

**City of Richmond**

# **PURPLE MARTIN NEST BOX PROJECT**

## **2023 Summary Report**

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*Photo: Melissa Hafting*

# Purple Martin Status and Population Trends in BC

The Purple Martins (*Progne subis*) is the largest swallows in North America. They are at the northwestern limit of their range in BC, where they occur in the lower Fraser River lowlands and the east side of Vancouver Island.<sup>1</sup>

Historically, Purple Martins nested in small colonies in natural cavities and abandoned woodpecker holes in old trees and snags in open woodland areas, forest clearings, and burned areas, often near bodies of water.<sup>2</sup> With increasing human settlement and associated habitat loss from land clearing, snag removal, and fire suppression, Purple Martins adopted to nesting in cavities in harbour pilings and building crevices.<sup>1,2</sup> The species experienced a significant population decline starting in the 1940s due to a decline in cavity supply from replacement of old harbour pilings with creosote-treated pilings coinciding with increased nest site competition from the expanding population of the introduced European Starlings and House Sparrows.<sup>1,2</sup> By the 1970s, Purple Martins disappeared from the Lower Mainland, and by the 1980s their population in BC had declined to five known pairs nesting on southeast Vancouver Island.<sup>2</sup>

Provincial recovery efforts began in 1985 with a nest box program in Cowichan Bay on southeast Vancouver Island.<sup>2</sup> That program was quickly successful, prompting the initiation of more nest box programs at other sites throughout BC. Purple Martins became re-established in the Lower Mainland in 1994 when a nest box program was initiated at Maplewood Flats in North Vancouver.<sup>1</sup>

Thanks to collaborative recovery efforts spanning 30 years, there were over 120 active colonies and over 1,200 nesting pairs of Purple Martin in BC in 2018 and they are now Blue-listed by the BC Conservation Data Centre.<sup>3</sup> Blue-listed species are of Special Concern because they have characteristics that make them particularly sensitive or vulnerable to human activities or natural events. In the case of Purple Martins, these characteristics include their relatively small population size and reliance on human-made nest boxes.<sup>4</sup>



## Summary

Purple Martins are a Blue-listed (Special Concern) species in BC and are heavily reliant on human-made nest boxes. The City of Richmond initiated a Purple Martin Nest Box Project in 2023 to support the species' population persistence in BC. Twenty nest boxes were installed on existing pilings at Garry Point Park and Purple Martins were observed at the nest boxes throughout the breeding season. Nest box contents were checked and cleaned at the end of the nesting season. Seven nest boxes contained fully constructed nests. No unhatched eggs or dead nestlings were observed. Based on a typical clutch size of 3 to 6 eggs, it is estimated that 21 to 42 Purple Martins fledged at Garry Point Park in 2023. None of the nest boxes contained European Starling nests. This was a successful outcome for the first year of the Purple Martin Nest Box Project.

# Nesting Ecology

Purple Martins typically nest in loose colonies, numbering from just a few pairs to several dozen.<sup>1</sup> Adult males are the first to return to their breeding grounds each spring, arriving in the Fraser Lowlands in mid-April.<sup>5</sup> Their flight songs attract young males which claim adjacent nest sites and the colony expands.<sup>1</sup>

Nests are constructed mostly by the female, although males sometimes initiate nest-building or contribute green leaves to the nest.<sup>6</sup> The nest consists of a loose mat of twigs, leaves, grass, and mud spread evenly across the floor of the cavity or nesting compartment.<sup>6</sup> The nest bowl is usually lined with green leaves which are replaced throughout the nesting season.<sup>6</sup>

In BC, egg laying typically occurs from late May to early June and is asynchronous within the colony.<sup>5</sup> Clutch size is usually 3 to 6 eggs and only females incubate the eggs.<sup>6</sup> The incubation period lasts 15 to 18 days during which time the female spends over 70% of daylight hours incubating in bouts of 4 to 15 minutes.<sup>6</sup> Males often sit on the eggs when the female is absent from the nest, but they do not have a brood patch.<sup>6</sup> Second broods are rare and are usually associated with replacement clutches if the first clutch fails.<sup>6</sup>

Nestlings are brooded with decreasing frequency over the first 10 days after hatching.<sup>6</sup> Nestlings open their eyes when they are 9 or 10 days old, their feathers typically emerge at 12 days, and they leave the nest (i.e., fledge) at 27 to 36 days.<sup>4,6</sup> Purple Martin diet consists of flying insects and they can forage upwards of 5 km from their nest sites.<sup>4,6</sup> During periods of peak nestling demand, the parents make an average 13 food deliveries per hour.<sup>6</sup> Both parents continue to feed the young for 5 to 7 days after fledging.<sup>6</sup>

Purple Martins depart BC in mid-September to begin their southbound migration to South America, where they winter mainly in southeast Brazil.<sup>4,6</sup> Most martins that survive their first winter live only 2 to 3 years and relatively few (<10%) exceed 5 years of age.<sup>3,4</sup> The longevity record for birds from BC is shared by two 11-year-old females.<sup>4</sup>



Figure 1: Adult male Purple Martin.



