

during my study were similar to those on Espanola when bill-brace feeding was first described in the Large Cactus Finch (*G. conirostris*) (DeBenedictis 1966) in that seeds were covered by other material. Such dry conditions may require finches to excavate to reach the seed supply, although similar uses of the bill may also be of value at other times of year. Clark (1971) found that bill-sweeping in various species, and Greenlaw (1976) found that scratching in the Rufous-sided Towhee (*Pipilo erythrophthalmus*), occur under restricted conditions when food is not readily available except by moving litter. Clark (1983) found in thrushes that the extent and complexity of such behavior depended on the depth of the litter. On the Galapagos, foraging responses appear to differ in wet and cool-dry seasons, and it is this latter period when specific differences in foraging may be most apparent (Smith et al. 1978). Understanding alternative tactics used in the dry season such as group feeding and complex feeding techniques may provide insight into the evolution of foraging behaviors. The study of complex behaviors in captive finches may be useful in distinguishing genetic from learned components of their behavioral repertoire and in determining how behavioral choices relate to morphological constraints on feeding efficiency of the various species of Darwin's finches.

This study was supported in part by the Frank M. Chapman Memorial Fund of the American Museum of Natural History and conducted in cooperation with the Charles Darwin Research Station. I thank Hendrik Hoeck for his encouragement and M. Spalding for assistance. I especially thank Peter R. Grant and Robert I. Bowman for their discussions, advice, and review of the manuscript. This is a contribution from the Charles Darwin Research Station.

LITERATURE CITED

- ABBOTT, I., L. K. ABBOTT, AND P. R. GRANT. 1977. Comparative ecology of Galapagos ground finches (*Geospiza* Gould): evaluation of the importance of floristic diversity and interspecific competition. *Ecol. Monogr.* 47:151-184.
- BOWMAN, R. I. 1961. Morphological differentiation in the Galapagos finches. *Univ. Calif. Berkeley, Publ. Zool.* 58:1-302.
- CLARK, G. A., JR. 1971. The occurrence of bill-sweeping in the terrestrial foraging of birds. *Wilson Bull.* 83:66-73.
- . 1983. An additional method of foraging in litter by species of *Turdus* thrushes. *Wilson Bull.* 95:155-157.
- DEBENEDICTIS, P. A. 1966. The bill brace feeding behavior of the Galapagos Finch *Geospiza conirostris*. *Condor* 68:206-208.
- GRANT, P. R., B. R. GRANT, J. M. N. SMITH, I. J. ABBOTT, AND L. K. ABBOTT. 1976. Darwin's finches: Population variation and natural selection. *Proc. Natl. Acad. Sci.* 73:257-261.
- GREENLAW, J. S. 1976. Use of bilateral scratching behavior by emberizines and icterids. *Condor* 78:94-97.
- HARRISON, C. J. O. 1967. The double-scratch as a taxonomic character in the holarctic emberizinae. *Wilson Bull.* 79:22-27.
- LACK, D. 1947. *Darwin's Finches*, Cambridge Univ. Press, Cambridge, England.
- SMITH, J. M. N., P. R. GRANT, B. R. GRANT, I. J. ABBOTT, AND L. K. ABBOTT. 1978. Seasonal variation in feeding habits of Darwin's ground finches. *Ecology* 59:1137-1150.
- JAMES A. KUSHLAN, *Department of Biology, University of Miami, Coral Gables, Florida 33124*. Received 22 Oct. 1982; accepted 5 Aug. 1983.

Burrowing Owl Occurrence on White-tailed Prairie Dog Colonies.—The Burrowing Owl (*Athene cunicularia*) nests primarily in the underground burrow systems of various rodents (Zarn 1974). Owls have been studied on black-tailed prairie dog (*Cynomys ludovicianus*) colonies by several investigators (Butts 1973, Koford 1958, Olendorff 1973) but little is known about their occurrence on white-tailed prairie dog colonies (*C. leucurus*).

