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SHORT COMMUNICATIONS

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DISTRIBUTION AND NATURAL HISTORY OF THE CARIBBEAN OSPREY (*PANDION HALIAETUS RIDGWAYI*)

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KEY WORDS: *Osprey*; Pandion haliaetus ridgwayi; *Belize*; *Caribbean*; *diet*; *nesting*; *nest platforms*; *West Indies*; *Yucatan*.

The Caribbean Osprey (*Pandion haliaetus ridgwayi*) is a nonmigratory Osprey that nests in scattered numbers across the northwestern Caribbean, from the Bahamas through Cuba to the Yucatan Peninsula and Belize. Distinguished from its North American counterpart (*P. h. carolinensis*) by paler plumage and a whiter head, this bird remains in many ways the least known and certainly the least studied of the world's four subspecies of Osprey. Given its apparent low numbers and restricted range, this bird may even be at risk.

We present here an overview of the status and distribution of this little-known bird, with a focus on delineating areas of nesting concentration; we also provide brief notes on natural history as well as directions for future research. Because little is known, we base much of this report on a study of museum specimens, but include published and unpublished field reports, where available, as well as notes from a preliminary study of a small colony of Ospreys nesting in southern Belize.

Wink et al. (2004) recommended elevation of the four recognized Osprey subspecies (*P. h. haliaetus, carolinensis, ridgwayi,* and *cristatus*) to species level. That study, however, was limited to the calculated genetic distance of a single mtDNA gene (cytochrome *b*), and included no molecular data from *ridgwayi,* so we regard these conclusions as premature. See Prevost (1983) for a detailed discussion of Osprey subspecific taxonomy.

METHODS

Data from museum collections were gathered from specimen labels during visits to institutions. JWW's work in Cuba was conducted incidental to other research in Isla de Pinos from 1992 to 2006, and in Ciénaga de Zapata from 2007 through 2012. JWW's observations in Cuba were facilitated by the Empresa Nacional para la Conservacion de la Flora y la Fauna, and he accompanied Empresa biologists on aerial surveys of Ciénaga de Zapata and Isla de Pinos. He was provided transportation to Ospreys nesting on cays by local fishermen at Playa Larga, Ciénaga de Zapata, and western Isla de Pinos. Field data were collected during brief, irregular visits to nest sites.

We derived information about *ridgwayi* in Belize and the Yucatan from varied sources: Sprunt's (1977) aerial surveys in April–May of 1971; brief, irregular, incidental observations by AFP, February 1988–2005, while traveling by boat and flying aerial surveys (1989, Belize coast only) in the region; and a more focused study at Glover's Reef Atoll, southern Belize, by NJC (under the auspices of the Wildlife Conservation Society), 18–23 January and 13–22 November 2008. This latter study involved surveys of nest activity, the establishment of a monitoring network, and nest observations (45 h total at three nests, dawn to dusk) with a focus on diet, foraging activity, and breeding behavior and nest success.

RESULTS AND DISCUSSION

Distribution. *West Indies.* The Caribbean Osprey occurs in the Bahamas, the Turks and Caicos Islands, and Cuba (offshore cays and coastal regions), where it appears to be generally a rare resident, common in only a few locations. Among the 62 specimens of Ospreys JWW located in 23 museum collections in the West Indies, North America, and Europe, *P. h. ridgwayi* (n = 26) had been collected only in the Bahama Islands, the Turks and Caicos Islands, and Cuba and its satellites (Appendix; Fig. 1).

Elsewhere in the West Indies, no thorough survey or study of Ospreys has yet been conducted, so almost all information on *P. h. ridgwayi* has come through incidental

