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THE RETURN OF A BROWN PELICAN NESTING COLONY

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The Florida Fish and Wildlife Conservation Commission (FWC) regularly surveyed nesting Brown Pelicans (*Pelecanus occidentalis*) in Florida from 1968 (Williams and Martin 1970) through 2001. Brown Pelicans were listed by the U.S. Department of Interior as endangered in Florida from 1970 until 1985 when region-wide numbers had recovered to a level that the species could be removed from the federal list (Nesbitt 1996). FWC has continued to monitor Brown Pelican nesting efforts in Florida following the delisting. In order to reduce costs complete statewide surveys were conducted every other year from 1983 to 1991 and no survey was conducted in 1997 and only a partial survey was conducted in 2000. The average annual number of Brown Pelicans nesting in Florida from 1968 to 2001 was $9,028.2 \pm 1,321.5$ (SD) pairs.

Pelicans have nested at 69 sites in Florida (that is considering the several small colonies in Florida Bay as 1 site) from 1968 to the present, with the number of pairs per colony ranging from 8 to 1,600 (Nesbitt 2001). Nesting sites are typically on small to medium-sized ($5 < 10$ ha) islands in the Intracoastal Waterway (Nesbitt 2001). In northern portions of the Florida peninsula black mangrove (*Avicennia germinans*) is the preferred nesting substrate.

Fourteen (20.3%) of the sites, usually the larger sites (≥ 400 pairs), were occupied by nesting pelicans for 25 or more of the 30 survey years. Nineteen (27.5%), typically the smaller sites (≤ 60 pairs), were occupied for five or fewer of the survey years. Among all colonies, mean duration of occupation was 12.9 ± 9.5 (SD) years, and the mean nesting population per colony was 264 ± 59.3 (SD) pairs. When a large colony was abandoned it was often because of the presence of predators on the colony island (R.T. Paul, pers. comm.). Erosion that reduced the size of the nesting island has also caused abandonment. Between 1971 and 1978, Hall Island in Brevard County, declined from 500 to 35 nesting pairs as a consequence of erosion. No pelicans have nested there since 1978. During the years of decline a new site developed at George and Brady islands 10 km southwest. The number of pairs nesting on George and Brady islands increased as the number nesting on Hall Island declined. Pelicans were pioneering a new nesting site as a traditional site was degraded by erosion (Nesbitt 1982).

Pelicans were nesting on a spoil island in the Intracoastal Waterway near Port Orange in Volusia County when the statewide survey began in 1968. The island, less than 0.5 ha in size, was covered by black mangrove (Fig. 1). Freezing temperatures on 26 December 1983, and 21 January 1985 (-7° and -9°C , respectively; recorded at the Daytona International Airport, 9 km NNW) killed all the mangroves on the island. An effort was undertaken by the city of Port Orange with guidance from Ecoshores, Inc. to restore the mangroves on the island. Between October of 1985 and March of 1986 approximately 500 black mangroves, 1-3 meters tall were planted on the island. Twelve months later an estimated 85% of the plants were still alive.

Aerial surveys by FWC documented the response of pelicans to the loss of nesting substrate. The number of pairs using this site prior to the freezes ranged from 300 to 675. Following the freezes some pairs continued to nest on the traditional site, using the standing dead mangroves (Fig. 2). Others shifted to an alternate site on a larger island 0.8 km south. This site had little, if any, mangrove habitat; instead the birds were nesting



Figures 1-5. Photo documentation of the transition from a Brown Pelican nesting colony in black mangroves (Fig. 1), to nesting in dead mangroves after they were killed by freezing temperatures, (Fig. 2), to nesting on the ground (Fig. 3), to abandonment and nesting in yaupon on a nearby island (Fig. 4), to nesting in restored mangroves (Fig. 5).



Figure 2. Brown Pelicans nesting in dead mangroves after they were killed by freezing temperatures.



Figure 3. Brown Pelicans nesting in yaupon on a nearby island.



Figure 4. Brown Pelicans nesting on the ground.



Figure 5. Brown Pelicans nesting in restored mangroves.

in yaupon (*Ilex vomitoria*) and eastern red-cedar (*Juniperus virginiana*) (Fig. 3). By 1989 nesting at the original site occurred only on the ground (Fig. 4), and by 1991 all nesting was on a mangrove island 1.5 km north. Pelicans did not use the original site again for nesting until an estimated 50 pairs nested there successfully in 1997. They were nesting in reestablished mangroves (Fig. 5). Following their return to the original site pelicans did not use either of the alternative sites for nesting. In 2001 the number of nesting pairs at the original site was estimated at 550 pairs.

Pelicans returned to the Port Orange site, soon after the mangroves had grown large enough to support nesting. This is the only instance known to us of Brown Pelicans returning to an abandoned nesting site following the human-assisted restoration of the preferred nesting substrate. From this we conclude there must be something particularly important about this site. In addition this series of events points out that not every small island in the Intracoastal Waterway in Florida is an acceptable long-term nesting site.

With only 20% of Florida nesting sites having long-term use by pelicans there seems to be a paucity of suitable nesting situations. A comparison of this site with other similar nearby sites not used by pelicans might be elucidating. It might also be beneficial to compare nesting and non-nesting sites statewide. The loss of nesting habitat, whether natural or anthropogenic could have broad reaching consequences to the population of Brown Pelicans nesting in Florida. If we are not able to recognize what constitutes preferred nesting sites for Brown Pelicans, how will we be able to preserve or recreate those characteristics if they are destroyed?

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