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## **EASTERN SCREECH-OWL USE OF NEST BOXES AT HOLIDAY HIGHLANDS SANCTUARY, ORANGE COUNTY, FLORIDA**

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Holiday Highlands Sanctuary (HHS), a 17-hectare lot owned by Audubon of Florida, is located 6.4 km NNE of Zellwood, Florida. The canopy, covering 90% of the area, consists mainly of live oak (*Quercus virginiana*) and longleaf pine (*Pinus palustris*). Ground cover is variable with yellow jessamine (*Gelsemium sempervirens*), greenbriar (*Smilax auriculata*), and wiregrass (*Aristida beyrichiana*).

The Eastern Screech-Owl (*Megascops asio*), found throughout Florida, is more common in central and southern Florida and probably breeds throughout the state (Stevenson and Anderson 1994). A cavity nester, Eastern Screech-Owls readily nest in natural cavities and nest boxes (Grimes 1945). Eggs have been found in Florida from 15 March to 28 May and newly fledged young have been reported as late as 31 July (Stevenson and Anderson 1994).

Fifteen nest boxes of various sizes were installed in HHS, 3-4 m high on trees, in 1976 and periodically thereafter (Table 1). Initially, most nest boxes were constructed of 2-cm outdoor plywood. At that time, many people helped with construction and various types of wood were used. Boxes had 3-m or more clearance in front of them and all were in partial or complete shade throughout the day. From 1976 to 2003 a total of 122 boxes of various sizes have been placed in the sanctuary. The largest number of boxes present and available for use at any one time was 46 in 2000. Between 1976 and 2003 we made 114 trips to monitor the boxes. No visits were conducted in 1994 and 14 trips, the maximum, were made in 1987. Mean number of trips per year was 4.2. Most visits were made from March through May. Only occasional trips were made during other months and no trips were made in August and October.

**Table 1. Dimensions and orientation of nest boxes used by Eastern Screech-Owls for the greatest numbers of years at Holiday Highlands Sanctuary, 1976-2003.**

Nest box	Year erected	Dimensions (D × W × H)	Diameter of entrance hole	Orientation from North <sup>a</sup>	No. of years used by Eastern Screech-Owls
L	1976	18 × 18 × 25 cm	8 cm	280°	5
Q	1976	18 × 18 × 23 cm	8 cm	342°	5
A	1976	18 × 15 × 25 cm	8 cm	126°	4
E	1976	23 × 20 × 25 cm	8 cm	40°	4
G	1985	18 × 18 × 23 cm	8 cm	110°	4
J	1976	23 × 28 × 25 cm	8 cm	312°	4
I	1976	18 × 18 × 23 cm	6 cm	320°	3
J	1988	18 × 18 × 20 cm	8 cm	312°	3
O	1976	25 × 23 × 23 cm	6 cm	150°	3
P2	1985	23 × 20 × 33 cm	8 cm	210°	3
R99A	1999	13 × 15 × 18 cm	5 cm	0°	3
Z98	1998	25 × 25 × 41 cm	6 cm	45°	3

<sup>a</sup>The orientation of the front of the box is measured in degrees from due North.

We found Eastern Screech-Owls in boxes from 1 January through 19 July, and on some of the few visits in September, November, and December. The longest interval when young were seen in the same box during the same year was 35 days (15 April to 20 May 2001). The longest period of egg sighting to young in the same box and year was 59 days (20 March to 18 May 1985). The longest periods of sighting an owl and later seeing young in the same year and in the same box were from 6 March to 16 May 1982, 71 days, and 1 February to 14 May 1986, 102 days. We found eggs in various boxes between 19 March and 30 May, and young between 6 April and 14 June. Number of eggs was not determined because of concern for nest desertion. Number of young varied from 1-3 with two the mode.

Yearly use of boxes by Screech-Owls varied from zero to ten (Table 2). The average number of boxes occupied per year was 3.5. In November 1998, ornamental plant growers near Lake Apopka, approximately 6 km from the Audubon property, noticed impacts by a house mouse population (*Mus musculus*), a food source for Eastern Screech-Owls, and began an aggressive control plan. In the spring of 1999 residents of nearby communities surrounding Lake Apopka noticed an increase in the mouse population, with intrusion into residential buildings. The peak appears to have been in October 1999 when numerous government agencies worked on the problem (Pam Bowen, Saint Johns River Water Management District, pers. comm.). The infestation appeared to

**Table 2. Numbers of site visits, nest boxes occupied by Eastern Screech-Owls, and nest boxes occupied by other bird species at Holiday Highlands Sanctuary, 1976-2003.**

Year	No. of visits	Boxes occupied by Eastern Screech-Owls	Boxes occupied by other bird species	Vacant boxes
1976	3	3	1	16
1977	2	0	5	15
1978	6	5	5	10
1979	3	4	0	13
1980	2	1	0	16
1981	6	6	2	9
1982	4	6	1	10
1983	2	4	1	8
1984	2	0	0	13
1985	4	5	6	9
1986	6	6	1	14
1987	14	6	5	20
1988	4	3	1	28
1989	6	2	4	27
1990	6	3	5	23
1991	6	3	3	32
1992	4	3	3	38
1993	1	0	0	U <sup>a</sup>
1995	1	0	0	21
1996	2	1	2	30
1997	3	1	3	27
1998	5	2	3	32
1999	6	5	1	33
2000	5	10	2	34
2001	5	2	7	34
2002	5	6	2	38
2003	5	7	1	37

<sup>a</sup>U denotes that the value is unknown or could not be calculated due to a lack of data.

have subsided by December 1999. The greatest number of boxes used by owls, 10, occurred in 2000, suggesting that owls may have produced large broods the previous year.