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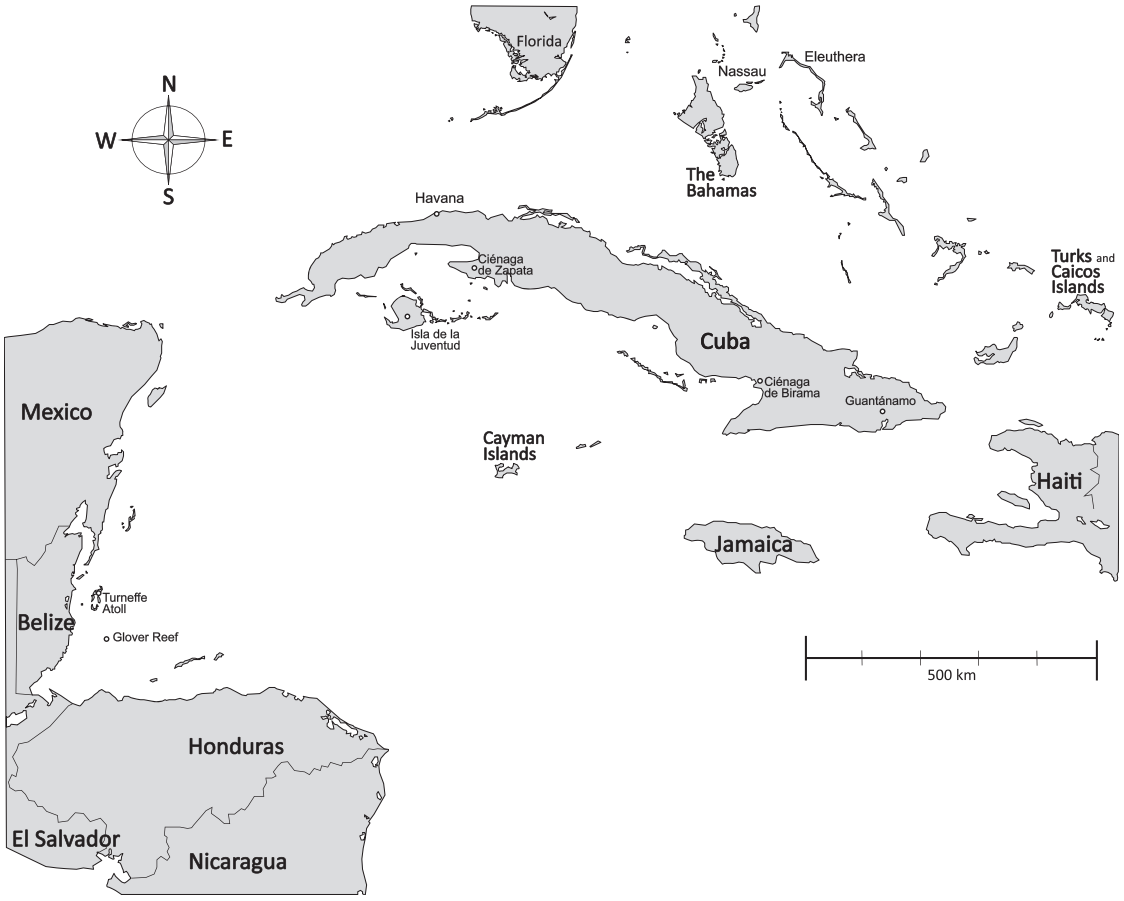


Figure 1. Area encompassing known range of Caribbean Osprey (*Pandion haliaetus ridgwayi*), including the Bahamas, northern Greater Antilles, Cayman Islands, Yucatan, and Belize.

observations. Interpreting these data is often difficult because North American Ospreys (*P. h. carolinensis*) migrate through and winter (a few) in the Bahamas and Antilles, and the majority of Osprey reports from the islands do not distinguish between the races. Further, some *carolinensis* are known to over-summer in the islands, and are often assumed by observers to be *ridgwayi*. Even where nesting has been reported, most observers have not recorded the race of the breeding birds, assuming all were *ridgwayi*. In recent years, however, several reports of *carolinensis* breeding in Cuba (see below) have complicated the description of the breeding range of *ridgwayi*.

Pandion h. ridgwayi is a vagrant to Hispaniola (Latta et al. 2006), the Cayman Islands (Bradley 1995, 2000), and possibly the Virgin Islands. Historically, it has been suggested that this race bred in the British Virgin Islands (George Dog, Anegada; Nichols 1943, Mirecki et al. 1977; but see Robertson 1962, Wiley 1984, Norton et al. 1989). One unlikely breeding record exists for St. Lucia in the Lesser Antilles (Keith 1997). Questionable records exist for breeding in Jamaica (e.g., Gosse in Gundlach 1876, 1893, Tenison 1968); these reports, however, are atypical, as all others report Ospreys have not nested in Jamaica, despite some birds over-summering on the island (e.g., Fletcher and Downer 1984, Swabey 1990). Furse (2005) reported both *carolinensis* and *ridgwayi* in coastal Grenada in December.

Ospreys have been observed constructing rudimentary nests (and old nest structures have been reported) in the Dominican Republic (Dod 1981, Wiley and Ottenwalder 1990, Latta et al. 2006, J. Brocca pers. comm.), Puerto Rico (Pérez-Rivera and Bonilla 1980, McNair et al. 2006, R. Pérez-Rivera pers. comm., J. Wiley unpubl. data) and St. Croix, U.S. Virgin Islands (Nellis 1979, Norton et al. 1989). No evidence of eggs or nestlings has been presented for any of these locations, however, nor have any of the building birds been identified as *ridgwayi*. Several of the birds observed constructing nests in Puerto Rico and the Virgin Islands were likely juvenile *carolinensis* (Norton 1989).

In the Bahamas, the Osprey is a widespread and fairly common resident, breeding sparingly on islands south of

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Table 1. Breeding records of Osprey (*Pandion haliaetus ridgwayi*) in the Bahamas and Turks and Caicos Islands.

