Florida Field Naturalist

Volume 37 | Issue 2 Article 3

January 2009

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Florida Field Naturalist 37(2):51-57, 2009.

NESTING SUBSTRATES OF MONK PARAKEETS (*MYIOPSITTA MONACHUS*) IN FLORIDA

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The Monk Parakeet (*Myiopsitta monachus*) is the most abundant and widespread psittacid in North America, attaining its greatest numbers in Florida (Pranty 2002, Pranty and Garrett 2003). First reported breeding in the state in 1969 (Owre 1973), Monk Parakeets in Florida number in the thousands of individuals (Pranty 2002, Pranty and Garrett 2003, Pruett-Jones et al. 2005), although Christmas Bird Count data suggest a steady decline since 2003 (NAS 2009). The success of Monk Parakeets can be partially explained by their adaptable nesting habits: they use as their nesting substrates a wide variety of native and exotic palms and trees and manmade structures. Monk Parakeets are the only psittacid that builds its own nest rather than nesting in secondary cavities (Forshaw 2006). In this note, I document the nesting substrates of more than 1000 Monk Parakeet nests in Florida, 1999-2000. Nest-site selection by Monk Parakeets is diverse and may provide clues to their survival and persistence as an exotic species in tropical and temperate regions of North America and parts of the Old World—areas outside their native range. This behavior is important also because of the parakeet's propensity for selecting manmade structures such as electrical substations and powerline towers, a behavior that sometimes causes safety concerns and economic impacts to utility companies (Pruett-Jones et al. 2005).

METHODS

As part of a project to determine the range and population size of Monk Parakeets in Florida, I and dozens of volunteers surveyed urban and suburban habitats in the peninsula and mainline Keys from January 1999 through June 2000 for the presence of Monk Parakeet nests. The data gathered at each nest varied according to logistics and observer skill and effort, but two measurements were taken at each nest: 1) the specific location (e.g., street address or road intersection); and 2) the nesting substrate. Most substrates were identified precisely, but some were identified only generally (e.g., palm species). Regions of Florida follow Robertson and Woolfenden (1992).

RESULTS

I determined the nesting substrates of 1046 Monk Parakeet nests built in 16 counties in Florida during 1999 and 2000 (Table 1). Nests

Table 1. Monk Parakeet nesting substrates (n = 1046) in Florida, 1999-2000. The right-hand column indicates the number of nests for each substrate by county.

SUBSTRATE/SUBSTRATE-TYPE	# NESTS	COUNT(Y) (IES)
MANMADE STRUCTURES	=531	
Billboard	5	Pinellas (5)
Building eaves	1	Pasco (1)
Electrical substation	251	Brevard (8), Broward (14), Miami-Dade (36), Osceola (9), Pasco (20), Pinellas (164)
*Osprey (*Pandion haliaetus*) nest platform	1*	Orange (1)
Tower, ballfield light	103	Broward (42), Lee (4), Miami-Dade (14), Palm Beach (13), Pinellas (30)
Tower, communication	49	Broward (26), Miami-Dade (7), Pinellas (16)
Tower, powerline	27	Broward (11), Miami-Dade (11), Pasco (5)
Tower, water	1	Pinellas (1)
Utility pole, with transformer	62	Broward (14), Citrus (1), Hillsborough (7), Miami-Dade (6), Palm Beach (1), Pasco (19), Pinellas (12), Sarasota (2)
Utility pole, no transformer	17	Broward (9), Hillsborough (6), Miami-Dade (2)
Utility pole, no transformer, with vine	3	Hillsborough (1), Miami-Dade (1), Pasco (1)
Utility pole, no information	11	Broward (2), Hillsborough (1), Miami-Dade (2), Pinellas (5), Seminole (1)
EXOTIC TREES OR PALMS	=413	
Australian pine (*Casuarina* sp.)	1	Manatee (1)
Fig (*Ficus* sp.)	1	Broward (1)
Kapok tree (*Ceiba pentandra*)	7	Miami-Dade (7)
Monkey puzzle tree (*Araucaria araucana*)	5	Hillsborough (5)
Palm, Canary Island date (*Phoenix canariensis*)	154	Broward (11), Citrus (1), Hillsborough (26), Miami-Dade (2), Pasco (3), Pinellas (102), Polk (1), Sarasota (8)
Palm, coconut (*Cocos nucifera*)	58	Broward (36), Miami-Dade (3), Palm Beach (6), Sarasota (13)

*A Monk Parakeet nest built in the bottom of an active Osprey nest in Pinellas County is listed under ballfield light tower because both species built their nests on top of the tower. Counties in Florida that contained one or more Monk Parakeet nests during my study were St. Johns (northern peninsula), Brevard, Citrus, Hillsborough, Manatee, Orange, Osceola, Pasco, Pinellas, Polk, Sarasota, and Seminole (central peninsula), and Broward, Lee, Miami-Dade, and Palm Beach (southern peninsula).