Burrowing Owls are known to nest in 20 of 28 Wyoming latilongs (Wyoming Game

and Fish 1982) but are considered uncommon in the state and may be declining in numbers. Habitat destruction and rodent control are believed responsible for reducing owl numbers in the state (Wyoming Game and Fish 1977).

In the present note I report the incidence of Burrowing Owls observed on white-tailed prairie dog colonies during day and night searches for black-footed ferrets (*Mustela nigripes*) in south-central and southwestern Wyoming, 1978–1982. Daytime searches involved walking through prairie dog colonies and examining all burrow entrances. Night surveys were conducted with the aid of a high-intensity spotlight. Location, size, and burrow density of prairie dog colonies were recorded for each Burrowing Owl observed.

Surveys were conducted June–September on 426 white-tailed prairie dog colonies comprising 14,349 ha. A total of 86 Burrowing Owls was sighted on 34 (8.0%) colonies. Owls were found in Sweetwater, Carbon, Uinta, and Lincoln counties on 16, 14, 3, and 1, colonies respectively. Mean (\pm SE) size of owl occupied colonies was 72.8 ± 13.2 ha ($n = 33$; range .8–325.1) with a mean number of burrows/ha of 31.6 ± 6.9 ($n = 25$; range 4.7–167.2).

Burrowing Owl nests with young were found on 10 (2.4%) colonies. A total of 27 owlets was observed with a mean young/nest of 2.7 ± 0.5 (range 1–5). Mean colony size for nest sites were 74.0 ± 12.8 ha ($n = 10$; range 27.5–147.8) with a mean number of burrows/ha of 20.0 ± 2.7 ($n = 9$; range 7.2–34.3).

To estimate adult owl densities, the single bird sightings were doubled, to account for unpaired birds in early summer, and added to the number of paired birds to arrive at a maximum number of owls. An estimated 80 adults were projected with a density of 1 adult/172.5 ha. This density is considerably less than the 1 adult/1.9 ha reported by Butts (1973) for black-tailed prairie dog colonies in Oklahoma. These data seem to substantiate casual observations that Burrowing Owls are less numerous on white-tailed prairie dog colonies than on black-tailed prairie dog colonies. Reasons for these differences may be found in the variation of colony characteristics between black-tailed and white-tailed prairie dogs. Factors identified as essential for good Burrowing Owl habitat include openness, short vegetation, and burrow availability (Wyoming Game and Fish 1977). White-tailed prairie dog colonies may contain fewer Burrowing Owls because they are generally less open and contain taller vegetation (Hoogland 1981) than black-tailed prairie dog colonies. Searches were funded by the Bureau of Land Management. F. Knopf and J. Oldemeyer reviewed this paper.

LITERATURE CITED

- BUTTS, K. O. 1973. Life history and habitat requirements of Burrowing Owls in western Oklahoma. M.S. thesis, Okla. State Univ., Stillwater, Oklahoma.
- HOOGLAND, J. L. 1981. The evolution of coloniality in white-tailed and black-tailed prairie dogs (Sciuridae: *Cynomys leucurus* and *C. ludovicianus*). Ecology 62:252–272.
- KOFORD, C. B. 1958. Prairie dogs, whitefaces, and blue grama. Wildl. Monogr. 3:1–78.
- OLENDORFF, R. R. 1973. The ecology of the nesting birds of prey of northeastern Colorado. U.S.I.B.P., Grassland Biome. Tech. Rept. 211 pp.
- WYOMING GAME AND FISH DEPT. 1977. Current status and inventory of wildlife in Wyoming. Cheyenne, Wyoming.
- WYOMING GAME AND FISH DEPT. AND BIGHORN AUDUBON SOCIETY. 1982. Wyoming avian atlas. Cheyenne, Wyoming.
- ZARN, M. 1974. Habitat management series for unique or endangered species. Report No. 11. Burrowing Owl (*Speotyto cunicularia hypugaea*). U.S. Dept. Int. Bur. Land Manage. Tech. Note No. 250.
- STEPHEN J. MARTIN, *Denver Wildlife Research Center, 1300 Blue Spruce Drive, Fort Collins, Colorado. 80524*. Received 2 July 1983; accepted 30 Aug. 1983.