FIGURE 2. Nearly fledged Golden Eaglets on 30 July.

periodically exercised their wings. Neither adult was seen. Subsequent visits and photographs were made on 29 and 30 July when the eaglets were nearly fully feathered (fig. 2). One adult appeared with a ground squirrel on the latter date, and an adult was at the nest when I arrived on 9 August. On this day both eaglets were fully feathered, and one birds was perched on a ledge several feet below the nest. Both young frequently exercised their wings. The last visit to the nest was on 15 August; only one eaglet remained on a nearby ledge.

No nesting records exist for the Golden Eagle on the Alaska Peninsula or Aleutian Islands (Gabrielson and Lincoln, 1959). Moreover, this species was not previously recorded on the Izembek National Wildlife Range (Birds of the Izembek National Wildlife Range, Bureau of Sport Fisheries and Wildlife, Portland, 1973). The nearest specimen was collected at Unga Island in the Shumagin Islands, 80 miles E of Cold Bay (Dall, Calif. Acad. Sci. Proc. 5:25, 1873). The most recent sight record was 200 miles to the west on Unalaska Island (Cahn, Condor 49:78, 1947).

Although rare in the Aleutians and Alaska Peninsula, the Golden Eagle may be more widespread than believed in this remote region where Bald Eagles (*Haliaeetus leucocephalus*) are common.

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FIRST RECORDED BREEDING OF THE GREAT-TAILED GRACKLE IN COLORADO

P. H. R. STEPNEY
Department of Zoology
University of Toronto
Toronto, Ontario, Canada

Great-tailed Grackles (*Cassidix mexicanus* ssp.) (Gmelin) have been expanding their breeding ranges northward during this century. *C. m. prosopidicola* has followed the Blackland Prairie of central and northern Texas northward, reaching Alva, Oklahoma by 1953 (Selander and Giller 1961), while *C. m. nelsoni* has moved northward from Sonora, México into south-central Arizona at least as far as Phoenix (Phillips et al. 1964). A third expansion movement northward from Chihuahua, México into New Mexico, west Texas, and eastern Arizona has also occurred, the individuals involved belonging to the subspecies *C. m. monsoni* (Phillips 1950).

In New Mexico, *C. m. monsoni* is distributed rather widely across the southern section of the state but becomes more restricted to the valley of the Rio Grande north of Las Cruces. It occurs casually as far north as Espanola in the Rio Grande valley, and is also occasional in Farmington and Aztec in the northwest portion of the state (Hubbard 1970). Sometime between 1965 and 1970, the Great-tailed Grackle continued its movement northward into Colorado. It was not recorded prior to 1965 by Bailey and Niedrach (1965), but in 1970 a male was observed at Gunnison, Gunnison County. Since then, solitary males have been noted at Gunnison and several were seen at Durango, La Plata County in 1972 (Kingery 1972). In 1973 a male and a female returned to Gunnison but apparently did not nest (Kingery 1973). On 27 April 1973 the author observed a single male Great-tailed Grackle at Monte Vista, Rio Grande County in the San Luis Valley of Colorado. Subsequent observations revealed the presence of eight nests of this species.

The male seen on 27 April was sitting on the bridge over the Empire Canal, immediately northeast of the State Veterans Home at Monte Vista. What was presumably the same bird was seen again the following morning as it foraged along the shore of nearby Home Lake. Although periodic checks were made of the area in the next few days, the bird was not relocated.

On 9 May the area was visited again and three males

TABLE 1. The heights, dimensions, and contents of the nests of the Great-tailed Grackle.

	Height (m)	Inside diameter (cm)	Outside diameter (cm)	Depth (cm)	Contents
Nest 1	8	11.4 × 10.8	20.3 × 25.4	11.4	2 yg., 1 infertile egg
Nest 2	7	10.5 × 11.4	24.1 × 25.4	11.4	3 eggs
Nest 3	5	11.4 × 11.4	16.5 × 22.9	7.6	3 yg.
Nest 4	10	11.4 × 11.4	15.2 × 22.9	7.6	1 yg., 3 eggs
Nest 5	11	12.0 × 12.7	20.3 × 22.2	11.4	2 yg.
Nest 6	11				
Nest 7	6				
Nest 8	5				

and seven females were observed foraging in a recently irrigated pasture. The three males were intermittently courting the females and giving head-up threat displays to each other. On 6 June when the site was visited again, eight nests were located in the evergreens (*Picea* spp.) in the cemetery of the Veterans Home. This is the first recorded breeding of this species in Colorado, and at present this colony is on the northern and altitudinal limits of distribution of this species, the elevation of the site being approximately 2270 m.

