Their mates continued to feed the chicks: one male raised two to fledging while the other raised only one. This difference in success reflected differences in performance between the males as judged by other criteria. One chick survived a period of food-shortage by stealing fish from neighboring broods. These observations show the importance of food availability and parental competence in breeding success, the role of asynchronous hatching in limiting destructive competition between siblings, and the importance of food-stealing in competition between families.

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DESERTION OF NESTS BY BLUE GROUSE

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AND

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Interpretation of the significance of nest desertion seems to be a recurring problem in studies of nesting success. It is difficult to determine whether desertion is an artifact of one's methods or a natural phenomenon (Patterson, The Sage Grouse in Wyoming, Sage Books, 1952; Sowls, Prairie ducks, Stackpole, 1955; Zwickel, Condor 77:423–430, 1975). As well, the time in the nesting cycle at which desertion might occur has potential theoretical implications.

We recently reanalyzed the data presented by Zwickel (1975) for nesting success of Blue Grouse (*Dendragapus obscurus*) on Vancouver Island, along with additional samples from 1974, 1975, and 1976. Larger samples allowed us to make a more detailed analysis, which provides a better opportunity for interpreting the significance of desertion.

Study areas were the same as before (Zwickel 1975) and methods and terminology were essentially the same. The only exceptions were cases where nests were deserted prior to the loss of all eggs, in which the eggs were disappearing one by one. We now classify these cases as predation rather than desertion. Unless specified, all nests were active when found.

We separated all nests as to whether they were found during laying or incubation (Table 1). Of 22 nests that were deserted, 21 were found prior to incubation. Only three times was a female that deserted seen on the nest after first contact, and in only one case was another egg laid.

TABLE 1. Fate of active Blue Grouse nests in relation to whether found during laying or incubation, 1963 to 1976.

	Number of nests	Percent
Found during laying	51	
No. deserted	21*	41
No. to predation	16	32
No. hatched	14	27
Found during incubation	113	
No. deserted	1	1
No. to predation	36	32
No. hatched	76	67

* One nest found during laying was deserted during incubation.

The number of eggs in a nest at the time of desertion seemed to affect whether the female deserted or not (Fig. 1). Over 90% of nests found with less than four eggs were deserted, but only 40% of those with four or more eggs ($P < 0.01$). Of nests in which incubation had begun, only two were deserted and these could easily have been situations where females were killed away from the nest. Of all nests found during laying, 27% hatched, compared to 67% of those found during incubation ($P < 0.001$); the majority of losses during laying were a result of desertion (20/36, Table 1). Of 215 nests (active and inactive) located from 1969 to 1976, only 3 had been

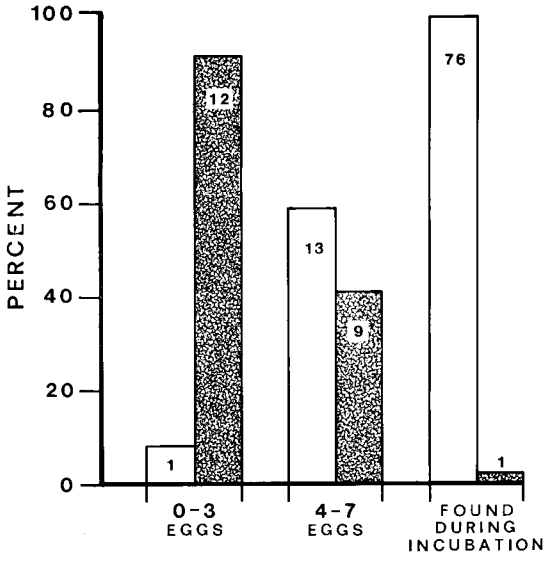

FIGURE 1. Percentage of nests found during laying that hatched (clear) or were deserted (shaded) in relation to number of eggs at the time nests were found and in relation to nests found during incubation. This sample does not include nests lost to predation. Sample sizes are shown.

deserted when found. These, too, could have resulted from females being killed off the nest. We believe these data collectively indicate that most, if not all, desertions that occurred during laying were caused by us.

