

COLONIZATION OF THE ROCKAWAY PENINSULA, LONG ISLAND BY BANK SWALLOWS (*RIPARIA* *RIPARIA*)

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Abstract— Bank Swallows (*Riparia riparia*) are Neotropical migratory birds that are in steep decline throughout North America. In 2016, we began monitoring a small colony in the sand dunes on the western end of the Rockaway Peninsula, Long Island, New York at Breezy Point Tip. Although we did not find that Bank Swallows at the Breezy Point colony reproduced successfully from 2016–2018, the number of pairs grew from one in 2016 to approximately 10 in 2019. At least three pairs reproduced successfully in 2019. This colonization event suggests that Bank Swallows may be attempting to breed in suitable habitat in coastal New York more regularly than is currently appreciated, even in locations frequented by birdwatchers. Further study and population assessment of Bank Swallows in coastal New York is needed, which can be facilitated by community science participation in research.

Bank Swallows are trans-hemispheric migrants that nest colonially in burrows dug into steep slopes comprised of fine-grained sediment (Turner and Rose 1989, Garrison 1999). In suitable habitat, they display high site fidelity (Freer 1979), though they often nest in ephemeral sites such as eroding cliff faces (Garrison 1999), which may be destroyed by hydrological processes. They are also known to nest in anthropogenic sites such as sand and gravel pits (Burke *et al.* 2019), and drainpipes (Ramírez-Garofalo pers. obs.; Buckley *et al.* 2018). In ocean-facing areas, Bank Swallows are likely vulnerable to sea-level rise as a result of climate change, which is causing degradation of suitable nesting habitat such as steep dune faces (IPCC 2019).

Bank Swallows reach their highest worldwide abundances in northeastern North America (Turner and Rose 1989), but are generally considered sensitive species throughout this region (e.g. they are listed as threatened in Ontario; Ontario Ministry of Natural Resources and Forestry 2017). In New York, they are widespread but localized breeders (McGowan and Corwin 2008), and do not currently have any protected status outside of the Migratory Bird Treaty Act,

despite steeply declining trends statewide (McGowan and Corwin 2008) and throughout the region (Nebel *et al.* 2010, Ontario Ministry of Natural Resources and Forestry 2017). Historically, Bank Swallows were found in their highest numbers in the coastal regions, the shores of Lake Ontario, and in the Genesee and Hudson valleys (Eaton 1914, Griscom 1923). On Long Island, they were once found to be most abundant as summer residents along the south shore (Griscom 1923), but by the 1940s were considered to be more abundant and localized on the eastern end of the Island, and no longer common on the south shore (Cruickshank 1942). By later assessment, they were widespread local breeders upstate, and less numerous on Long Island (Bull 1974). Most recently, Long Island breeding colonies have been most numerous in bluffs on the east end and north shore, although sporadic nesting activity involving small numbers of birds has been observed on the Atlantic Ocean-facing beach near Moriches Inlet, Suffolk County (S. Mitra, pers. comm.). By the mid-1980s, colonies of more than 100 pairs were no longer being reported in New York (Levine 1998, McGowan and Corwin 2008), which coincided with a significant decline in the population of aerial insectivores in northeastern North America (Nebel *et al.* 2010, Smith *et al.* 2015, Imlay *et al.* 2018).

Bank Swallows bred sporadically in New York City during the early twentieth century, with colony-sites being found chiefly in the Bronx (Hix 1905, Eaton 1914, Kuerzi 1927, Buckley *et al.* 2018). By the 1940s, however, Bank Swallows were no longer found breeding within the city (Cruickshank 1942; Bull 1964, 1974), and were still absent by the time of the first New York State Breeding Bird Atlas Survey (1980–1985; Andrle and Carroll 1988). During the second atlas survey (2000–2005), they were found breeding on Hart Island in the Bronx, and on the south shore of Staten Island (McGowan and Corwin 2008, Buckley *et al.* 2018). They currently persist on Hart Island in small numbers, and have remained breeding birds since at least 2002 (Ramírez-Garofalo, unpubl. data).