ISLAND GROUP ISLAND	SOURCE
Bahama Islands	
Bird Rock, Crooked Island	White 1998
Bitter Guana Cay, Exuma Cays	Buden and Sprunt 1993
Booby Cay, Long Island	Buden 1990, 1992a
Conception Island	G. Oliver *in* Norton 1984
Eleuthera	P. Dean *in* White et al. 2007
Exuma Cays	Buden 1992b, L. Gape *in* Dobson et al. 2004
Great Inagua	Norton 1985, White 1998, Inagua Site Support Group *in* Norton et al. 2005
Hawkfish Rocks	Buden 1992b
Highborne Cay	Buden 1992b
Inagua	G. Oliver *in* Norton 1984
Lee Stocking Island	Buden 1992b, Dunham et al. 1990
Little Hawksbill Cay	Buden 1992b
Little Inagua	Bond and de Schauensee 1944
Little Sail Rock (Exuma Cays)	J. Kushlan pers. comm.
Little San Salvador	White 1998
Long Island	Buden 1990, 1992a; White 1998; J. Wunderle and S. Johnson *in* Norton et al. 2010
Mayaguana	White 1998
New Providence	B. Hallert and E. Bracey *in* Norton et al. 2004, A. White and P. Dean *in* Dobson et al. 2009
Norman's Cay	Buden 1992b
Plana Cays (French Cays)	Clough and Fulk 1971, White 1998
Ragged Island	Bryant 1859
Rose Island, New Providence	A.O. Davis pers. comm.
Rudder Cut Cay, Exuma Cays	Buden 1992b
San Salvador	White 1998, White 1991
Sandy Cay (White Cay)	Buden 1992b
Turks and Caicos Islands	
Big Sand Cay	Pienkowski et al. 2005
Fish Cays	Pienkowski et al. 2005
Gibbs Cay	Pienkowski et al. 2005
Grand Turk	White 1998, B. Aldridge and R. St. Leger *in* Norton 1984, P. Bradley pers. comm.
Middle Caicos	P. Bradley pers. comm.
North Caicos	A.C. Watson *in* Buden 1979, Pienkowski et al. 2005, P. Bradley pers. comm.
Pear Cay, Seal Cays	Pienkowski et al. 2005
Penniston Cay	Pienkowski et al. 2005
Providenciales	T. Baran *in* Buden 1979, B. Aldridge and R. St. Leger *in* Norton 1984, White 1998
South Caicos	P. Bradley pers. comm.
Three Mary Cays	Pienkowski et al. 2005
Water Cay	B. Aldridge *in* Buden 1979

the Northeast Providence Channel (ca. 26°N, 77°W; Buden 1979, White 1998; Table 1). On Eleuthera, field crews active in the period 2002 to 2010 recorded only two nesting locations along the coast from Governor's Harbor south to Cape Eleuthera (J. Wunderle pers. comm.). Breeding has not been recorded in the northern Bahamas, on islands north of New Providence. Brudenell-Bruce (1975) suggested that many Osprey records for New Providence pertain to the migratory *carolinensis*. In summary, we find no records of concentrated breeding anywhere in the Bahamas, no cays or groups of cays where nests appear to be clustered (>2–3 nests).

Pandion h. ridgwayi is a widespread and permanent breeding resident throughout the Turks and Caicos Islands (Buden 1979, Ground 2001, Hallett 2006; Table 1). Although data are sparse, the bird appears to be fairly common here; indeed, if there is any nesting concentration in the West Indies, it appears to be in the Turks and Caicos. Future surveys would do well to focus on these islands.

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Cuba. Pandion h. ridgwayi has been reported from many of Cuba's 4195 satellite islands and several coastal areas of mainland Cuba, particularly Ciénaga de Zapata, Ciénaga de Birama, and the southern coast of Guantánamo (e.g., Gundlach 1876, 1893, Bond 1950a, 1956, Garrido and García Montaña 1975, Wotzkow 1985; Table 2; Fig. 1). *P. h. ridgwayi* is associated with cays, coastal bays, and saltwater areas, but also has been reported from coastal lakes and river mouths (Gundlach 1876, 1893, Wotzkow 1985; C. Wotzkow pers. comm.). Although the migratory race (*P. h. carolinensis*) is also encountered in saltwater lagoons and mangroves on the coasts and cays of Cuba (Garrido and García Montaña 1975), it is more often associated with inland freshwater bodies, including reservoirs, canals, rivers, temporary water bodies, and rice fields (Wotzkow 1985, C. Wotzkow pers. comm., O. Garrido pers. comm.). Both races occur in the Ciénaga de Zapata, but *ridgwayi* is the prevalent subspecies (J. Wiley unpubl. data).

Although González Alonso (2002) reported *Pandion h. ridgwayi* as a locally abundant or common resident, most observers have considered it a rare permanent resident in Cuba, except in Oriente, where it appears to be more common (Garrido and García Montaña 1975, Wotzkow 1985). Kirkconnell (pers. comm.) noted that in the past the distribution of *ridgwayi* was much wider in the south. At Isla de Pinos (now Isla de la Juventud), Todd (1916) considered this bird a rare visitor, although it is now considered a common resident (J. Wiley unpubl. data). *Pandion h. ridgwayi* also breeds in the mangroves of Ciénaga de Zapata and on Cuba's offshore cays, including the archipelagos of Los Colorados, Sabana-Camagüey, Los Jardines de la Reina, and Los Canarreos (Table 3).