We cannot discern from our data whether desertion might be an important phenomenon in the absence of human disturbance because in most cases

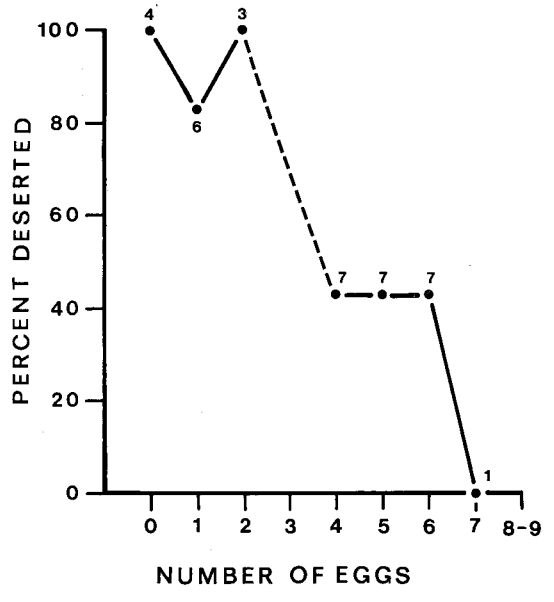

FIGURE 2. Percentage of nests found during laying that were deserted relative to the number of eggs present at the time nests were found, by one-egg increments. This sample does not include nests lost to predation. Sample sizes are shown.

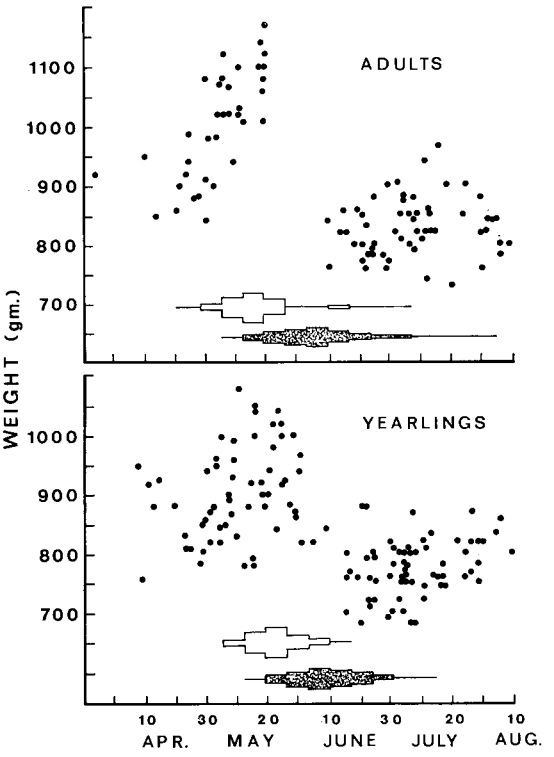

FIGURE 3. Body weights of female Blue Grouse in relation to egg-laying and incubation (egg-laying [clear] and incubation [shaded] are in percent per week).

where predators flush a female from the nest, the eggs are eaten and termination of nesting is classified as predation. However, we have no reason to believe that hens would not be as sensitive to predators as to us.

We consider it important that nests found with four eggs or more had a significantly higher rate of success than those with less than four. This suggests that a female's investment in the nest has a bearing on whether or not she deserts. Females with few eggs appear to find it more advantageous to desert, and perhaps renest, than to return to a nest which has been discovered by a potential predator—in this case, man. Investment in such a nest is small. Once four or more eggs are laid most females may have sufficient investment that they cannot afford to desert (Fig. 2). There appears to be a threshold beyond which it is more advantageous to stay with the nest than to desert a clutch of eggs (Leopold, Game management, Scribner's, 1933). For most females on our study areas, this threshold seems to be reached after at least two, but before four, eggs are laid. Since no nests were first found with three eggs, three possibilities for the threshold level exist: 1) a threshold between two and three eggs laid, 2) a threshold between three and four eggs laid, or 3) nests with three eggs may be intermediate in rate of desertion between two- and greater than four-egg nests, with a threshold as shown in Figure 2. Clearly, our data suggest no gradual continuum in the decreasing tendency to desert with number of eggs laid. Once incubation has begun, it may be disadvantageous to desert because incubating females

lose a great deal of weight, with little loss prior to that time (Fig. 3).

If we are correct in believing that most desertions we noted were an artifact of our methods, then Zwickel's (1975) figure of 57% minimal nesting success for Blue Grouse in this area should be changed to 63%. If we then apply fertility and hatchability figures reported by Zwickel to this figure, minimal hatching success becomes 60% rather than 54%, as reported earlier.

Many people and organizations contributed to this study (Zwickel 1975). A. T. Bergerud, University of Victoria, and J. F. Wittenberger, University of Washington, contributed helpful comments on the manuscript. All assistance is appreciated.

