

OBSERVATIONS ON FOOD, NESTING,
AND WINTER POPULATIONS OF LARGE
NORTH AMERICAN FALCONSCLAYTON M. WHITE¹Department of Zoology
University of Utah
Salt Lake City, Utah 84112

AND

DAVID G. ROSENEAU

College of Biological Sciences and Renewable Resources
University of Alaska
College, Alaska 99701

During the course of a biosystematic study of the Peregrine Falcon (*Falco peregrinus*) by White over the past few years, observations have been made on several species of North American falcons. While all three large species (Prairie Falcon, *Falco mexicanus*; Gyrfalcon, *Falco rusticolus*; and Peregrine) have been subjected to detailed study by various writers, a few additional notes on their biology are reported herein. We would like to acknowledge the help in the field of William Tilton, Anchorage, Alaska, and the late Gary D. Lloyd of the University of Utah for stimulating discussions of the data presented. Marvin R. Meyer, of Salt Lake City, provided some data on Prairie Falcons.

PRAIRIE FALCON

The findings of Enderson (1964) in his study of this species in Wyoming and Colorado prompt a comparison with the wintering Prairie Falcon populations in the valleys of north central Utah. These valleys lie on the western front of the main Rocky Mountain chain (Wasatch Mountains), running from Tremonton to Provo Valley, and covering an area about 20 miles wide by 120 miles long. Although at least three different valleys are involved in this area, they are all essentially confluent and physiographically similar. Enderson, working on the eastern Wyoming plains and along the eastern slope of the Rocky Mountain region, found that 38 per cent of the wintering falcons were first-year birds. He cites the findings of a falconer in New Mexico where only three (13.6 per cent) of 22 Prairie Falcons trapped during one winter were first-year birds. Data from these two areas are clearly at variance and Enderson concluded that immature (first-year) Prairie Falcons are apparently not evenly distributed over their range, and that their frequency in his study area (Colorado and Wyoming) was not representative for the species. Although no exhaustive attempt was made on our part to obtain sex and age ratios in the Utah region, the data gathered seems to differ significantly from those of Enderson. Between September 1961 and December 1964, 23 immature female, nine adult female, two immature male, and two adult male Prairie Falcons were trapped. An additional 22 females, the majority appearing to be immature, and 12 males were seen. Thus the immature birds made up 64 per cent of the sample of birds trapped, and females outnumbered males. Between October 1965 and December 1968, 14 (73 per cent) of 19 birds trapped were immature, and of the total only four were males. Because of nonuniform methods and procedures of trapping and observing, these data cannot be properly compared statistically with Enderson's, but the ratio of immatures to adults found

in Utah is grossly different from that found by Enderson in Colorado and Wyoming or reported by him for New Mexico. These data from Utah further corroborate Enderson's statements that there is an uneven distribution of immatures over their range, and that their numbers in his study area were not indicative of the overall frequency of that age group.

The falcons usually arrive in the Utah area in late October and remain through March. Since the numbers may fluctuate markedly from month to month, most of the birds are probably transient, although some birds are definitely winter residents with winter territories. As many as four falcons have been seen in the air at the same time, and as many as seven have been seen on a 20-mile stretch of utility poles in one morning of travel. Some adult falcons remain in the vicinity of eyries, presumably theirs, throughout the winter. The winter habitat frequented by the falcons, like that found by Enderson, is dry-farm wheat lands and grassland flats characteristically occupied by large flocks of Horned Larks (*Eremophila alpestris*) and rosy finches (*Leucosticte* spp.). One wintering falcon was observed to prey on starlings (*Sturnus vulgaris*) which are also common in the area.

GYRFALCON

Large falcons usually occupy cliffs of some sort as nesting sites. However, there are instances of their using man-made structures. Meinertzhagen (1954) reports the Lanner Falcon (*Falco biarmicus*) nesting on the great pyramids in Egypt, and Dementiev (1957) has received reports of the Barbary Falcon (*Falco peregrinoides*) using ruins of human dwellings in Turkestan, but proof of this is lacking. Vaurie (1965) cites nesting by the Laggar (*Falco jugger*) and Lanner Falcon (*Falco biarmicus*) on ledges of monuments and tall buildings. Peregrine Falcons have nested on buildings in many metropolitan areas in the United States, Canada, and elsewhere, and on ruins of buildings (Groskin 1952; Olivier 1953; Marcetti 1955/1956; Mebs 1960; Herbert and Herbert 1965), abandoned bridge piers (Craighead and Craighead 1939), as well as on tree platforms made by hunters in Germany (Th. Mebs, pers. comm.). In 1963 data were obtained on the nesting of Gyrfalcons on gold dredges in the Seward Peninsula area, Alaska, and are apparently the first records of Gyrfalcons using man-made structures for nesting. Although these nestings have been widely known among falconophiles (Tom Cade, Harold M. Webster and Robert Berry, pers. comm.), they are herewith recorded for the first time.