We note that although *ridgwayi* is known to breed in these locales, there are no data on overall numbers, or on areas where nesting may be concentrated; nor do we have much information on breeding success. Possible areas of concentration, in addition to Oriente, include Isla de Pinos, Los Jardines de la Reina, and the Los Canarreos, Los Colorados, and Sabana-Camagüey archipelagos, but researcher access is limited in all these areas, particularly to aircraft. There is a clear need for surveys during peak nesting season in these locations.

The migratory race *carolinensis* has long been considered a common winter resident and fall/spring transient in Cuba (Garrido and García Montaña 1975, Wotzkow 1985, Kirkconnell and Garrido 1991, 1997), but in recent decades this subspecies has become even more common. Wotzkow (1985) noted that the number of migrant and summer resident *carolinensis* increased since the middle of the 20th century. The increased number of *carolinensis* Ospreys visiting and remaining in Cuba year-round suggests that this race is encountering changing ecological conditions in Cuba that favor it. Since the end of the 1960s, aquatic habitats have increased substantially in Cuba with the construction of dams and creation of reservoirs, as well as expansion of the rice industry (Garrido and Wotzkow 1990). Also, substantial introductions of exotic fishes (including *Oreochromis aureus, Sarotherodon mossambicus, Tilapia melanopleura, Micropterus salmoides*; A. Pérez pers. comm.) have been made in recent years. As a consequence of additional and improved habitat, with augmented food supplies, populations of many bird species, including *carolinensis* Osprey, have increased in number and distribution in Cuba. Further, populations of North American Osprey have recovered from pesticide-related declines in the 20th century, so there are more individuals migrating through Cuba since that recovery. Satellite-tracking data suggest that at least 80–90% of North American Ospreys breeding east of the Mississippi River migrate through Cuba (see http://www.ospreytrax.com/2013AdPTT.html# for routes flown by Ospreys breeding in the northeastern U.S.).

Breeding by *carolinensis* in Cuba has been recorded in recent years, with numbers apparently increasing (Kirkconnell and Garrido 1991, 1997). C. Wotzkow and O. Garrido (pers. comm.) observed that *P. h. carolinensis* has recently occupied regions of Cuba that were formerly inhabited only by *ridgwayi*, with the latter race diminishing in numbers there.

There have been reports of mixed (*ridgwayi* × *carolinensis*) pairs of Ospreys reproducing in Cuba in recent years (Wotzkow 1985, Garrido 1992). Wotzkow (1985) reported a mixed pairing of the subspecies on Cayo La Piedra (Cayo Farito; northwest of Cayo Largo), where the pair nested in 1981. Bond (1956) noted that specimens of *ridgwayi* from the cays off southern Cuba had darker plumage, similar to that of *carolinensis*. That similarity may reflect hybridization between the two races. On the other hand, such similarity could compromise distinction of *carolinensis* from *ridgwayi* individuals by field observers, thus resulting in misidentification of individuals in pairs.

Yucatan/Belize. The only published survey of nesting Ospreys in this region was carried out by Sprunt (1977), who flew the Gulf and Caribbean coasts of Mexico, and the cays of Belize, in late April and early May, 1971. His flights focused on censusing colonies of nesting herons and egrets, but he noted Ospreys and their nests in passing. April and May are late to be censusing Ospreys in this region, as many pairs have fledged young (or failed) and left nests by then. In addition, reliably distinguishing individual *ridgwayi* from *carolinensis* at an altitude of 60–100 m is difficult; nests, however, are generally conspicuous from the air, so we focus here on Sprunt's counts of Osprey nests, with or without Ospreys in residence.

Along the Yucatan coast, Sprunt found Osprey nests in the Bahía de la Ascensión (Ascension Bay, part of the Sian Ka'An Biosphere Reserve: nine nests) and the Bahía del Espírito Santo (five nests). He found only one or two other nests outside this region in Caribbean Mexico. Ospreys and their nests were more common in Belize, where Sprunt found six nests scattered along the coast and cays north of Belize City, and 10 to the south; by far the largest concentration, however, was on the Turneffe Islands, a ca. 40 km^2 atoll off the coast of northern Belize where Sprunt

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Table 2. Localities where Osprey (*Pandion haliaetus ridgwayi*) has been recorded in Cuba, Isla de Pinos, and satellites. Breeding records are indicated by ''*.''