Table 1. (Continued) Monk Parakeet nesting substrates (n = 1046) in Florida, 1999-2000. The right-hand column indicates the number of nests for each substrate by county.

SUBSTRATE/SUBSTRATE-TYPE	# NESTS	COUNT(Y) (IES)
Palm, Cuban royal (*Roystonea regia elata*)	23	Broward (15), Manatee (4), Miami-Dade (4)
Palm, edible date (*Phoenix dactylifera*)	4	Hillsborough (3), Pinellas (1)
Palm, foxtail (*Wodyetia bifurcata*)	2	Broward (2)
Palm, jelly (*Butia capitata*)	1	Hillsborough (1)
Palm, Mexican fan (*Washingtonia robusta*)	22	Lee (11), Miami-Dade (1), Pinellas (9), Sarasota (1)
Palm, queen (*Syagrus romanzoffianum*)	8	Broward (2), Manatee (1), Pinellas (5)
Palm, Senegal date (*Phoenix reclinata*)	4	Miami-Dade (3), Sarasota (1)
Palm species	24	Broward (6), Hillsborough (1), Manatee (1), Miami-Dade (1), Pinellas (12), Polk (1), Seminole (1), St. Johns (1)
Pine, Norfolk Island (*Araucaria heterophylla*)	1	Miami-Dade (1)
Punk tree (*Melaleuca quinquenervia*)	98	Broward (44), Lee (5), Miami-Dade (44), Pinellas (5)
NATIVE TREES	=102	
Cypress (*Taxodium* spp.)	41	Broward (39), Pasco (2)
Oak, live (*Quercus virginiana*)	19	Pinellas (19)
Oak (*Quercus* spp.)	8	Hillsborough (6), Pinellas (2)
Palm, cabbage (*Sabal palmetto*)	22	Broward (1), Hillsborough (3), Manatee (2), Pinellas (5), Polk (1), Sarasota (10)
Pine, slash (*Pinus elliottii*)	11	Broward (8), Pinellas (3)
Redcedar (*Juniperus virginiana*)	1	Lee (1)
TOTAL SUBSTRATES	=1046	Brevard (8), Broward (283), Citrus (2), Hillsborough (60), Lee (21), Manatee (9), Miami-Dade (145), Orange (1), Osceola (9), Palm Beach (20), Pasco (51), Pinellas (396), Polk (3), Sarasota (35), Seminole (1), St. Johns (2)

*A Monk Parakeet nest built in the bottom of an active Osprey nest in Pinellas County is listed under ballfield light tower because both species built their nests on top of the tower. Counties in Florida that contained one or more Monk Parakeet nests during my study were St. Johns (northern peninsula), Brevard, Citrus, Hillsborough, Manatee, Orange, Osceola, Pasco, Pinellas, Polk, Sarasota, and Seminole (central peninsula), and Broward, Lee, Miami-Dade, and Palm Beach (southern peninsula).

were built in 31 specific substrates (Table 1) and were broadly divided into three categories: manmade structures (531 nests; 50%); exotic palms or trees (413; 39%); and native palms or trees (102 nests; 9%). All of the nests found during my study were located in the peninsula, primarily in coastal counties in the southern half of the peninsula (Fig. 1). No nests were found in the Panhandle or in the Keys, and only two nests were found in the northern peninsula (Fig. 1). Photographs of most Monk Parakeet nesting substrates found during my study are posted to <monkparakeet.com/florida/slideshow2>.