Here, we describe the recent colonization of Breezy Point Tip on the Rockaway Peninsula, Queens, New York by Bank Swallows. Failed breeding attempts from 2016–2018 were followed by success in 2019, with at least five juveniles from at least three burrows being fledged by July. This suggests that management policies allowing natural erosion to occur unimpeded will benefit Bank Swallows on Long Island and coastal areas more generally.

METHODS

Study Area—Breezy Point Tip (40°55'58"N, -73°95'96"W), the western terminus of the Rockaway Peninsula, is a 200-acre area administered by the Jamaica Bay Unit of Gateway National Recreation Area (GNRA). Established in 1972, GNRA was the first urban national park in the United States and encompasses important natural and cultural resources, as well as recreational areas, in metropolitan New York and New Jersey (GNRA 2014). Breezy Point Tip is separated into two distinct sections: the Jamaica Bay-facing beach (hereafter “bayside”), and the

Atlantic Ocean-facing beach (hereafter “oceanside”). The bayside beach is relatively narrow and lined with steep sand dunes that are densely vegetated with American Beachgrass (*Ammophila breviligulata*), while the oceanside beach is wide, more sparsely vegetated, and lacks steep dunes. On both beaches, symbolic string fencing blocks public access to most of the backshore, foredune and backdune, which are designated as critical habitat for federally and state protected breeding birds such as the Piping Plover (*Charadrius melodus*), and both the Common (*Sterna hirundo*) and Least Tern (*Sternula antillarum*). The symbolic string fencing also helps minimize disturbance to species like the American Oystercatcher (*Haematopus palliatus*), which do not currently have special protected-status, but regularly occupy the same habitat as species that do. Daily monitoring of the breeding birds at the Breezy Point Tip is conducted by GNRA volunteers and staff, who keep detailed notes and lists of other species found in the area.

Monitoring—From 2016–2019 we monitored Bank Swallows on the bayside beach at Breezy Point. Observations were made each year from May–August, with daily coverage from May–July, and weekly coverage during August. Burrow occupancy was determined by counting the number of burrows that appeared active. Active burrows generally had visible scratch marks at the entrance of the burrow, and appeared dark and un-ending to the naked eye. Since the number of burrows was small (< 20 per season), we were able to make an exact count of active burrows, unlike in a large colony where estimates are more common (e.g. Wright *et al.* 2011).

RESULTS

In June 2016, SS observed several Bank Swallows excavating burrows in the sand dunes on Breezy Point’s bayside beach (Figure 1a, p. 264). Throughout June and into July, one pair occupied a single burrow, and did not appear to fledge any young. The following June, SS again found Bank Swallows nesting in the area, this time farther back behind the symbolic fencing where the dunes were steepest. The colony peaked at four pairs in 2017, and like the previous year there was no evidence that they had fledged any young. On 24 May 2018, we found five active burrows, one of which was determined to be active based on fresh claw-marks and loose sand at its entrance. During the months of June and July, we monitored the small colony, which peaked at 10 active burrows and about 10 partially dug burrows in mid-June. On multiple occasions, swallows were observed carrying nesting material into the burrows, but no young were found. On 21 July, a nor’easter brought heavy rainfall, flooding, and wind gusts upwards of 40 mph to the area, causing the dune faces to be reshaped. Following the storm, none of the remaining swallow burrows were occupied, although some swallows did seem to remain in the area for the following week. In 2019, we found ten active burrows by 10 June, with a total of five young being fledged from at least three of the

burrows by 1 July. The COVID-19 pandemic prevented us from surveying the Bank Swallow colony during the 2020 breeding season due to National Park Service (NPS) research policies, however, three pairs were observed on 30 May, and on 1 July, at least 10—and potentially up to 20—individuals were seen at the colony, though the number of active burrows were not counted (S. Sime, pers. comm.).

