



Colonial Nesting Bird Monitoring in Biscayne National Park

2020

Importance: Trends in nesting birds add insight to Biscayne Bay's status

Colonial nesting birds such as Great Egrets, Great Blue Herons, White Ibis, Snowy Egrets, Roseate Spoonbills, and Double-crested Cormorants are important as indicators of the health of Biscayne National Park. Many of these species have previously experienced declines and some are state listed species. The presence of colonial nesting birds, the size and distribution of their nesting colonies, and the reproductive success of their nesting effort indicate that the surrounding habitat can support these energy intensive activities. These birds must acquire large quantities of high-quality food during the nesting season as they select mates, build nests, lay eggs, and rear chicks. Colonies are susceptible to disturbance and predation pressure. Thus, nesting effort should indicate the ecosystem functionality.

Objective and Approach: Monitoring nine island colonies

The objective of this vital sign is to track the status and trends in colony size, distribution, and active nests of specific colonial nesting bird species. The monitoring process involves monthly helicopter flights over known nesting colonies inside Biscayne National Park (BISC) (Figure 1) and an annual search for new colonies. The nine colonies monitored are: Kings Road, Mangrove Key, West Arsenicker, Arsenicker Key, Jones Lagoon, Ragged Key 5 (Figures 2 & 3), Ragged Key 4, Soldier Key, and Kings Bay. All the colonies are located within the park except Kings Bay which is located just outside the park northwest boundary (Figure 1). During flights, the South Florida/Caribbean Network (SFCN) personnel gather photographic data of nests and make observations of non-nesting birds at the colonies. Approximately 450 photos are taken per flight. The photo data are then processed, and the number of active nests counted (Figures 4 & 5). Results are reported by nesting year (July 2019–June 2020).

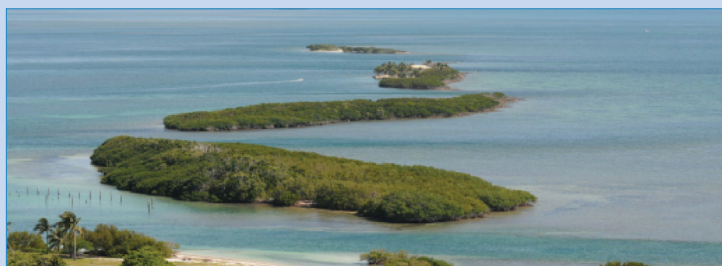


Figure 2. A view of the Ragged Keys in Biscayne National Park. Beyond the foreground island are Ragged Key 5 and Ragged Key 4, both of which have active bird colonies.

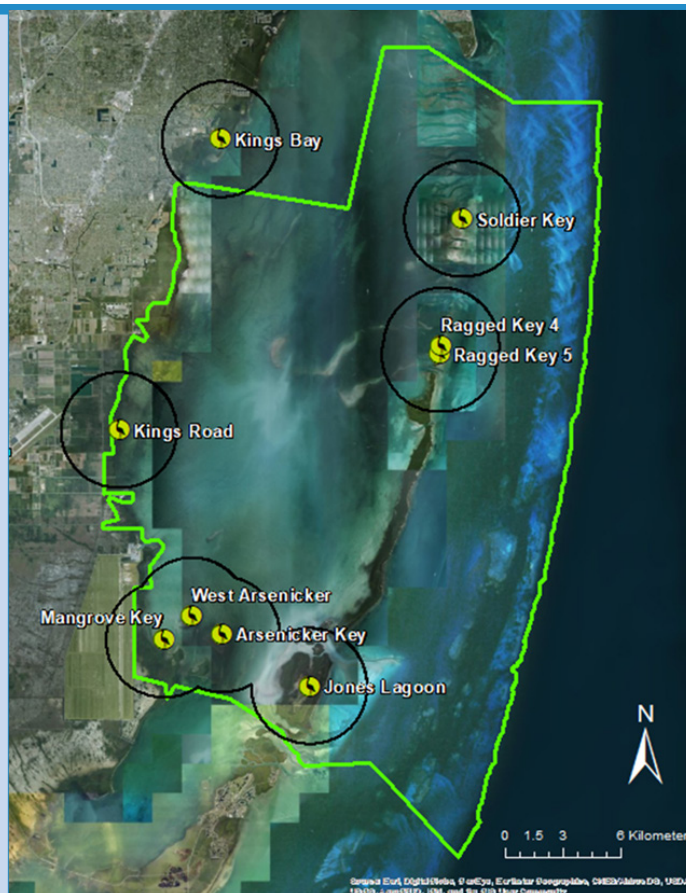


Figure 1. Locations of the nine nesting colonies. The black circles represent an estimated three-mile radius foraging area. The park boundary is in green.



