GENERAL NOTES

Alpine birds of the Little Belt Mountains, Montana.—The Little Belt Mountains, an isolated range within the plains of central Montana, were the subject of a study by Hoffmann (1960. *Montana State Univ. Occasional Papers*, 1) in which he reported 95 species of birds. Yogo Peak (8,801 feet) and Big Baldy (9,715 feet), located approximately 50 miles southeast of Great Falls, are the only peaks in this range which reach into the alpine zone.

The present paper, based upon data collected in the alpine tundra on Yogo Peak 19 June to 7 August and 15 to 18 September 1964, add two species to Hoffmann's list and reports 15 species new to the alpine zone. Only four species were found nesting above timberline and two others at timberline. Hoffmann found a Killdeer (*Charadrius vociferus*) nest on the tundra in 1958 but none was seen in the present study. The Rock Wren (*Salpinctes obsoletus*) and the Vesper Sparrow (*Pooecetes gramineus*) may also nest above timberline in years when the weather is not as cold and wet as it was in 1964.

The Horned Lark (*Eremophila alpestris*) and Rosy Finch (*Leucosticte tephrocotis*) apparently breed on Big Baldy but were not observed to breed on Yogo Peak.

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SPECIES ACCOUNT

Rough-legged Hawk (*Buteo lagopus*).—Not previously reported from the Little Belt Mountains. One seen 21 July and 27 July.

Ferruginous Hawk (*Buteo regalis*).—One seen 4 July. Its presence did not bring the usual high-pitched chirp from the yellow-bellied marmots (*Marmota flaviventris*) on the rocks below. Hoffmann saw this species only once within the mountains, over lower montane forest.

Golden Eagle (*Aquila chrysaetos*).—Seen daily, often in pairs. The marmots always gave a call and ran under the boulders when an eagle was overhead. Occasionally an eagle was observed to attack.

Prairie Falcon (*Falco mexicanus*).—Seen by Hoffmann but not in the alpine zone. One seen 6 July and 14 September.

Peregrine Falcon (*Falco peregrinus*).—Not previously reported from these mountains. One seen 29 and 30 June and 5 and 6 July.

Sparrow Hawk (*Falco sparverius*).—Hoffmann did not find this species above timberline and I saw it only twice (14 and 27 July), though it is a common late-summer visitant in the alpine zone in other mountain ranges.

Common Nighthawk (*Chordeiles minor*).—Not previously reported from the alpine zone. Several were flushed from a dirt road each evening between 20 and 28 June.

Olive-sided Flycatcher (*Nuttallornis borealis*).—Not previously reported in the alpine zone. One observed singing and feeding from a snag overlooking the tundra, 13 July.

Horned Lark (*Eremophila alpestris*).—One male was observed singing daily from late June to mid-July, but no females were seen. On 28 July a singing male was heard in an open park adjacent to Tepee Butte (8,000 feet) southwest of Yogo Peak. Pairs and small flocks were observed in parks at 7,800 feet on Prospect Ridge on 15 September. Hoffmann found pairs only on or near Big Baldy, with only one transient on Yogo Peak and none in the surrounding grassy parks.

Violet-green Swallow (*Tachycineta thalassina*).—Occasional. Not previously reported from the alpine zone.

Clark's Nutcracker (*Nucifraga columbiana*).—Occasional on alpine meadows and adjacent forest. Not previously reported from the alpine zone.

White-breasted Nuthatch (*Sitta carolinensis*).—Not previously reported from the alpine zone. One was seen 29 July just below timberline and another 27 July a few hundred yards upslope from the timber in a boulder slide. Hoffmann did not see this species in the Little Belt Mountains, but it had been reported by Williams (1882. *Bull. Nuttall Ornith. Club*, 7:61–63).

Rock Wren (*Salpinctes obsoletus*).—Though Hoffmann found this species common on Yogo Peak, they were uncommon in 1964, probably because of the extremely wet weather throughout June and July. They were heard singing only on sunny days. The peak of activity occurred during the first week of July when five singing males were observed on territories on the south-facing slopes of Yogo Peak. Wrens were not observed thereafter until 20 to 23 July when a pair and one young were seen. These may have moved up from lower elevations.

Robin (*Turdus migratorius*).—Occasional. One nest was located in a small fir tree on Tepee Butte above 8,000 feet and contained two or more young which fledged on 16 July.

Mountain Bluebird (*Siala currucoides*).—Common. One nest found in an old building was begun on 20 June, completed 22 June, and contained four eggs on 28 June.

Townsend's Solitaire (*Myadestes townsendi*).—Hoffmann saw this bird above timberline only once. I located one nest built in a road cut below timberline at 7,600 feet and containing three eggs on 9 July.

Ruby-crowned Kinglet (*Regulus calendula*).—Hoffmann observed this species at timberline on one occasion and I also observed it once, on 26 July.

Water Pipit (*Anthus spinoletta*).—Common. Of 33 nests, 16 were under rocks, 15 in tufts of grass, one in a rodent hole, and another in a pocket in a bank.