Monk Parakeet nests in Florida were divided regionally: 2 nests in one county in the northern peninsula; 575 nests in 11 counties in the

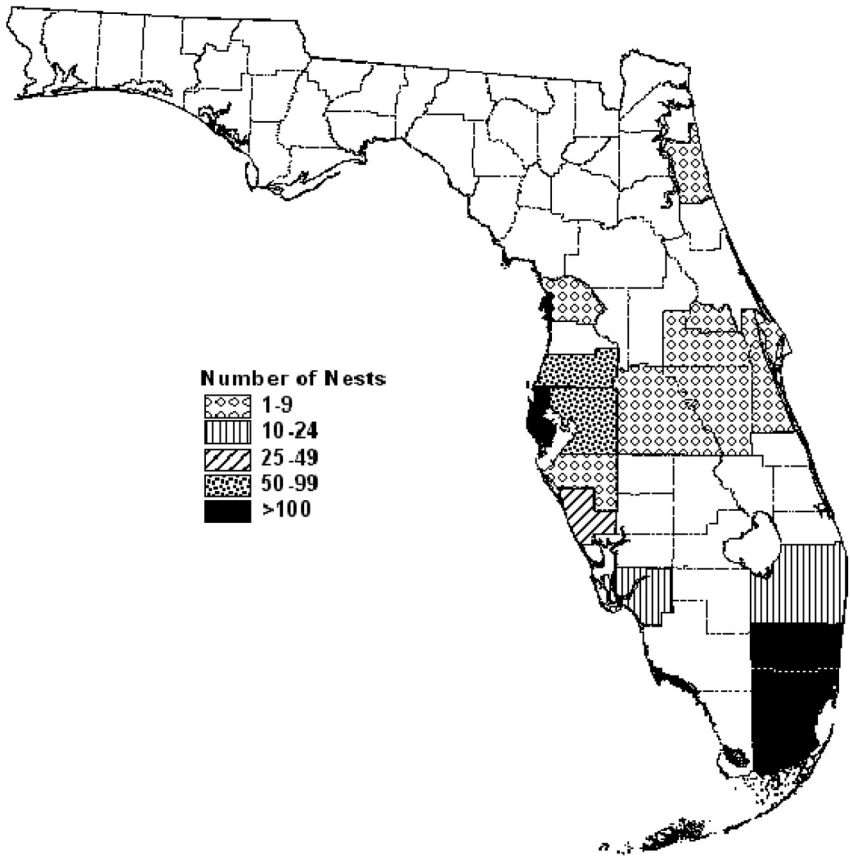

Figure 1. Distribution of Monk Parakeet nests in Florida, 1999-2000. Most nests mapped during this study were located in coastal regions in the southern half of the Peninsula, especially in the counties of Broward (283 nests), Miami-Dade (145 nests), and Pinellas (396 nests).

central peninsula; and 469 nests in four counties in the southern peninsula (Table 1, Fig. 1). Substrate use, as measured by category, differs little between the central and southern thirds of the peninsula (Fig. 2). One parakeet nest found during my study, built at the top of a communications tower next to Freedom Lake Park, Pinellas County, was estimated as being 60 m above the ground, perhaps establishing it as the highest Monk Parakeet nest reported (Spreyer and Bucher 1998).

Discussion

My study confirms that Monk Parakeets are extremely plastic in their choice of nesting substrates, using at least 31 types of palms, trees, or artificial structures (Table 1). Stevenson and Anderson (1994) list several of the same nesting substrates found during my study, including a Monk Parakeet nest built at the base of an active Osprey (*Pandion haliaetus*) nest at Plantation Key, Monroe County on 4 January 1992. Spreyer and Bucher (1998) list the following substrates used in North America: green ash (*Fraxinus pennsylvanica*), pin oak (*Quercus palus-*