The nesting area was similar to those typically occupied by this species; a close association with human dwellings, water, and an agricultural landscape (Skutch 1958). The nesting habits of this group, however, differed somewhat from those of birds nesting in New Mexico and elsewhere. The nests were more widely dispersed. Each was located in a separate tree, with several unoccupied trees occurring between neighboring nests. To the south in New Mexico, the typical nesting habitat appears to be cattail (*Typha*) marshes (Compton 1947, Ligon 1926, but see Hubbard 1970), and although no data are available on nest dispersion in New Mexico, elsewhere the species commonly places several to many nests in the same tree (Selander and Giller 1961). In the Monte Vista colony nest heights ranged from 5 to 11 m and the distance between nest trees ranged from 6 to 27 m. The causes for these variations are unknown; many apparently similar sites were available that could have resulted in a closer grouping of the nests.

The nests were investigated to obtain data on their heights, contents, and construction (table 1). Although there were eight nests, only five were accessible. The remaining three whose presence were indicated by parental foraging flights were inaccessible due to dense tree growth. The accessible nests were well hidden by surrounding boughs and unlike nests often found elsewhere (Skutch 1958, Tutor 1962), securely attached to the supporting vegetation. Four of the nests were situated against the trunk as well as being attached to several branches. The fifth nest was located approximately 37 cm away from the trunk and supported by six branches. The rim and outer parts of each nest were constructed from coarse grasses and a few *Typha* fragments. The bowls of each were formed from mud and then lined with finer grasses. As is often the case in this species, two of the nests also contained pieces of string in their outer rims.

Measurements were taken on the inside and outside diameters of the nests as well as on the depth of the bowls. Nest diameters were measured to the nearest millimeter along two axes at right angles to each other. Bowl depths were measured from the center of the bowl to a height level with the nest rim. The variations observed in the outside diameters presumably reflect differences due at least in part to the nature of the construction materials and nest-site configuration. The inside diameters and bowl depth also show considerable variation. The former appears to be consistant with the range of 10.2–12.7 cm given for *C. m. mexicanus*, but the bowl depths show a tendency to be deeper than those of *C. m. mexicanus*, which range from 6.9 to 10.2 cm (Skutch 1958).

There was pronounced asynchrony in the grackles' breeding activity. Nest no. 2 contained unhatched eggs, while the eggs in nest 4 were just starting to hatch, the down of the one nestling was still wet. The young in nest 1 were about 6 days old, those in nest 3 were about 10 days old, and those in nest 5 fledged when approached. This asynchrony is apparently related to the courtship pattern and distorted sex ratios in breeding colonies of this species (Selander and Giller 1961). At Monte Vista the observed male to female ratio was 1:2.

The trees used for nesting by the grackles also contained nests of Mourning Doves (*Zenaida macroura*), American Robins (*Turdus migratorius*), and House Sparrows (*Passer domesticus*). The general nesting zone of the grackles appeared to be the upper levels of the trees. They also appeared to be selecting either taller trees with moderate foliage or shorter trees if these had particularly dense foliage.

Three old nests were located that appeared to be those of the grackle. Grackles had been observed at this site since 1971 by a person employed by the Veterans Home for 17 years. It is probable that the species did not occur here prior to 1971 or if it did, it was only for a short time before it was detected. The presence of the grackle in this area of Colorado is probably a result of following the Rio Grande valley northward. However, it was not established whether or not these birds were *C. m. monsoni*. In view of this and the fact that the other two localities in Colorado are west of the Continental Divide, further information is needed concerning the taxonomic status of these Colorado grackles.

