

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

TABLE 1. Records of the House Finch (*Carpodacus mexicanus*) at Missoula, Montana.

Date	Number, sex, activity, etc.	Area	Observer
1-2 Nov. 1964	♀ with flock of goldfinches	Rural	Hand
24 May-8 June 1965	♂ singing almost daily	Residential	Hand
15-18 Mar. 1966	♂ singing daily	Residential	Hand
17 June 1966	A pair	Rural	Hand
18-20 Oct. 1966	5 or 6, all ♀ or juv.	Rural	Hand
28 Dec. 1966-29 Jan. 1967	1-9, both sexes; at least 4 adult ♂ ♂	Rural	Hand
5 Mar.-7 Apr. 1967	1-4, including singing ♂ ♂	Rural	Hand
Mar.-July 1967	Both sexes seen repeatedly, singing ♂ ♂	Residential	Wright
5 July 1967	♀ feeding young; juv. collected	Residential	Wright
4 Sept.-21 Dec. 1967	Frequent flocks to max. 35 (both sexes)	Rural	Hand
Jan.-Apr. 1968	Several, almost daily; both sexes; ♂ ♂ singing in spring	Residential	Wright
April 1968	1-3 occasional	Residential	Hand

this seemed to be the northern limit of their range for at least another decade. The eventual expansion that now extends throughout the Palouse Prairie country of northern Idaho and eastern Washington and into the Spokane area, while well known to local ornithologists, has apparently never been thoroughly documented.

There is now evidence that a similar invasion has reached the vicinity of Missoula in western Montana. The AOU Check-list (1957), in outlining the range of this species, mentions Montana only as follows: "In winter . . . casual north to Alberta (Topaz Lake) and Montana (Santon Lake)." Davis, in his check-

list of the birds of Montana (Proc. Montana Acad. Sci. 16:5, 1956) mentions sight records of House Finches in Helena and Bozeman. Additional Montana records include the following by Dr. P. L. Wright, Department of Zoology, University of Montana, and myself. Wright's observations were near his home in southeastern Missoula, while mine included both residential and rural areas near the southern outskirts of the city (table 1). From these records there seems to be little doubt that the House Finch is well on the way toward becoming an established resident in this area.

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## A METHOD OF ESTIMATING CARCASS FAT AND FAT-FREE WEIGHTS IN MIGRANT BIRDS FROM WATER CONTENT OF SPECIMENS

GEORGE I. CHILD

AND

SHIRLEY G. MARSHALL

Institute of Ecology  
University of Georgia  
Athens, Georgia 30601

Previous studies by Odum et al. (Science 143:1037-1039, 1964) and Child (Auk, 86:327-338, 1969) have indicated that the ratio of water to non-fat weight in migrant birds is virtually a constant, and little affected by the degree of fatness, stage of migration, sex, season, species, or wing length. Accordingly, accurate estimates of the non-fat components of television tower kills or other specimens should be obtainable without tedious fat extraction. The weight of water divided by a predetermined water ratio would give an estimate of the fat-free weight and the estimated fat-free weight subtracted from the field weight would be an estimate of fat content.

To test the effectiveness of the water ratio method as a predictor of fat content, 11 species representing six families were assayed by both dehydration and

fat extraction methods. Dual analyses were performed on the following species: Yellow-billed Cuckoo, *Coccyzus americanus* (fall); Catbird, *Dumetella carolinensis* (fall); Chestnut-sided Warbler, *Dendroica pensylvanica* (fall); Myrtle Warbler, *Dendroica coronata* (fall); Parula Warbler, *Parula americana* (spring); Veery, *Hylocichla fuscescens* (fall); Gray-cheeked Thrush, *Hylocichla minima* (spring); Swainson's Thrush, *Hylocichla ustulata* (spring, fall); Summer Tanager, *Piranga rubra* (spring, fall); White-throated Sparrow, *Zonotrichia albicollis* (fall); Indigo Bunting, *Passerina cyanea* (fall).

## MATERIALS AND METHODS

A majority of the specimens were spring and fall nocturnal migrants that had collided with a television tower at Tallahassee, Florida. Others were netted in Panamá or along the gulf coast of the southeastern United States.

All specimens were weighed, dehydrated, and extracted of fat according to the laboratory procedures outlined by Rogers and Odum (Auk 81:505-513, 1964). To facilitate drying, the body cavity was opened and the pectoral muscles macerated. Individuals were vacuum dried at 40° C for a minimum of three days to a constant weight.

After dehydration and extraction, the data for each species were randomly divided into two sub-groups,