LOCALITY	SOURCE
*Ciénaga de Zapata**	Gundlach 1876, 1893; A. Kirkconnell pers. comm.; J. Wiley unpubl. data
Cayo Blanco	Borroto Páez et al. 2007
Cayo Masio	Borroto Páez et al. 2007
*Isla de Pinos (Isla de la Juventud)**	Cory 1892, Read 1914, Todd 1916, B. Sánchez pers. comm., J. Wiley unpubl. data
Cayo Matías	B. Sánchez pers. comm.
Archipiélago de Sabana-Camagüey	
Cayo Coco*	Garrido 1976, Kirkconnell 1998, Sánchez and Rodríguez 2000, Kirkconnell and Kirwan 2008
Cayo Cruz	González et al. 1992, Shaffer et al. 2000
Cayo Ensenachos	Ruiz Rojas et al. 2009
Cayo Francés	Garrido 1973, Garrido and García Montaña 1975, Bond 1978, A. Kirkconnell pers. comm.
Cayo Guajaba	Garrido et al. 1986
Cayo Guillermo	Kirkconnell et al. 1993, Kirkconnell and Kirwan 2008
Cayo Las Brujas	ACC, ICGC 1990a
Cayo Mégano Grande	ACC, ICGC 1990b
Cayo Paredón Grande	B. Sánchez pers. comm.
Cayo Romano	Kirkconnell and Posada Rodríguez 1988
Cayo Sabinal	González et al. 2005, Morales Leal and Garrido 1996
Cayo Santa María	Garrido 1973, A. Kirkconnell pers. comm.
Cayos Ballenatos	Sánchez et al. in press
Archipiélago de los Canarreos	
Cayería de los Majáes	B. Sánchez pers. comm., C. Wotzkow pers. comm.
Cayito de la Piedra*	Wotzkow 1985
Cayo Aguada, Cayos de Piedra	Blanco et al. 1996
Cayo Algodón Grandes	Bond 1950a, A. Kirkconnell pers. comm.
Cayo Arenoso	A. Kirkconnell pers. comm.
Cayo Avalos	Posada Rodríguez et al. 1989, B. Sánchez pers. comm., C. Wotzkow pers. comm.
Cayo Campos	Estrada and Rodríguez 1985, Posada Rodríguez et al. 1989, B. Sánchez pers. comm.
Cayo Cantiles	Bond 1950a, Duvall *in* Bond 1956, Garrido and Schwartz 1969, Llanes Sosa et al. 1987, B. Sánchez pers. comm.
Cayo Hicacos	A. Kirkconnell pers. comm.
Cayo La Piedra* (Cayo Farito)	Bond 1950b, Blanco et al. 1996
Cayo Largo	Mugica Valdés and Acosta Cruz 1992, A. Kirkconnell pers. comm.
Cayo Lucas, Cayos de Piedra	Blanco et al. 1996
Cayo Majá	Bond 1950a
Cayo Rosario	Llanes Sosa et al. 1987, Cubillas Hernández et al. 1988, B. Sánchez pers. comm.
Archipiélago de los Jardines de la Reina	
Cayo Algodón Grande	C. Wotzkow pers. comm.
Cayo Anclitas	Sánchez et al. in press
Cayo Boca Juan Grin	Buden and Olson 1989
Cayo Caballones	Buden and Olson 1989, A. Kirkconnell pers. comm.
Cayo Contrapunta	A. Kirkconnell pers. comm.
Cayo Doce Leguas	C. Wotzkow pers. comm.
Cayo Grande	Buden and Olson 1989, A. Kirkconnell pers. comm.
Cayo Juan Grin	A. Kirkconnell pers. comm.
Cayo las Caguamas	C. Wotzkow pers. comm.
Cayo Las Cruces	Garrido 1978
Cayos Boca Rica	A. Kirkconnell pers. comm.
Laberinto de las Doce Leguas	C. Wotzkow pers. comm.

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Table 2. Continued.

LOCALITY	SOURCE
Archipiélago de los Colorados	
Cayos de la Leña	Wotzkow 1985
Golfo de Guacanayabo	
Cayo Blanco	Borroto Páez et al. 2007, Soberón and Rodríguez 1997, A. Kirkconnell pers. comm.
Cayos Balandra (Cayo Palmeto)	A. Kirkconnell pers. comm.
Cayo Carenas, Ciénaga de Birama	Lambrada and Cisneros 2005
Cayo Damas	C. Wotzkow pers. comm.
Cayo Perasa	B. Sánchez pers. comm.
Cayo Cupey or Torrenteras Cayos	Gundlach 1893

counted 17 nests. His survey did not include the atolls at Lighthouse or Glover's reefs, Belize, however, which are now known Osprey nesting sites (see below).

Surprisingly, no one has published reports of breeding Ospreys in Belize or the Yucatan since this survey, although recent anecdotal evidence suggests that *ridgwayi* has increased along the Yucatan coast and (perhaps) decreased in Belize. AFP (unpubl. data) found *ridgwayi* Ospreys fairly common (5–8 birds/d) along eastern edges of the Sian Ka'An Biosphere Reserve in February 2006 and 2007, with local eco-guides reporting 6–8 active nests within ca. 5 km of their lodge (ca. 15 km south of Tulum). Along the coast of Belize, AFP (unpubl. data, 1995–2005) found only scattered nests (3–5 active) on cays south of South Water/Carrie Bow, excluding Glovers Reef (see below). North along the Belize Barrier Reef, Ospreys have been known to nest in recent years (2010–2014) on Lighthouse Reef (one nest on Half Moon Caye, one on Long Caye), on Caye Caulker (one nest), on Ambergris Caye (one or two nests; A. Poole unpubl. data), and on Tobacco Caye (one nest; C. Dykstra unpubl. data). Although there are reports of other nests scattered throughout the northern cays, none has been substantiated. Clearly, renewed survey work is needed in this region, particularly on the Turneffe Islands where Sprunt (1977) found nesting concentrations in 1971.

