

FLORIDA BURROWING OWL
(*Athene cunicularia floridana*) PREYS ON EURASIAN
COLLARED-DOVE (*Streptopelia decaocto*)

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Data are sparse on the diet of Florida Burrowing Owls (*Athene cunicularia floridana*). What information does exist indicates that insects and other relatively small prey items predominate in the diet of this subspecies (Ridgway 1874, Cahoon 1885, Hoxie 1889, Rhoads 1892, Palmer 1896, Bent 1938, Lewis 1973, Hennemann 1980, Wesemann 1986, Yosef and Deyrup 1994, Mrykalo et al. 2009). Lewis (1973) tabulated records of pellet content analyses and determined that invertebrates and vertebrates constituted 82 and 17 percent of the owls' diets, respectively. Of these, items such as beetles, small lizards, and small rodents appear to have dominated. Mrykalo et al. (2009) found a similar preponderance of small prey items in pellets they examined. Insects were the most abundant prey item identified for both an urban site (86%) and a rural site (89.1%). Avian prey made up a larger part of owl diets on the urban study site but on both sites accounted for a very small proportion of the diets (2.9% = urban, 0.7% = rural). No data were reported to indicate the size of the birds identified as prey. Burrowing Owls are perceived as generalist feeders, consuming any terrestrial vertebrate or invertebrate that they can physically handle (Poulin et al. 2011). It seems, however, that most prey items weigh from a few grams to 60 grams. As reported by Mrykalo et al. (2009), prey of Florida Burrowing Owls other than insects have included Savannah Sparrows (*Passerculus sandwichensis*), Bobolinks (*Dolichonyx oryzivorus*), and unknown species of rodents, lizards, frogs, fish (Rhoads 1892), crabs (Bent 1938), crayfish (Rhoads 1892, Palmer 1896), and snakes (Rhoads 1892, Bent 1938).

The general lack of data showing large prey being taken by the Florida Burrowing Owl may indicate that the species is unable to catch or subdue anything beyond what would be considered small to moderate-size prey. This makes some biological sense given that the Florida subspecies is one of the smallest of the 15 recognized subspecies (Poulin et al. 2011). But the lack of such data may simply reflect the general paucity of data on the food habits of the Florida subspecies and

reliance primarily on examination of pellets for identification of prey items. The following observations especially suggest that the latter may be the case.

Between 26 April and 5 May 2012, I spent about 40 hours observing and photographing a mated pair of Florida Burrowing Owls that had established a nest site on a large vacant lot in Cape Coral, Florida. The city of Cape Coral is located in southwest Florida and consists of filled upland subdivided into lots suitable for homes, dissected by access roads and saltwater canals. Undeveloped lots are interspersed with single-family homes throughout the area. The pair was actively foraging and feeding 6 owlets. The age of the owlets was unknown, but they were almost capable of flight, so I estimate that they were three to four weeks old. At that age an owlet can consume a large volume of food in a short period of time. I observed both the male and female foraging and taking food to the owlets at the burrow from morning through evening each day. All prey items except one were small or medium-size, and these consisted of insects, worms, and frogs (Figures 1 and 2) that were quickly devoured by the young birds. The single large prey item was a Eurasian Collared-Dove (*Streptopelia decaocto*), killed by the male and delivered to the burrow in less than pristine condition (Figure 3).



Figure 1. Florida Burrowing Owl with typical medium-size prey item (frog).



Figure 2. Adult female Florida Burrowing Owl returning to burrow site with an earthworm for its owlets.

The Eurasian Collared-Dove is longer (mean = 32cm) and heavier (mean = 185g; range = 125-240g; Romagosa 2012) than the Florida Burrowing Owl (length = 19-25cm; weight = 150-170g; Poulin et al.



Figure 3. Adult male Florida Burrowing Owl returning to burrow with Eurasian Collared-Dove for its owlets.

2011), qualifying it as a very large prey item for this owl. I saw the owl kill the dove by flying over and then diving onto it while the dove was foraging on the ground in the middle of the vacant lot. A Florida Burrowing Owl, therefore, is capable of killing a bird larger than itself. But the way it manipulated the dove and transported it to the burrow suggests that it could not easily transport such a large prey item. The owl plucked feathers and removed and discarded large quantities of flesh from the carcass in what may have been an effort to reduce the carcass's weight. The male then flew to the burrow (approximately 75 meters from the kill site) holding the dove in one foot. It flew low to the ground and stopped about 6 feet short of the burrow. The owlets ventured out to the carcass to feed, pulling away shreds of flesh and consuming them. I did not see the owlets consume any bones, and the carcass remained on the ground near the burrow for a couple of days.