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CORRECTION FACTORS FOR DIGESTION RATES FOR PREY TAKEN BY SNOW BUNTINGS (*PLECTROPHENAX NIVALIS*)

THOMAS W. CUSTER

AND

FRANK A. PITELKA

Museum of Vertebrate Zoology
University of California
Berkeley, California 94720

A major bias in studies of stomach contents of birds results from differences in digestion rates of various kinds of prey, such that proportions of some food items are underestimated or overestimated (Hartley 1948, Dillery 1965, Goss-Custard 1969, Swanson and Bartonek 1970). To account for such differences, some investigators have applied correction factors in their assessments of diet composition. Goss-Custard (1969) adjusted values of two dietary items (a soft crustacean, *Corophium volutator*, and a shelled gastropod, *Hydrobia ulvae*) found in stomachs of the Redshank (*Tringa totanus*) according to their relative occurrence in stomach versus esophagus. The method appears useful for the most abundant prey items; however, its applicability to uncommon or rare items is weak unless very large samples of birds are taken. Mook and Marshall (1965) attempted to find differences in digestion rates of spruce budworm (*Choristoneura fumiferana*) larvae and pupae fed to Olive-backed Thrushes (*Catharus ustulatus*) by sacrificing birds at specified time intervals after they had been fed known food items. Swanson and Bartonek (1970), studying the Blue-winged Teal (*Anas discors*), concluded that the solution to the problem of differential digestion of stomach contents is simply to use only esophageal samples taken from actively feeding birds. Because of the large esophageal capacity of ducks, this seems reasonable for that group. However, for small passerine birds, whose stomachs hold relatively few items and whose esophagi are often empty, investigation of correction factors by Mook and Marshall's method is made necessary to arrive at an adequate sample size. Existing data on this problem are good for ducks (Swanson and Bartonek 1970), but otherwise they are meager in both variety of avian species studied and types of prey represented in their diets.

In this paper we attempt to develop correction factors for different prey items in the diet of the Snow Bunting (*Plectrophenax nivalis*), using the technique of Mook and Marshall (1965). The primary motive for this study was to obtain correction factors that could be used in dietary studies already completed for the Lapland Longspur (*Calcarius lapponicus*). Buntings were chosen to avoid conflict with ongoing studies of local longspurs and because the diets of these closely related emberizine finches are so similar. Both species are primarily granivorous on wintering grounds, but take both seeds and invertebrates during the breeding and molting seasons. Reviews of longspur and bunting diets are given by Williamson (1968) and Parmelee (1968), respectively. Because the diet of the finches studied is relatively catholic, we hope that the results will have significance also for studies of stomach contents of fringillids in general.

METHODS

This study was carried out at the Naval Arctic Research Laboratory, Barrow, Alaska, during June and July 1973. Twenty male buntings were trapped, using four-celled Glenhaven sparrow traps baited with commercial bird seed. The birds were immediately brought into the laboratory and force-fed known numbers and sizes of prey items collected near the laboratory (fig. 1). General background on the invertebrate fauna of the Barrow area is given by MacLean and Pitelka (1971) and on the seed-producing flora by Wiggins and Thomas (1962).

Types of prey used were selected on the basis of availability and known occurrence in the diet of the bunting. Except for tests involving millet seeds where pure samples of a single item were used, each bird was fed a variety of items. Prey items in the stomachs of experimental birds not part of the force-fed meal were ignored. Force-feeding proceeds easily and does not lead to bias in results since intact bodies of larvae and other invertebrates are regularly to be found in both esophagus and stomach of these finches. After force-feeding, the birds were confined to a darkened chamber and sacrificed after selected five-minute intervals. The stomachs were removed immediately and analyzed for contents. An item was recorded as "present" when remains allowed a count of the original number of individuals ingested (e.g., by wings, head capsules, or tarsi); an item was recorded as "trace" when remains revealed occurrence but not number of individuals ingested (e.g., fragments of elytra).

In this study we did not use a standard combination of food items; that is, we thereby assumed that the diet composition does not influence the digestion rate. This may be dubious, but because stomachs of each experimental bird, when force-fed, already contained some seeds and occasionally invertebrates consumed before experimentation, we consider that the experimental diets were exposed to the usual variability of stomach contents.

RESULTS

Results are summarized in figure 1. Different food items fed buntings remained distinguishable in the stomach for variable times. The small seeds of a native biennial crucifer, *Cochlearia officinalis*, could be recognized over 150 min after ingestion, and large commercial millet seeds remained in the stomach well