Further south along the coast of Belize, on Glover's Reef Atoll, NJC (2008a, 2008b) found six active nests in January 2008, with a total of 18 *ridgwayi* in residence along a stretch of cays and reef about 6 km in length, indicating 12 breeders and 6 nonbreeders. Later that year, at the start of the breeding season (13–22 November), she located 4–5 active nests, although the total number of birds remained roughly the same, with five of the nonbreeders known juveniles.

Natural History. *Movements.* Although data on movements of *P. h. ridgwayi* are few, it is generally considered

Table 3. Timing of nesting activities of Osprey (*Pandion haliaetus ridgwayi*) in the Bahamas and Turks and Caicos Islands.

BREEDING STAGE AND DATES	SOURCE
Copulation	
23 November 1985	B. Aldridge *in* Norton 1986
Nest-building	
mid-October 1987	Dunham et al. 1990
Egg(s)	
1st week November 1951	Wolfe 1951
15 February 1981	S.L. Olson (specimen USNMNH B47764)
23 February 1934	J.C. Greenway (specimen MCZ 269642)
5 March 1949	Wolfe 1951
11 April 1977	D. Campbell *in* Buden 1979
Nestlings	
5 January 1978	B. Aldridge *in* Buden 1979
early February 1976	Buden 1979
20 February 2010	J. Wunderle and S. Johnson *in* Norton et al. 2010
3 March 2007	P. Dean *in* White et al. 2007
20 March 1992	R. Sutherland *in* Buden and Sprunt 1993

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a nonmigratory bird, based on year-round observations at nest sites (Poole 1989). Nonetheless, some researchers suggested that some portions of Cuban *ridgwayi* populations may be migratory, or at least show local movements outside of the breeding season (C. Wotzkow and O. Garrido pers. comm.). Gundlach (1893) was the first to observe seasonal migration of Ospreys along the coast of Guantánamo. Although he did not know of the two subspecies, *ridgwayi* is particularly abundant in this zone and is likely the race to which Gundlach referred (Garrido and García Montaña 1975, A. Llanes pers. comm.).

Food supply. Clum (2008a) provides details from 45 hr of observation at three nests on Glover's Reef, November 2008. Key findings included: (1) duration of male foraging trips was short, averaging about 20 min, with 6 of 13 trips <10 min; (2) length of fish delivered to nests ranged from 15 to 30 cm, with estimated mass of those fish 150–350 g; (3) 1–4 fish/d were delivered to nests, adequate to meet estimated energy requirements of both the foraging male and his mate during incubation, when these observations took place, and roughly equivalent to prey delivery rates at Osprey nests in the U.S.A. (Poole 1989); and (4) genera of key identifiable prey species were *Mulloidichthys, Ocyurus, Acanthurus,* among others. In conclusion, during the period of this study, *ridgwayi* at Glover's Atoll did not appear to be food-limited. Clearly, we need further studies of additional populations at other times of year, particularly during the nestling season and during windy and stormy weather.

Nesting. Pandion h. ridgwayi in Cuba characteristically builds its nest close to the sea on a prominent point of land, in the top of red (*Rhizophora mangle*), black (*Avicennia germinans*), or buttonwood (*Conocarpus erectus*) mangroves, or on the ground, rocks, or human-made structures (lighthouses, buoys, or partially or totally inactive cranes; Valdés Miró 1984, Wotzkow 1985, O. Suárez pers. comm., J. Wiley unpubl. data). Of seven active nests examined by Wiley, five were in red mangrove trees, two were in black mangroves; of 16 inactive nests, 11 were in red mangroves, three were in black mangroves, one was in a buttonwood mangrove, and one was on the ground. Mean height of active *ridgwayi* nests measured by JWW was 3.1 m ($n = 7$; range = 2–4 m).

Ospreys in the Bahamas nest on the ground, on seastacks, or in trees in isolated areas (Paterson 1972, E. Haxby *in* Norton 1985, J. Kushlan pers. comm.). Among human-made structures used by nesting Ospreys were an old pier, an abandoned church roof, and a field station water tower (White 1998). Paterson (1972) noted that pairs often use the same nest in successive seasons, adding to it each year.

In Belize, *ridgwayi* is known to nest on lighthouses, on the roofs of fishermen's shacks, on logs washed up along reefs, in trees (mostly mangrove), and on artificial platforms (Clum 2008b, A. Poole unpubl. data). We note that all nests found in Belize have been on offshore cays—along the reef and on atolls outside the reef; we found no records of nests along the mainland coast of Belize, perhaps owing to the threat of increased predation (snakes, iguanas) in that environment. Clum (2008b) detailed the locations of six nests found in January 2008 on Glover's Reef Atoll: two on artificial structures (lighthouse, tripod); three on the roots of overturned trees washed up along the reef; and one in a live white mangrove. This study suggested that nest sites are limited for Ospreys on Glover's Reef (very few trees and logs provide adequate support), but that the potential for bolstering populations with artificial nest sites (tripods, platforms) is considerable. Given the extraordinary degree to which *carolinensis* Ospreys use artificial nest sites in the U.S.A. (Poole et al. 2002), we encourage a program to develop nesting platforms for *ridgwayi* on the cays of Belize.