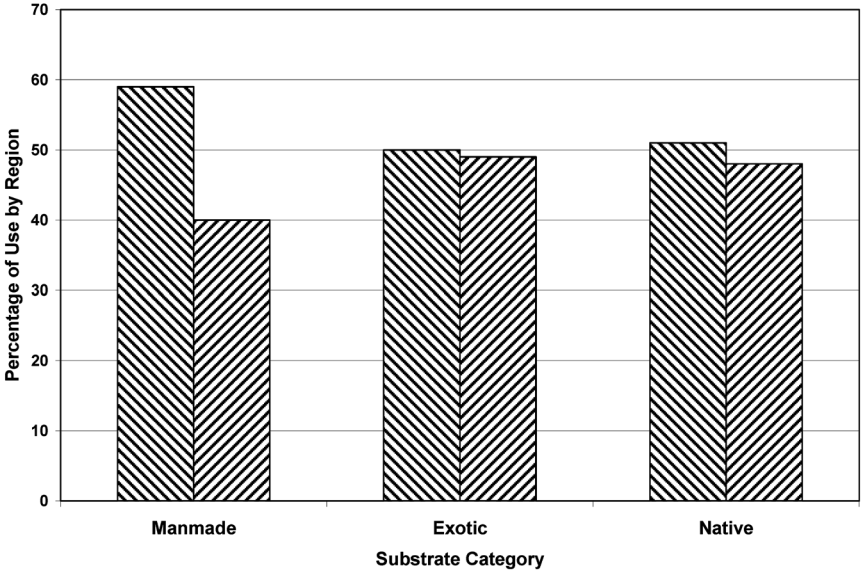

Figure 2. Substrate type of Monk Parakeet nests in Florida by regions, divided into manmade structures, exotic palms or trees, and native palms or trees. The left bar for each category represents the central peninsula and the right bars refer to the southern peninsula. Although use of individual substrates within each type differs considerably, due in part to geographic ranges of some trees or palms (Table 1), the percentages of the substrate types differ little by region except for manmade substrates.

tris), poplar (*Populus* spp.), Norway spruce (*Picea abies*), fir (*Abies* spp.), date palm (*Phoenix* spp.), utility poles, silos, and fire escapes. Substrates used in South America include willow (*Salix* spp.), tala (*Celtis spinosa*), palms, mesquite (*Prosopis* spp.), eucalyptus (*Eucalyptus* spp.), "electric, telephone, and geodetic towers," and an active Jabiru (*Jabiru mycteria*) nest (Spreyer and Bucher 1998, Snyder 2004). My study adds at least 15 substrates to the list of those used by Monk Parakeets.

The strong tendency for Monk Parakeets to nest near the coasts may simply reflect that most of Florida's human population centers—on which Monk Parakeets are dependent—are found in coastal counties. Populations of all other psittacids in Florida, including the Budgerigar (*Melopsittacus undulatus*), Black-hooded Parakeet (*Nandayus nenday*), two *Brotogeris* species, Chestnut-fronted Macaw (*Ara severa*), and various *Amazona* and *Aratinga* species similarly are largely or wholly restricted to urban areas within 30 km of the coasts (Pranty 2001, Pranty and Epps 2002, Pranty and Garrett 2003, Pranty and Voren 2003, Pranty and Lovell 2004). Nonetheless, there are some "colonies" of Monk Parakeets inland in Florida, such as at Orlando (Orange County, where populations are controlled, B.H. Anderson, pers. comm.), Kissimmee (Osceola County), Land O' Lakes (Pasco County), and Lakeland (Polk County).

Some regional differences in substrate selection can be explained by landscaping preferences. Many Monk Parakeet nests in southern Florida were built in punk trees (*Melaleuca quinquenervia*) and Cuban royal palms (*Roystonea regia elata*), species that are rare or absent farther north because of colder weather during winter. Native oaks seem to be much scarcer in urban and suburban areas in southeastern Florida compared to those in the central peninsula; all the Monk Parakeet nests built in oaks during my study were limited to the Tampa Bay region (Table 1). Curiously, most Monk Parakeet nests built in cypresses (*Taxodium* spp.) were located in the Fort Lauderdale metropolitan area, including areas downtown! Nests built on powerline towers are more frequent in the southern peninsula compared to the central peninsula, whereas nests built in electrical substations occurred more frequently in the central peninsula (Table 1), for reasons not readily apparent. Potential regional differences in Monk Parakeet nest-substrate selection deserves additional study.

ACKNOWLEDGMENTS

I thank all those who accompanied me in the field or contributed observations, most notably Bruce H. Anderson, Jon-Mark Davey, Susan Epps, Judy Fisher, David Goodwin, Erik Haney, Holly Lovell, Bruce Purdy, Kevin and Kim Schnitzius, Austin and Ron Smith, Ken Tracey, and the late Don Woodard. I thank Kathleen Carr for hosting my study on her website <monkparakeet.com>. Gian Basili, Scott Robinson, and an anonymous reviewer improved drafts of this paper.

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