Black Skimmer (*Rynchops niger*) Breeding Success in the East Bay Regional Park District, California

Abstract

The Black Skimmer (*Rynchops niger*), one of our most distinctive colonial waterbirds, is listed as a California Species of Special Concern. Factors affecting their breeding population include limited suitable open nesting habitat, human disturbance, varied food availability, predation (feral animals and gulls), extreme weather, and environment pollutants. It is projected that by the year 2050, due to climate change, this coastal bird will have its habitat reduced by 50%. Typically, islet-breeding skimmers are in close proximately to nesting tern species which provide early warning and defensive behaviors against intruders. Since 2001, the East Bay Regional Park District has been working to establish and enhance a California Least Tern (*Sterna antillarum browni*) colony at Hayward Regional Shoreline located along the eastern shore of the San Francisco Bay. These efforts are to assist in the recovery of this State and Federally listed endangered species and resulted in the attraction of breeding Black Skimmers to the site in 2015. For a total of eight breeding seasons (2015 to 2024), the Black Skimmer, California Least Tern, the threatened Western Snowy Plover (*Anarhynchus nivosus nivosus*) have nested successfully, in association with American Avocet (*Recurvirostra americana*) and Black-necked Stilt (*Himantopus mexicanus*). The results presented on Black Skimmer breeding chronology, hatching and fledging success, and diet in the northern portion of the species range answers data gaps that may help inform future research, protection, and management measures for this special status bird species.

Introduction

The Black Skimmer (*Rynchops niger*) is one of our most distinctive and beautiful coastal colonial waterbirds, usually seen gliding low over the water on elegant wingbeats (Figure 1), with its iconic longer lower bill slicing through the wet surface in search of fish. This species is listed as a California Species of Special Concern, and it was first recorded breeding in California at the Salton Sea in 1971 and later in the south San Francisco Bay (Santa Clara County) in 1994 (Shuford and Gardali 2008). Also, the first east San Francisco Bay (Alameda County) record of a nesting pair of Black Skimmers occurred in 1994 at the Hayward Re gional Shoreline (Richmond et al. 2011). Factors affecting their breeding population include limited suitable open nesting habitat, human disturbance, varied marine food availability, predation (feral animals and gulls), extreme weather, and environment pollutants (Coburn et al. 2001). It is projected that by the year 2050, this California bird, in a changing climate, will have its habitat reduced by as much as 50% (Napa-Solano Audubon Society, 2016). Islet-breeding skimmers are typically in close proximately to nesting tern species that provide early warning and defense against intruders (Gochfeld and Burger 1994).

Study Areas

The East Bay Regional Park District manages Black Skimmer, California Least Tern, Western Snowy Plover and Black Oystercatcher nesting habitat at the Hayward Regional Shoreline (37°37'47"N 122°8'46"W) located along the eastern shore of San Francisco Bay (Riensche 2007, Riensche et al. 2012, Riensche et al. 2015). We conducted this study on Island Five (also known as "Tern Town"), a 0.6-acre island created from dredge materials. Vegetative cover on Tern Town has been managed (with mechanical techniques and herbicide treatments) to 5-15% over the years to minimize non-native vegetation spread and encourage State and Federally listed ground-nesting bird species. A 10 x 20 m grid system was established for nest surveys and outside colony monitoring. The oyster shells were Pacific oyster (*Magallana gigas*) shells, an introduced species from Asia, which were harvested from Tomales Bay.

Methods

Data collection to determine nest distribution, chronology of nesting, and reproductive success has primarily been accomplished using the Type 1 method (active monitoring inside colony by permitted biologists; Riensche 2007). In this method, monitors entered the colony to mark nests and record the number of eggs and chicks (Figure 2). This type of intensive monitoring, conducted twice a week (0700 to 1700 hours), yields data on clutch size, hatching success, and evidence of predation.

Diet data was obtained by collecting fish dropped in the colony during the 2020 breeding season. Once collected, the specimens were stored in plastic bags labeled with the collection date. Next, they were soaked in water and cleaned with a fine artist's paintbrush and then dried in a laboratory convection oven. The specimens were given a sample number, which was written on the specimen with a fine tip marker. The following was recorded for each sample: species or lowest taxonomic group possible; total length (from the tip of the snout to the end of the caudal fin (mm)); standard length (from the tip of the snout to the end of the hypural bone (mm)); body depth (the widest part of the fish (mm)); and dry weight (g; Riensche et al. 2018).

Results

The chronology of nesting for Black Skimmers by year at Hayward Regional Shoreline (Tern Town) can be found in Figure 3. Black Skimmer breeding success metrics collected including hatching success (the proportion of eggs that hatched), number of chicks produced, and fledglings per pair ratio (Figure 4). Skimmer nesting activity has increased through time (Figure 5). Lastly, the skimmer diet data can be found in Figure 6.

Figure 1. Black Skimmer (Rynchops niger) *Flying with elegant wingbeats at the Hayward Regional Shoreline (Tern Town). By D. I. Riensche.*

Figure 2. Black Skimmer (Rynchops niger) *nest with chicks at the Hayward Regional Shoreline (Tern Town). By D. L. Riensche. The skimmers did not nest at the site in 2018 and 2021.*

Management Implications & Future Efforts

- Black Skimmer breeding chronology (Typically from mid-April through mid-September).
- Black Skimmers nesting pairs (78) from 2015 to 2014 have had an 89% nest hatching rate, produced a total of 122 fledglings for a 1.56 fledgling/per pair ratio.
- Over the last decade Black Skimmer nesting trends have shown an increase, with the exception of no nesting attempts in 2018 and 2021.
- Diet data collected from dropped fish show that 50% of the Black Skimmers diet at this location is composed of silversides (Atherinopsidea).
- Continuing research and management efforts to enhance the breeding success of this special status species.