Diane Tweet of Portland, Oregon, daughter of the owner and operator of the principal dredge used for nesting, sent White the following data. A nest originally built by Common Ravens (*Corvus corax*) was situated on a platform under the top of the front gantry of the dredge. The nest was occupied by falcons every year from 1956 to 1963 (when White received the records), except for 1957 when ravens reutilized the site. In 1959, 1960, 1961, and 1963 the dredge was in operation after about 15 June of each year and young were successfully fledged. Between 1958 and 1963 four eggs were laid each year. In 1958 no one was present at the dredge during the fledging period and the number that left the nest is unknown. However, between 1959 and 1963, three, two, four, two, and one young were fledged, respectively. Direct causes of mortality were not observed but human activities are suspected. The dredge was, however, in operation the year all four young were fledged. Within 16 miles of the dredge another abandoned gold dredge was used by nesting Gyrfal-

¹ Present address: Division of Biological Sciences, Section of Ecology and Systematics, Cornell University, Ithaca, New York 14850



FIGURE 1. Nest on an abandoned sluice box used by Gyrfalcons for nesting in 1968 and 1969, Seward Peninsula, Alaska. Nest is situated about 10 ft above ground level (photo, 9 August 1969).

cons at least one year (1963). An abandoned pile-driver in this same region was also used at least once by nesting Gyrfalcons in the past five years.

More recent data on this situation were gathered by Roseneau, who spent the summers of 1968 and 1969 studying the Gyrfalcon populations of the Seward Peninsula. The nesting site on the Tweet dredge mentioned above was used by ravens for nesting in 1968 and 1969. A second old abandoned gold dredge near the above site contained a large nest, unoccupied in 1968 and 1969.

About one mile from the Tweet dredge a large elevated sluice box rested on a sandbar adjacent to an old tailings pile. The receiving end of the box projected about 10 ft above the sandbar's edge. This sluice box contained a stick nest located directly beneath the top of the structure. An iron plate used to construct the box served as a complete roof over the nest. It has been our experience that the one feature most common to all Gyrfalcon nestings, particularly evident on the Colville River, Alaska, is the protection of the site from above by some sort of projecting cover, usually overhanging rock (see also Cade 1960: 169). The construction features of the sluice box offer a match for any cliff on the Colville River (fig. 1; compare with plate 22 in Cade 1960:281). This nest contained two grayish-colored young on 8 July 1968. The aircraft used in locating nests could not land in the area, so the young were not examined in the hand and thus not positively identified as Gyrfalcons. They were, however, of a size comparable to 10 other 500–700 g young Gyrfalcons examined during the first week of July. Adults were not seen at the nest, which is often the case when aerial observation is used but is also the case when an observer approaches a Gyrfalcon nest on foot. Although ravens, Rough-legged Hawks (*Buteo lagopus*), and Golden Eagles (*Aquila chrysaetos*) also build nests on gold dredges in this region, the young in question were ruled out as being of these species on the following bases. Young ravens had fledged several weeks earlier, and are shiny black. Young Rough-legged Hawks were just hatching, and so were covered with white down, and the adults are nearly always seen about the nest. Eagles, on that date, had young that were, on the average, one-half again larger than the

young seen in the nest, and they are of a dark brown color. The nestlings mentioned were almost certainly Gyrfalcons.

In 1969 Gyrfalcons were observed nesting at this site. Four eggs were laid. Only two eggs were seen in the nest on 11 June during aerial observations. This nest was subsequently visited on foot and the two eggs, which were cold and addled, were then collected for pesticide analysis. The fate of the two missing eggs and the adults is unknown. The Tweets had made but two visits to the nest. On their first visit both adults were seen and the nest contained four eggs, while on the later visit no adults were seen and the two remaining eggs were thought to be abandoned. This was the only known human disturbance. The nest was determined to be unreachable by terrestrial predators. The total extent of this sort of nesting by Gyrfalcons and its effect on the falcon population density were not fully assessed, but will be reported later by Roseneau.

Two items concerning the above Gyrfalcon nestings are of importance. Gyrfalcons in this region are known to have high breeding densities (Roseneau, pers. obser.; Cade 1960). Furthermore, Alaskan Gyrfalcons typically make use of, or "parasitize," old stick nests of other rapacious birds. North of the Brooks Range they generally use old raven nests. On the Seward Peninsula they apparently use eagle or hawk nests with equal or greater frequency than raven nests. Thus there are more nesting choices available to Gyrfalcons on the Peninsula regardless of whether the nest is on a cliff, dredge, etc. The manner in which the dredges, tailings booms, and sluice boxes are constructed make them a "cliff," in the ecological sense, as is also probably the case with buildings, pyramids, etc. for other falcons. The high density of Gyrfalcons, and presumably some population pressure for nesting site use in a region of readily available, unused, and suitable man-made nesting sites, are probably the prime factors determining these nestings.