Along the Yucatan coast, *ridgwayi* nests in low trees on small islets, and occasionally on taller, flat-topped mangroves on larger cays (Sian Ka'An Biosphere Reserve; A. Poole unpubl. data). Increasingly, Yucatan Ospreys are nesting on artificial structures; e.g., a successful nest on a communications tower along the coast south of Tulum, and attempted nests (generally unsuccessful because support is lacking) on small thatched residences along that same coast (A. Poole unpubl. data). Here again, the potential to develop artificial sites to support Osprey nests seems considerable, especially considering that these could provide wildlife attractions in an area where ecotourism dominates the economy.

Breeding season. Nesting activity in the Bahamas and Turks and Caicos Islands generally spans a period from mid-October through April (Table 3), although there is a record of a pair on a nest as early as 10 September (Inagua Site Support Group *in* Norton et al. 2005) and a nest with an egg (likely inviable) as late as 11 April (D. Campbell *in* Buden 1979).

Breeding in Cuba follows a similar pattern, usually from October to May (A. Kirkconnell pers. comm.). Garrido (pers. comm.) observed an Osprey carrying a large stick on 25 February 1986. Nests at Los Indios, Isla de Pinos, contained eggs 10–18 December 1995 (three nests), and 24–26 December 1996 (three nests; J. Wiley unpubl. data). Three nests observed in Ciénaga de Zapata, 2–8 February 1999, contained half-grown nestlings (J. Wiley unpubl. data).

On Glover's Atoll, Belize, females produced eggs from mid-November to mid-January, with most birds laying mid-November to mid-December (Clum 2008b). Thus, most nestlings hatched during January, fledging in February and March.

Overall, the breeding season in Caribbean *ridgwayi* (peak egg-laying November–December; peak period for nestlings January–March) seems roughly similar to that seen in Osprey (*P. h. carolinensis*) populations in southern Florida, but significantly longer (at least 2 mo longer) than the laying period for northern U.S. Ospreys (*carolinensis*), where egg-laying is restricted to a period from early April to mid-May (Poole 1982, 1989). One would predict a more relaxed nesting period for *ridgwayi*, given the lack of pronounced seasonality and of significant migration in this race.

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Clutch size. Ospreys generally lay 2–3 eggs in Cuba (Gundlach 1893, Garrido 1992). JWW found a mean of 2.7 (range = 2–3) eggs per clutch at seven nests in Cuba (J. Wiley unpubl. data). In the Bahamas, clutches ranged from one to three eggs (D. Campbell *in* Buden 1979, Wolfe 1951). Six sets of *ridgwayi* eggs (in the Ragnar Kreuger collection of the Finnish Museum of Natural History, University of Helsinki) collected from 1925 to 1935 at Andros Island, Bahamas averaged 2.66 (ranges = 2–3). Such clutch sizes are lower than those of Ospreys nesting at temperate latitudes in the U.S.A. and Europe, but equivalent to those of Ospreys nesting at subtropical latitudes (e.g., Florida Bay, Baja California; Poole 1989).

Brood size and fledging success. We find few data on breeding success in this subspecies; unlike with Ospreys breeding in the U.S.A., no study has followed a population from egg-stage to fledging, to determine extent of loss, at what stage of nesting loss occurs, and overall success. Instead, we report here data from occasional (generally single) observations at scattered nests.

One nest in the Bahamas had two young (R. Sutherland *in* Buden and Sprunt 1993). The Inagua Site Support Group (*in* Norton et al. 2005) reported two pairs with two fledglings each, and four pairs with one fledgling on Great Inagua. Six nests examined in Cuba contained from one to three nestlings each (ages not reported; C. Wotzkow pers. comm.). Three nests observed at Ciénaga de Zapata (two nests) and Isla de Pinos (one nest) contained two nestlings each (J. Wiley unpubl. data). Both young fledged from one intensively studied nest (Wotzkow 1985).

In Belize (Clum 2008b), the duration of the Glover's Reef study was too short to determine fledging success (and clutch size) accurately, but in mid-January four surveyed nests contained: two small nestlings, one egg, one egg, and two eggs. Of two nests with adults surveyed briefly in the Sian Ka'An Biosphere Reserve, February 2007, one had 0 young and one had two young near fledging (A. Poole unpubl. data).

Overall, although data are sparse, brood sizes of *ridgwayi* Ospreys near fledging appear roughly similar to those of *carolinensis* Ospreys breeding at subtropical latitudes (south Florida and Baja California; Poole 1989, Poole at al. 2002). Clearly, we need better data on *ridgwayi* breeding success, from focused studies that follow nests over an entire season. Areas of nesting concentration—such as Glover's Atoll, Belize; Great Inagua, Bahamas; the Turks and Caicos Islands; and the Sian Ka'An Biosphere Reserve—would be obvious places to start. We encourage such studies.