Florida is in the midst of a building boom in which large tracts of natural land are converted to residential and commercial uses. As trees are lost to development, birds are concentrated in the remaining prime areas, often forced onto less desirable habitat, or locally extirpated. Some cavity-nesting birds such as Eastern Screech-Owls may be deprived of nesting sites. There are parks and small tracts of land, which, while not having trees large or old enough for natural cavities so that reproduction can occur, may provide a food source for Eastern Screech-Owls. Nest boxes for the owls may provide homes for some that other-

wise may not nest. We had an Eastern Screech-Owl nest successfully in a box attached to a palm tree about 5 m from our front door while living in a condominium within a golf club community.

Owls at HHS have used forty different boxes. The smallest occupied box was  $13 \times 13 \times 20$  cm (depth  $\times$  width  $\times$  height, inside measurements). The largest box was  $25 \times 25 \times 41$  cm. Entrance holes varied from 5 to 8 cm in diameter. Publications about boxes for Eastern Screech-Owls suggest that boxes must have an 8-cm-diameter entrance or larger, although Conner et al. (1996) found Eastern Screech-Owls used entrance holes less than 7-cm diameter. Northern Eastern Screech-Owls, *M. a. maxwelliae*, average 220 g, Florida Screech-Owls, *M. a. floridanus*, 167 g (Karalus and Eckert 1974). Gehlbach (1995) also states screech-owls in the southeast are smaller than northern and western screech-owls. The larger owls would require larger holes, while the smaller Florida owls could use the smaller hole size. Entrance orientation had no influence on occupancy, as boxes used were almost equally divided among the NE, SE, SW and NW quadrants.

Four of the nest boxes used for the greatest numbers of years at HHS had entrance holes less than 7-cm diameter (Table 1). Dimensions listed for screech-owl box construction are  $20 \times 20 \times 30$  cm (Anon. 1969, Champion 1961, McElroy 1968). However, seven nest boxes used at HHS for the greatest number of years were smaller than the listed dimensions. The possibility exists that dimensions listed for Eastern Screech-Owl boxes are for the larger owls and may not reflect the specific needs of the smaller *floridanus* population. Depth of cavity is misleading as we have seen some boxes with the entrance hole in the middle of the vertical front panel. Height from the floor of the box to the bottom of the entrance hole should be specified when giving directions for box construction. Belthoff and Ritchison (1990) found Eastern Screech-Owls selected nest sites based on depth of cavity, and, to a lesser degree, on entrance size and entrance height from base of box. Eastern Screech-Owls nesting in Florida have nested successfully in much smaller boxes than those suggested for Eastern Screech-Owls, although Gehlbach (1994) suggested small boxes may increase the likelihood of mortality. Our data neither support nor contradict his suggestion.

Other species found using the nest boxes included: Great Crested Flycatcher (*Myiarchus crinitus*) found in 27 different boxes; southern flying squirrel (*Glaucomys volans*), 50 boxes; gray squirrel (*Sciurus carolinensis*), 31 boxes; Tufted Titmouse (*Baeolophus bicolor*), 6 boxes; and yellow rat snake (*Elaphe obsoleta*) 8 boxes. The flycatchers, titmice and gray squirrels used the boxes to raise young. No young flying squirrels were seen. One box held at least 12 flying squirrels; the bottom looked like it was carpeted. One snake was found in the same box for two consecutive years. A skin found on top of the box was four feet long.

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LITERATURE CITED

- ANON. 1969. Homes for Birds. Conservation Bulletin 14. U.S. Department of the Interior.
- BELTHOFF, J. R., AND G. RITCHISON. 1990. Nest-site selection by Eastern Screech-Owls in central Kentucky. *Condor* 92:982-990.
- CHAMPION, P. V. 1961. Birdhouses. The Bruce Publishing Company, Milwaukee, WI.
- CONNER, C. N., D. C. RUDOLPH, D. S. SAENZ, AND R.R. SCHAEFFER. 1996. Red-Cockaded Woodpecker nesting success, forest structure and southern flying squirrels in Texas. *Wilson's Bulletin* 108:697-711.
- GEHLBACH, F. R. 1994. The Eastern Screech-Owl: life history, ecology and behavior in the suburbs and countryside. Texas A&M University Press, College Station.
- GEHLBACH, F. R. 1995. Eastern Screech-Owl (*Otus asio*). In *The Birds of North America*, No. 165 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, and The American Ornithologists' Union, Washington, D.C.
- GRIMES, S. A. 1945. Birds of Duval County. *Florida Naturalist* 18:17-25; 19:1-11.
- KARALUS, K., AND A. W. ECKERT. 1974. The owls of North America. Doubleday, New York, NY.
- MCELROY, T. P. 1968. The new handbook of attracting birds. Alfred A. Knopf, New York.
- STEVENSON, H. M., AND B. H. ANDERSON. 1994. The birdlife of Florida. University Press of Florida, Gainesville.