PEREGRINE FALCON

Food. On 31 July 1963 along the Tanana River, Alaska, an adult female accidentally broke her neck when she apparently struck a portion of a falcon trap. The crop of the falcon was about three-fourths full and an examination of the contents revealed the flesh and bones of fish. Dr. James Marrow, Fishery Biologist, Department of Wildlife Management, University of Alaska, identified the fish remains as whitefish (*Coregonus* spp.). During a reexamination of the nesting ledge, the dried remains of what appeared to be a caudal fin was found. The fish may have been caught as bona fide prey, picked up as carrion, or possibly taken from a fish wheel located near the eyrie.

Fish have seldom been recorded as food for Peregrines. Witherby et al. (1943:383) report "a fish" as Peregrine food and Cade (1960) mentions a Peregrine catching a grayling (*Thymallus arcticus*) from the Colville River, Alaska, although he did not know if the fish was eaten. T. Cade and Walter R. Spofford also watched a Peregrine make several low passes in what appeared to be attempts to catch fish from a pool in the Colville River in 1967 (Spofford, field notes, 1967). Bagg and Eliot (1937) report a Peregrine forcing an Osprey (*Pandion haliaetus*) to drop its captured fish, grabbing the fish in the air, and carrying it to a cliff. Manning (1952) reports fish in the stomach of a immature female taken in the James Bay area, Canada. This latter falcon may have been weak and picked the fish up as carrion since it was an escaped falcon, used in falconry, and there are

no data to indicate how well escaped falcons fare when once again on their own in the wild, especially if kept in poor conditions in captivity.

Although Peregrines are usually thought of as primarily bird eaters, fish is apparently an adequate food for them and may be more common in their diets than the literature indicates. Beebe (1960) reports that natives on the Queen Charlotte Islands fed fish to captive Peregrines and that they were apparently healthy and unharmed by the fish diet. Cade (pers. comm.) tells us that Peregrines become extremely fat and remain in excellent condition when fed on fish.

Nesting. On 14 August 1963 White was on Birch Creek, Alaska, at a point downstream from the locality known locally as the "second muck bluff." This stretch of Birch Creek does not contain bluffs suitable for nesting Peregrines. At least they have not been known to utilize the dirt river banks there for nesting. (Peregrines have, however, nested on bluffs farther upstream from the "second muck bluffs.") Here three recently fledged young (and possibly a fourth a few hundred yards down river, judging from the calls) were seen being defended by adult birds. The young were especially tenacious with respect to an area of riverside spruces. A search revealed two stick nests in the trees which appeared to be old *Buteo* or perhaps large owl nests. The nests were about 1.5 miles apart and each was completely littered with fresh excreta, pellets and prey remains. Although the young falcons were not actually seen in the stick nests, the observations and the actions of the falcons indicated that the Peregrine had utilized the trees for nesting. Fred Robards, U.S. Fish and Wildlife Service agent of Juneau, Alaska, told White (pers. comm.) of a tree-nesting Peregrine he had found while he was working on Birch Creek on about 5 August 1965 some three miles downriver from the highway bridge that crosses Birch Creek. This is in the same general region as the "muck bluffs." Robards saw at least two nearly fledged young in a nest in a "dead snag" in the top of a live 60-ft-tall spruce.

Cade (1960) mentions one other Alaskan record of a pair of Peregrines nesting in a spruce snag in the Yukon Flats, Yukon River. (Birch Creek is a tributary of the Yukon River and empties into the Yukon in the Flats.) Tree-nesting Peregrines regularly inhabit the Scandinavian countries (Thomasson 1947), central Russia (Dementiev et al. 1951), Germany (Mebs 1960), and Australia (Jenkins et al. 1963). Tree-nesting Peregrines are known to have occurred in the United States only sporadically along waterways (Mississippi River drainage) from Illinois and Kansas to Tennessee and northern Louisiana. There is also the interesting record (Jones 1946) of Peregrines nesting near the sea coast in eastern Virginia in tree nests built by other birds that were, according to J. J. Hickey (in litt.), Osprey nests.

The Birch Creek-Yukon Flat area, Alaska, warrants further detailed investigation for biological data concerning the Peregrines since populations containing

other North American tree-nesters are apparently no longer existent.

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HOUSE FINCHES (*CARPODACUS MEXICANUS*) IN MONTANA

RALPH L. HAND

415 West Central Avenue
Missoula, Montana 59801

The northward range expansion of the House Finch (*Carpodacus mexicanus*) across the state of Washington, both along the coast and through the interior,

into some of the valleys of British Columbia, has been well documented by Edwards and Sterling (Murrelet 42:38, 1961) and by Paul (Murrelet 45:11, 1964). Edwards and Sterling include Walla Walla in their description of the northward invasion which eventually entered British Columbia via the Okanogan Valley, but made no mention of movements east of this point.

In the late 1920's I found House Finches common at Lewiston, Idaho, and Clarkston, Washington; but