DISCUSSION

The Breezy Point Bank Swallow colony appears to have benefited from the closure of the area surrounding the dunes to foot traffic and off-road vehicles during the breeding season. Regulations put in place to protect critical habitat for nesting threatened and endangered species restricts access to the dunes within the Jamaica Bay Unit of GNRA (GNRA 2018), indirectly protecting species that are susceptible to human disturbance like Bank Swallows. NPS policy also requires natural shoreline processes like erosion to be allowed to take place unimpeded in most circumstances (NPS 2006). This policy ultimately allows for the natural creation of suitable habitat for Bank Swallows, which rely on freshly eroded slopes to dig their nesting burrows (Freer 1979, Garrison 1987, 1999; Turner and Rose 1989, Heneberg 2001). On Long Island, where Bank Swallows were historically very abundant, areas along the south and north shores are frequently subject to bank stabilization measures to protect private property. Throughout North America, Bank Swallows are threatened by erosion mitigation measures (Garrison 1999, Moffatt *et al.* 2005, McGowan and Corwin 2008, Silver and Griffin 2009), and it is likely that these measures will continue to limit their success on Long Island and along the coast, particularly as sea levels rise throughout the 21st century.

The data reported in this paper give the first records of Bank Swallows breeding in Queens County, New York. Although Bank Swallows were first found nesting at Breezy Point in 2016, it is possible that they have nested there in the past and have gone undetected. For example, on over 100 consecutive days of observations from both the bayside and oceanside beaches during the 2018 breeding season, we rarely detected Bank Swallows outside of the immediate vicinity of their colony site. The issue of colony detectability has also come up in surveys of Bank Swallows in The Bronx and on Staten Island. For example, during the 2018 survey period there was one colony on Staten Island's east shore that was not found until late in the breeding season when most Bank Swallows had already left their colony-sites (Ramírez-Garofalo, unpubl. data). Similarly, in The Bronx, Bank Swallows were found nesting on Hart Island during the second New York State Breeding Bird Atlas, but were not explicitly reported again until 2021, when surveyors were able to view the colony from a boat.

Surveys of known Bank Swallow colonies should be undertaken to further determine their population status on Long Island and throughout New York. Specifically, counting the number of burrows, as opposed to just the number of

swallows, would be particularly useful for status assessment. During the third New York State Breeding Bird Atlas, participants have the opportunity to collect these data, though the Atlas itself does not require it. A more in-depth and geographically widespread study of Bank Swallows in New York may be the perfect opportunity for increasing participation by both atlasers and interested parties in scientific study of New York's avifauna. Monitoring programs in Canada and the state of California provide us with ample direction and information on estimating colony size via the number of apparently active burrows. Current efforts on Staten Island, New York are investigating colony site fidelity and colony persistence (longevity of a colony at a specific site), which are now being expanded to include other colony sites in New York City and Long Island (Ramírez-Garofalo unpubl. data).

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LITERATURE CITED

- Andrle, R.F., J.R. Carroll. 1988. *The atlas of breeding birds in New York State*. Cornell University Press, Ithaca, NY.
- Buckley, P.A., W. Sedwitz, W.J. Norse, J. Kieran. 2018. *Urban ornithology: 150 years of birds in New York City*. Cornell University Press.
- Bull, J. 1964. *Birds of the New York Area*. Harper and Row, New York, NY.
- Bull, J. 1974. *Birds of New York State*. Doubleday: Natural History Press, Garden City, NY.
- Burke, T., M.D. Cadman, E. Nol. 2019. Reproductive success and health of breeding Bank Swallows (*Riparia riparia*) in aggregate (sand and gravel) pit and natural lakeshore habitats. *The Condor: Ornithological Applications* 121: 1–10.
- Cruikshank, A.D. 1942. *Birds around New York City: where and when to find them*. American Museum of Natural History, New York, NY.
- Eaton, E.H. 1914. *The birds of New York*. Vol. 2. University of the State of New York, Albany, NY.
- Freer, V.M. 1979. Factors affecting site tenacity in New York Bank Swallows. *Bird-Banding* 50:349-357.
- Garrison, B.A., J.M. Humphrey, S.A. Laymon. 1987. Bank Swallow distribution and nesting ecology on the Sacramento River, California. *Western Birds* 18:71-76.
- Garrison, B.A. 1999. Bank Swallow (*Riparia riparia*), version 2.0. In *The Birds of North America* (A.F. Poole and F.B. Gill, Editors). Cornell Lab of Ornithology, Ithaca, NY, USA. <https://doi.org/10.2173/bna.414>
- Gateway National Recreation Area. 2014. A new vision for a great urban national park: Gateway National Recreation Area's general management plan. National Park