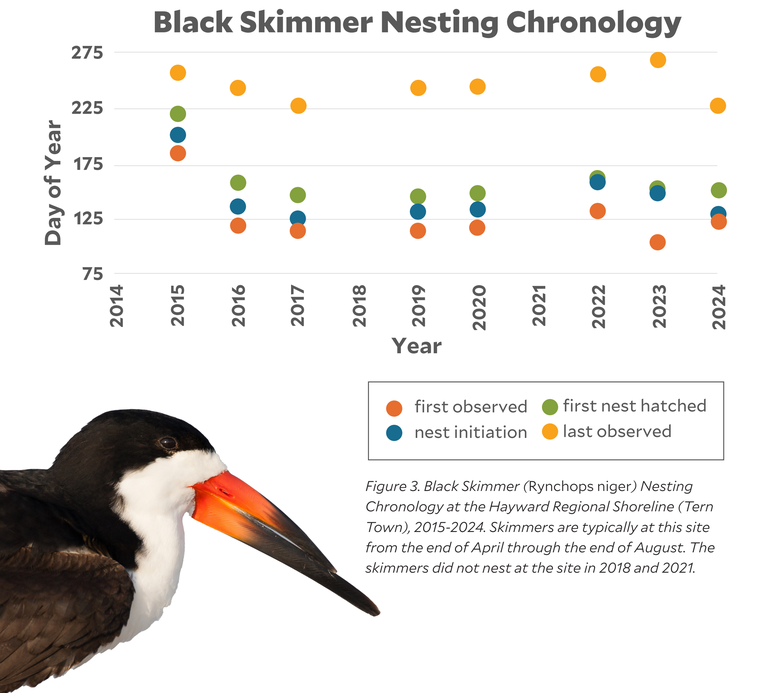

Figure 3. Black Skimmer (Rynchops niger) *Nesting Chronology at the Hayward Regional Shoreline (Tern Town), 2015-2024. Skimmers are typically at this site from the end of April through the end of August. The skimmers did not nest at the site in 2018 and 2021.*

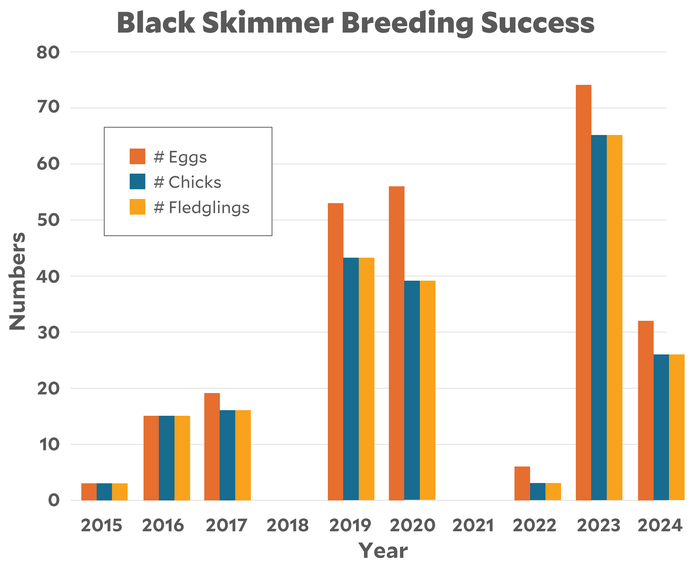

Figure 4. Black Skimmer (Rynchops niger) *Breeding Success at the Hayward Regional Shoreline (Tern Town) from 2015 to 2024. The average hatching success is 89% and fledgling per pair ratio is 1.56.*

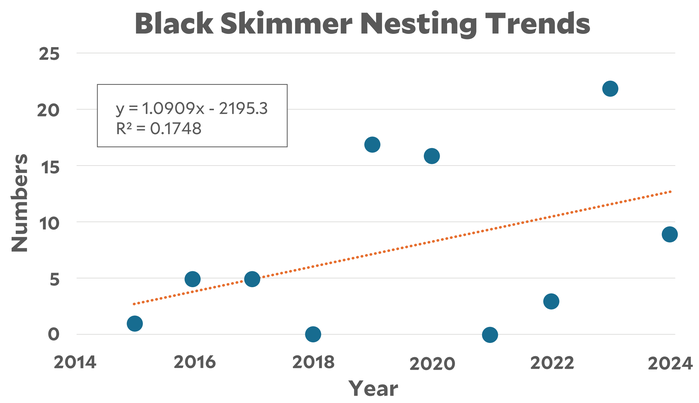

Figure 5. Black Skimmer (Rynchops niger) *Nesting Trends (2015 to 2024) at Tern Town (Hayward Regional Shoreline).*

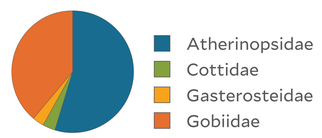

Figure 6. Black Skimmer (Rynchops niger) *diet data collected from dropped fish (2020) at Tern Town (Hayward Regional Shoreline).*

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