Based on a single observation, it is impossible to know how often Florida Burrowing Owls attack and kill large prey items such as Eurasian Collared-Doves. But this event shows that this small raptor is capable of killing relatively large prey. Given that the adult and owlets ate primarily flesh from the carcass, little evidence of this prey item would likely find its way into a pellet. Diet studies of Florida Burrowing Owls based on pellets alone may underestimate the prevalence of large prey items such as Eurasian Collared-Doves. Just as prey species with bones too large to be ingested by these small owls may be underestimated by pellet analysis, so too would soft-bodied prey species with no bones, such as earthworms. Mrykalo et al. (2009) suggested that future studies should compare the effectiveness of pellet analysis with other methods such as the analysis of prey remains, direct observation of predation and prey delivery to the nest, and camera or video documentation. Based on my observation of a Burrowing Owl successfully killing a large prey item and delivering it to nestlings, I believe that diet studies of Florida Burrowing Owls would be enhanced if pellet analysis was supplemented with other methods.

There is value in knowing whether foraging for large prey like the Eurasian Collared-Dove by Burrowing Owls is common, because hunting for and consuming fewer large prey items rather than many small ones may provide adaptive advantages to adults and young. For example, doing so would be an advantage if it allowed the adults to make fewer foraging trips to feed a large brood of owlets and young fledglings. Fewer foraging trips could translate into increased adult survival by reducing exposure to dangers and decreasing energy demands. Larger prey items also could reduce competition for food among siblings of larger broods, increasing fledging rates. Overall, a better understanding of the foraging and food habits of Florida Burrowing Owls is needed for birds in both urban and rural habitats

to elucidate these types of predator-prey relationships and help in managing conservation efforts directed toward this subspecies.

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LITERATURE CITED

- BENT, A. C. 1938. Life histories of North American birds of prey. U.S. National Museum Bulletin 170. Washington, D.C.
- CAHOON, J. C. 1885. The Florida Burrowing Owl (*Speotyto cunicularia floridana*). Ornithologist and Oologist 10:21.
- HENNEMANN, W. W., III. 1980. Notes on the food habits of the Burrowing Owl in Duval County, Florida. Florida Field Naturalist 8:25-26.
- HOXIE, W. J. 1889. Nesting of the Florida Burrowing Owl. Ornithologist and Oologist 14:33-34.
- LEWIS, J. C. 1973. Food habits of Florida Burrowing Owls. Florida Field Naturalist 1(2):12-14.
- MRYKALO, R. J., M. M. GRIGIONE, AND R. J. SARNO. 2009. A comparison of available prey and diet of Florida Burrowing Owls in urban and rural environments: A first study. Condor 111:556-559.
- PALMER, W. 1896. On the Florida ground owl (*Speotyto floridana*). Auk 13:98-108.
- POULIN, R., L. D. TODD, E. A. HAUG, B. A. MILLSAP, AND M. S. MARTELL. 2011. Burrowing Owl (*Athene cunicularia*) In The Birds of North America Online (A. Poole, Ed.). Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <<http://bna.birds.cornell.edu/bna/species/061>> <doi:10.2173/bna.61>
- RIDGWAY, R. 1874. Discovery of a Burrowing Owl in Florida. American Sportsman 4:216-217.
- RHOADS, S. N. 1892. The breeding habits of the Florida Burrowing Owl (*Speotyto cunicularia floridana*). Auk 9:1-8.
- ROMAGOSA, C. M. 2012. Eurasian Collared-Dove (*Streptopelia decaocto*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: <http://bna.birds.cornell.edu/bna/species/630>
- WESEMANN, T. 1986. Factors influencing the distribution and abundance of Burrowing Owls (*Athene cunicularia*) in Cape Coral, Florida. Thesis. Appalachian State University, Boone, North Carolina.
- YOSEF, R., AND M. DEYRUP. 1994. Pellet analysis of Burrowing Owls in south central Florida. Florida Field Naturalist 22:78-80.