- Service, Gateway National Recreation Area, New York, USA. Available online from <https://www.nps.gov/gate/getinvolved/planning.htm>
- Gateway National Recreation Area. 2018. Superintendent's Compendium. Gateway National Recreation Area, National Park Service.
- Griscom, L. 1923. *Birds of the New York City Region*. The American Museum of Natural History. Handbook Series, Number 9. New York, NY.
- Heneberg, P. 2001. Size of sand grains as a significant factor affecting the nesting of bank swallows (*Riparia riparia*). *Biologia-Bratislava* 56:205-210.
- Hix, G.E. 1905. A year with the birds in New York City. *The Wilson Bulletin* 17:35-43.
- Imlay, T.L., J.M. Flemming, S. Saldanha, N.T. Wheelwright, M.L. Leonard. 2018. Breeding phenology and performance for four swallows over 57 years: relationships with temperature and precipitation. *Ecosphere* 9:e02166.
- IPCC. 2019. IPCC special report on the ocean and cryosphere in a changing climate. International Panel on Climate Change. <https://www.ipcc.ch/srocc/home/>
- Kuerzi, J.F. 1927. A detailed report on the bird life of the greater Bronx region. *Proceedings of the Linnaean Society of New York* Nos. 37-38:88-111.
- Levine, E. (Ed). 1998. *Bull's Birds of New York State*. Cornell University Press, Ithaca, New York.
- McGowan, K.J., K. Corwin (Eds). 2008. *The second atlas of breeding birds in New York State*. Comstock Publishing Associates.
- Moffatt, K.C, E.E. Crone, K.D. Holl, R.W. Schlorff, B.A. Garrison. 2005. Importance of hydrological and landscape heterogeneity for restoring Bank Swallow (*Riparia riparia*) colonies along the Sacramento River, California. *Restoration Ecology* 13:391-402.
- National Park Service. 2006. Management Policies. U.S. Department of the Interior, National Park Service, Washington, D.C., USA.
- Nebel, S., A. Mills, J. McCracken, P. Taylor. 2010. Declines of aerial insectivores in North America follow a geographic gradient. *Avian Conservation and Ecology* 5:1.
- Ontario Ministry of Natural Resources and Forestry. 2017. Best management practices for the protection, creation and maintenance of Bank Swallow habitat in Ontario. Queen's Printer for Ontario. 37pp.
- Silver, M., C.R. Griffin. 2009. Nesting habitat characteristics of Bank Swallows and Belted Kingfishers on the Connecticut River. *Northeastern Naturalist* 16:519-534.
- Smith, A.C., M.R. Hudson, C.M. Downes, C.M. Francis. 2015. Change points in the population trends of aerial-insectivorous birds in North America: synchronized in time across species and regions. *PLoS One* 10: e0130768.
- Turner, A., C. Rose. 1989. *A handbook to the swallows and martins of the world*. Christopher Helm, London, UK.
- Wright, D.H., H. Lomelo, P.S. Hofmann, C. Nguyen. 2011. Burrow occupancy and nesting phenology of Bank Swallows along the Sacramento River. *California Fish and Game* 97: 138-147.





Black-throated Gray Warbler, Amherst State Park, *Erie*, 22 Apr 2021, © Tony Dvorak.



Figure 1. Bank Swallows at Breezy Point Tip, *Queens*, New York, 2016 – 2018. Photos clockwise from top left: (a) 7 Jun 2016 and (b) 12 Jun 2017 taken by Scott Solberg, (c) 14 Jun 2018 and (d) 18 Jun 2018 by José R. Ramírez-Garofalo. See pp. 210-215.