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NOTES ON THE BIRDS OF THE HAINES AREA OF SOUTHEASTERN ALASKA

J. DAN WEBSTER

Study of a collection of birds I made in 1972 and 1975 near Haines, southeastern Alaska, and in adjacent British Columbia uncovered some forms of interest. All specimens are in the collection of the California Academy of Sciences. The Klehini River flows from 12 miles NW of mile 46 of the Haines Highway into the Chilkat River (see Webster 1975 for map). The historic village of Klukwan is on the Chilkat River, one mile downstream from the confluence with the Klehini, and at mile 20 of the Haines Highway. Marshes begin on the west side of the Chilkat River 2 miles upstream (NW) from Klukwan. The area is within the humid coniferous forest region, but timberline is at about 800 m elevation. The terrain is extremely rugged and mountainous, with numerous glaciers. Precipitation, at least in the valleys, is distinctly less than in most of southeastern Alaska (Newman and Branton 1972).

Canachites canadensis atratus. Spruce Grouse. The only record from Southeastern Alaska is by Hartlaub (1883), who reported that the Krauses in 1882 took females and young at Portage Bay (= Haines) and Tlehini (= Klehini River; possibly in British Columbia as the boundary line was then uncertain). From the adjacent coastal forests of British Columbia north of the range of *C. c. franklinii*, the only record of Spruce Grouse is that of Swarth (1922:205–6) from Flood Glacier, on the Stikine River. My records are from mile 46 on the Haines Highway, beside the upper Klehini River, British Columbia, in Mountain Hemlock-Sitka Spruce forest. Here we watched a hooting male on 18 June 1972 and I collected a female on 21 June 1975. I compared the specimen with Swarth's Flood Glacier female (MVZ), as well as with 6 female topotypes of *C. c. atratus* from the Prince William Sound area, 13 female *C. c. osgoodi* from southern Alaska, southwestern Yukon, and northwestern British Columbia, and 11 female *franklinii* from western and central British Columbia. The race (in females, based on dark, blackish coloration) and its extension south to the Chilkat and Stikine are clear, despite the depreciation by Friedmann (1946: 137) and the omission of the Flood Glacier locality from the A. O. U. Check-list (1957:127). The female reported here is decidedly the darkest, blackest specimen of the *species* I have seen, and with the most extreme restriction of the terminal bar on the rectrices.

Certhia familiaris montana. Brown Creeper. I collected an immature female of this common species near Klukwan on 9 October 1972. Like those reported from Glacier Bay by Grinnell (1909:237) and Brooks (1915), it does not belong to the southern coastal race, *occidentalis*, but rather to the paler, grayer, northern and interior race. There is considerable difference of opinion as to the proper name of the grayer race from Alaska. Following Grinnell and Brooks, Gabrielson and Lincoln (1959: 636) called it *montana*. Aldrich (1946) called it *caurina*, lumping it with populations from interior Washington. Phillips (1964:116) called it *americana*. Pending revision, I use the name of the race most similar in color.

Catharus guttatus guttatus. Hermit Thrush. I collected two fall specimens and three summer specimens near Haines. All belong to the dull-colored, dark olive population from Yakutat mentioned by Aldrich (1968).

Anthus spinoletta pacificus. Water Pipit. Three specimens were collected near Haines in September and October of 1972. In identifying these, I investigated *A. s. geophilus* (Oberholser 1946), including statements by Lea and Edwards (1950) and Phillips (1964:138) supporting this race. Although autumn birds from western Alaska tend to be browner (than *A. s. rubescens*, *pacificus*, or *alticola*), I find this slight and erratic and prefer not to recognize *geophilus*.

Within the series of 76 Alaskan pipits I used for identification was the specimen (immature ♀ CAS30778 taken by Harrold 10 September 1927 on Nunivak Island) reported by Swarth (1928) and other authors as *A. s. japonicus*. I carefully compared it, particularly with a series of 39 recently-taken *japonicus* (MVZ). The wing length, 80 mm, is average for *A. s. pacificus*, but too short for *japonicus*. In my opinion, the specimen belongs not to the Asian race, but to *pacificus*, or to *geophilus* if that race be recognized, for it represents an extreme of the brown coloration. Oddly, *japonicus* resembles *rubescens* of eastern North America, in its dark dorsal color and extensive ventral streaking, more than any of the western North American races.

Agelaius phoeniceus arctolegus. Redwinged Blackbird. Some years ago (Webster 1948), I recorded two specimens from southeastern Alaska, noting that the species was a straggler from the interior. Since that time its status has changed, and it breeds in small numbers along the mainland of southeastern Alaska (Kessel and Gibson, in press). In June 1975,