DISTRIBUCIÓN E HISTORIA NATURAL DE *PANDION HALIAETUS RIDGWAYI*

RESUMEN.—*Pandion haliaetus ridgwayi* es una subespecie que nidifica en la cuenca del Caribe sobre la que se conoce muy poco. En este trabajo presentamos un panorama sobre el estatus y la distribución de esta subespecie, con énfasis en la delineación de áreas de concentración de nidificación y proporcionando notas breves sobre su historia natural. En general *P. h. ridgwayi* se distribuye de forma dispersa y en números limitados con nidificación documentada en el sur de las Islas Bahamas, Turks y Caicos, y a lo largo de las costas de Cuba, de Yucatán en México y de Belice. Las zonas costeras albergan las únicas parejas reproductivas conocidas, las que construyen sus nidos en una variedad de estructuras naturales y cada vez con mayor frecuencia en estructuras artificiales. La mayoría de las parejas ponen sus huevos en noviembre y diciembre y generalmente los pichones dejan el nido en febrero y marzo. Datos limitados sugieren que las tasas reproductivas son bajas comparadas con aquellas de individuos de *P. haliaetus* que nidifican en latitudes más templadas. Recomendamos esfuerzos renovados para el censado de esta especie, especialmente en regiones donde los nidos pueden estar agrupados y discutimos el potencial para incrementar las poblaciones clave con plataformas artificiales para la nidificación.

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Appendix 1. Specimens of Osprey (*Pandion haliaetus ridgwayi*) from the West Indies in 10 collections among 71 searched in the West Indies ($n = 31$), United States of America ($n = 17$), and Europe and the United Kingdom ($n = 23$).

Island and Institution[a]	Locality	Date Collected	Sex[b]	Age[b]	Collector	Comments
Bahama Islands						
Tring	Inagua	10 March 1888	M	-	Maynard, C.J.	
Tring	Andros: Spanish Wells	3 March 1902	M	-	Bonhote, J.L.	
Tring	Andros: Spanish Wells	6 December 1902	F?	-	Bonhote, J.L.	At nest 31 Jan 1902
MCZ	Bitter Guana Cay	March 1915	F	-	Maynard, C.J.	
ANSP	-	2 May 1930	M	-	Bond, J.	
MCZ	Crooked Island	20 February 1933	M	-	Greenway, J.C.	
MCZ	Crooked Island	21 February 1933	M	-	Greenway, J.C.	
MCZ	Acklins: Long Cay	21 February 1933	M	-	Greenway, J.C.	
MCZ	Mariguana Island	24 February 1933	M	-	Greenway, J.C.	
MCZ	Mariguana Island	25 February 1933	M	-	Greenway, J.C.	
MCZ	Long Island: Booby Cay	23 February 1934	F	-	Greenway, J.C.	On nest with 1 egg
ANSP	-	8 March 1941	U	-	Feathers, D.	
ANSP	-	8 March 1941	F	-	Feathers, D.	
LMNH	Great Inagua: 1 mi W Salt Pond Hill	3 December 1960	F	-	Leber, D.C.	
USNMNH	Rum Cay	29 May 1989	-	-	Buden, D.	
Turks and Caicos Islands						
LMNH	Grand Turk: Cockburn Town	28 Jan 1961	M	-	Leber, D.C.	
USNMNH	Grand Turk	14 May 1998	F	Ad	Kratter, A.	
Cuba						
Pinar del Río	-	-	-	-	Centro Universitario	
Pinar del Río	-	-	-	-	Centro Universitario	
Camagüey	-	-	-	-	-	
Poey	Cayo Larga, Habana	-	-	-	-	
Poey	Cayo La Piedra	-	-	-	Taraschuck, V.	
Gibara	Gibara	-	M	-	Vara, J.F. de la	
ANSP	westernmost Cayo Majas	8 April 1948	M	-	Bond, J.	
ANSP	westernmost Cayo Majas	8 April 1948	F	-	Bond, J.	
IBACC	Las Villas: Cayo Francés, Calbariem	20 October 1969	-	-	Garrido, O.H.	

[a] Abbreviations: ANSP = Academy of Natural Sciences of Philadelphia; Camagüey = Museo Provencial Ignacio Agramonte; Gibara = Museo de Historia Natural ''Joaquín Fernández de la Vera''; IBACC = Instituto de Biologia, Academia de Ciencias de Cuba; LMNH = Louisiana State Museum of Natural History; MCZ = Museum of Comparative Zoology; Pinar del Rio = Museo de Historia Natural ''Tranquilino Sandalio de Noda''; Poey = Museo de Historia Natural ''Felipe Poey''; Tring = Natural History Museum, Tring, U.K.; USNMNH = U.S. National Museum of Natural History.

[b] Abbreviations: M = male, F = female, U = unknown, Ad = adult.

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