Figure 3. A group of Double-crested Cormorants (*Phalacrocorax auritus*) resting on pilings near Ragged Key 5.





Figures 4 and 5. A photo of normal nesting activity from a past year (left) and reduced nesting activity observed more recently (right). Nests with birds are circled in yellow, the cyan circle represents a nest with eggs, and the navy blue circles represent active but empty nests.

Status and Trends: 2020, Ten years of monitoring

Monitoring did not occur every month during the 2019-2020 season primarily due to Covid restrictions, hence only seven months were surveyed. The monthly active nests for Double-crested Cormorants (DCCO) since 2009 is shown in Figure 6. The most recent winter season (December 2019 to March 2020), indicates a substantial reduction in DCCO nesting. There was a total of 280 active DCCO nests counted across all nine colonies, which is a 70-nest monthly average. The monthly average of active nests across the previous nine years for the same four months is 489. The most recent winter DCCO nest counts represents an 86% reduction. The only previous time active DCCO nest numbers were this low was immediately following Hurricane Irma in 2017 (Figure 6).

A reduction in active bird nest numbers in winter months was not observed in Great Blue Heron or Great White Heron. The nest numbers for these two species were very close to, or exceeding, the long term monthly average active nest count (mean active monthly nests for this winter was five and 22, which is 95 to 128% of the long-term average, respectively). There was a reduction in Great Egret and Roseate Spoonbill active nests during the winter period. However, Great Egrets more commonly nest in the spring and Roseate Spoonbill nesting activity in BISC tends to fluctuate, appearing to be inversely related to Roseate Spoonbill nesting in Florida Bay.

Since DCCOs nest year-round, the missing monthly observations make a direct comparison of the overall annual peak nest numbers problematic. However, the sheer reduction in the overall number of DCCO nests is a concern, especially when the observations are reduced to the winter season. It is important to continue monthly monitoring to determine if this is an episodic event or an indication of a larger issue.

Number of Double-crested Cormorant active nests per month and peak nesting periods.

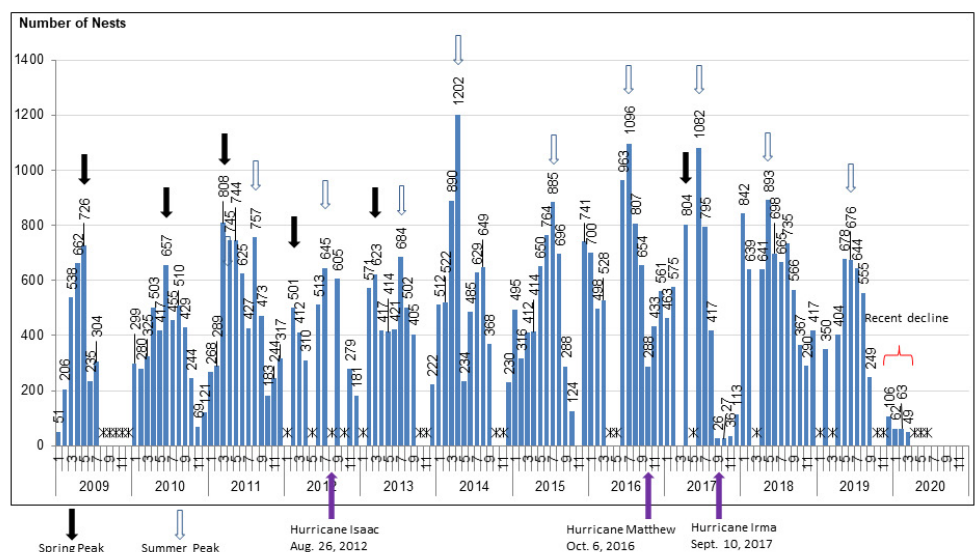


Figure 6. Total number of Double-crested Cormorant active nests per month in Biscayne National Park. Spring peak nestings are marked with a black arrow and summer peak nestings are marked with white arrows. Hurricanes are marked by purple arrows. * indicate no flight occurred.