Western Meadowlark (*Sturnella neglecta*).—One bird was observed singing on 22 July, the first record for the alpine zone.

Brewer's Blackbird (*Euphagus cyanocephalus*).—Not reported previously from the alpine zone. A pair seen 23 June.

Cassin's Finch (*Carpodacus cassinii*).—Hoffmann found these scarce in the Little Belt Mountains, but found one near timberline. I observed only one at timberline on 5 July.

Rosy Finch (*Leucosticte tephrocotis*).—Hoffmann found these only on Big Baldy where intergradation between *L. t. atrata* and *L. t. tephrocotis* appears to occur. I found *atrata* or intermediate forms on Yogo Peak on 31 July and 2 August, but they apparently do not nest in the cirque on the east face of Yogo Peak.

Pine Siskin (*Spinus pinus*).—Occasional. Not previously reported from the alpine zone.

Vesper Sparrow (*Pooecetes gramineus*).—These appeared occasionally on the tundra in June, singing, and a male was regularly observed singing from a small tree overlooking a meadow at timberline. Not previously reported in the alpine zone.

Oregon Junco (*Junco oreganus*).—Common. Of eight nests, two had three large young and one egg, three had three eggs, one had four eggs, and two had five eggs. Fledging dates for four nests were 12, 13, 13, and 18 July. The nestling periods for two nests were 10 and 12 days. Of the eight nests, three were under rocks and five were in tufts of grass.

Chipping Sparrow (*Spizella passerina*).—Occasional. Not previously reported from the alpine zone.

White-crowned Sparrow (*Zonotrichia leucophrys*).—Common. Of seven nests located,

one had four eggs, three had five eggs, two had four young, and one had five young. Young fledged at one nest on 15 July. Nests were placed as open cups in the meadow (three), in small (less than one foot high) shrubby cinquefoil (*Potentilla fruticosa*) (three), and one was under a rock. Adults apparently do not brood their eggs during rainstorms, but they were observed on several occasions to rush to their unprotected nests when a rainstorm turned into a hailstorm. Hail damage to two eggs in each of two nests resulted in abandoned nests.—RICHARD E. JOHNSON, *Department of Zoology, University of Montana, Missoula, Montana (Present address: Department of Zoology, University of California, Berkeley, California), 17 May 1965.*

Regurgitation of food by Mallard Ducks.—That water birds, by carrying resistant disseminules within their intestinal tract, are important agents of dispersal for many aquatic organisms is well known (Löffler, H., 1963. *Vogelwarte*, 22:17–20; Malone, C. R., 1965. *J. Wildl. Mgmt.*, 29:529–533; Proctor, V. W., 1964. *Ecology*, 45:656–658). The dispersal of freshwater species not capable of active overland transport and lacking resistant disseminules, while not so well documented, has largely been attributed to transport via the external surfaces of birds. A recent observation indicating that dispersal via the avian intestinal tract might be a possibility for even these organisms prompted this note.

During experiments to determine the effects of avian digestion on algal oospores and ostracod eggs, six-month-old female Mallards (*Anas platyrhynchos*) were fed to repletion on *Chara* sp. Two of the five birds under observation regurgitated portions of their meal about 45 minutes following its ingestion. Each bird vomited a ball, about one inch in diameter, of loosely compacted *Chara*. Apparently the food had not entered the stomach for it was not obviously altered by digestive processes. The cause of the vomits is unknown but it seems likely that the birds simply had overeaten. Trials were repeated numerous times but vomits never again occurred.

This observation bears little significance to the dispersal of either *Chara* or ostracods, since both possess resistant disseminules which survive passage through the intestinal tract of various birds (Proctor, V. W., and C. R. Malone, 1965. *Ecology*, 46:728–729). However, if organisms not capable of withstanding avian digestive processes were attached to plants ingested and later regurgitated by a flying bird, dispersal would be effected. Two excellent examples of organisms which might take advantage of this unique mechanism of transport exist.

Bondesden and Kaiser (1949. *Oikos*, 1:252–281), in attempting to explain the dispersal of aquatic gastropods, fed snails to ducks but found that all the snails were killed by digestion. They suggested that snails might be dispersed if vomited from the crop but did not offer evidence that this could occur. I have previously shown that aquatic snails and their eggs, when ingested by ducks, are unharmed before entering the gizzard and might be carried internally and dispersed if regurgitated from the crop (Malone, C. R., 1965. *Nautilus*, 78:135–139). At that time I pointed out that little is known of the rate of food passage from the crop into the gizzard of ducks. Even less is known concerning the occurrence and frequency of regurgitation.

Jubb (1964. *Ostrich*, 35:115–116) stated that the dispersal of fish cannot be explained by birds because fish do not possess resistant eggs. However, he failed to consider the possibility of fish or their eggs being carried within a bird's crop and later regurgitated.

For those organisms easily killed by avian digestion and by desiccation, such as fish, transport via the crop of birds would be a highly advantageous means of passive overland transport. This mechanism of dispersal largely has been neglected and data related to it