what may possibly have been a nest was found. Sharp-shinned nests are large in proportion to their size, averaging 24-26 inches in diameter and generally are found 20-60 feet above the

ground. The nests are made of a broad platform of sticks, may be lined with chips of bark, and are generally located against the base of the trunk (Harrison 1979).

Sharp-shinned hawks are known to return to the same area in subsequent years during breeding season, but often build a new nest within 100 m of the old one instead of using the old nest (Reynolds 1983).

The three Accipiter species, northern goshawk, Cooper's hawk, and sharp-shinned hawk, have a similar incubation period of 31 days. Nestling periods vary, though. Goshawks fledge in 37 days, Cooper's hawks in 30 days, and sharp-shinned hawks in 24 days. In northeastern Oregon in the Wallowa-Whitman National Forest, at elevations between 500-1600 m, northern goshawks, Cooper's, and sharp-shinned hawks average clutch completion dates were 24 April, 22 May, and 8 June respectively (Henny et al. 1985).

In another study done in southeastern Oregon on northern goshawks and Cooper's hawks at a higher elevation between 1430-2130 m, average clutch completion dates occurred on 6 May and 19 May respectively (Reynolds and Wight 1978).

Females in juvenile plumage are known to breed in all three Accipiter species. This phenomenon increases in tendency from northern goshawks to sharp-shinned hawks. Nesting dates for immatures of the two larger Accipiters are later than for adults. Little information on sharp-shinned hawks is available (Henny et al. 1985). Raptors breeding in juvenile plumage may be evidence of favorable breeding conditions or an excess of unoccupied

territories (Newton 1979).

Sharp-shinned hawks and Cooper's hawks are both migratory birds and generally nest in younger successional stands than goshawks. Goshawks will even nest in dead or dying trees. Nests in mistletoe clumps for the two smaller species are common; in eastern Oregon 64% of all Cooper's hawks' nests were found in mistletoe (Moore and Henny 1983). Average nest heights for goshawks, Cooper's and sharp-shinned hawks were 14.5 m and 7.6 m respectively.

RED-TAILED HAWKS

No active red-tailed hawk nests were found, but a pair was observed up near the outfitter's camp along Cliff Creek. This area is part of the 1988 burn. Other sightings of red-tail hawks occurred up along the ridge between Cliff and Cougar creeks. It appeared that this bird was part of the pair observed near the outfitter's camp because of the similar wing condition; feathers were missing and broken. All other red-tail sightings occurred up high also, away from the creek bottoms.

OTHER SPECIES

Cooper's hawks and prairie falcons were also seen, with no record of active nesting. A Cooper's hawk was observed trying to raid the kestrel nest near Cabin Creek. A big surprise were the bald eagle sightings. Both occurred along Big Creek, involved a single bird, flying 30-50 feet above the creek, heading east.

CONCLUSIONS

This first year for gathering raptor baseline data in a wilderness setting proved both successful and disappointing. Kestrel nests were abundant and easy to detect whereas accipiters and their nests remained evasive. Golden eagle sightings were numerous. It seems warranted to continue pursuit of golden eagle nests perhaps up Cliff and Breeching Creeks. If interest and time exists, both Cave Creek and Mile-High could prove fruitful in nest searching for prairie falcons or golden eagles.

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