Figure 2: Purple Martin pair at nest box at Garry Point Park. Adult male at entrance and adult female on top.



Figure 3: Adult female Purple Martin carrying nesting material at Garry Point Park.

# Garry Point Park Nest Box Project

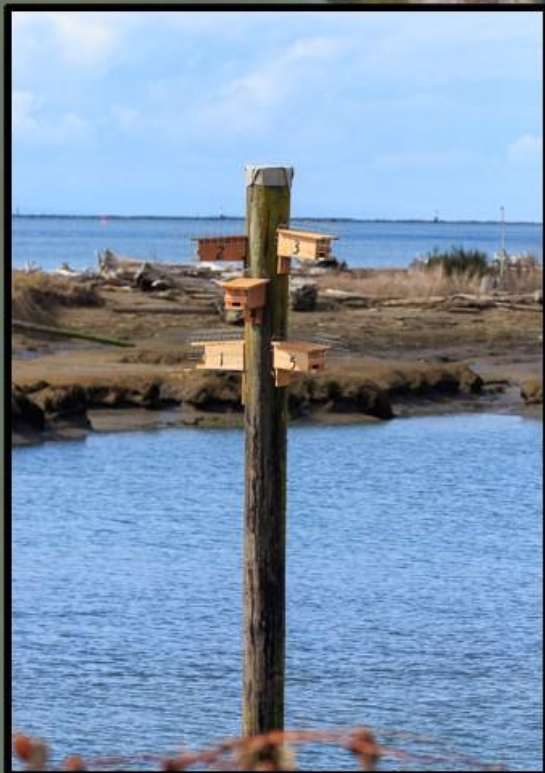
In December 2021, the City of Richmond approved Melissa Hafting's proposal to install Purple Martin nest boxes at Garry Point Park in Richmond, BC. Melissa was noticing and documenting Purple Martins frequenting and perching in the area since 2020, but nesting had not been observed likely due to limited availability of nest sites. Garry Point Park is across the Fraser River from the Reifel Bird Sanctuary where there is an existing Purple Martin colony, which could be a potential source population for colonization.

Melissa Hafting made several trips to the park to identify suitable pilings for nest box installation. Four existing pilings were selected: one within the channel at the west tip of Garry Point, and four pilings in the marsh north of Garry Point Park (Figure 5). These pilings were selected because they are in suitable habitat along a sheltered slough with low boat traffic, have very low human activity, and are visible from Garry Point Park where they can be enjoyed by the public. Because the pilings are located on federal lands below the high-water mark, permission to install nest boxes was required and obtained from Fisheries and Oceans Canada and the Vancouver Port Authority.

The nest boxes were built from cedar according to specifications provided by the Burke Mountain Naturalists.<sup>7</sup> Twenty Purple Martin nest boxes were installed on March 26, 2023. Five nest boxes were installed per piling and numbered sequentially. Metal baffles were installed around the base of land-based pilings to prevent terrestrial predators from climbing up the pilings to the nests. Wire mesh was added around each nest box to prevent gulls from perching on the boxes and predated nests.



Figure 4: Purple Martin nest boxes at Garry Point Park.



*Figure 5: Locations of pilings where Purple Martin nest boxes were installed. Insets show photographs of nest boxes at each piling.*

# Monitoring Results

Nest boxes were not physically checked during the breeding season in 2023 to avoid potential disturbance to an establishing colony during its first year. Instead, the colony was periodically observed from Garry Point Park throughout the breeding season. On May 27, two birds were observed at the nest boxes. By June 8, eight pairs of Purple Martins were observed chattering, perching, and entering the nest boxes. Adult female Purple Martins were observed carrying nesting material to the nest boxes on June 26. On August 5, adults were observed carrying food to the nest boxes and nestling begging calls were heard. The maximum count of birds (adults and juveniles) observed at the colony was 30 on August 15. Videos of the colony can be viewed at the following links: <https://youtu.be/FkEPiCEAerk?si=1GetUHSw-jtE11ay> and <https://youtu.be/An2YLSf-xdg?si=w92kJhRpkbITzLSv>.

Nest boxes were cleaned on October 15 and their contents checked. Seven nest boxes contained fully constructed Purple Martin nests, which consisted of relatively large amounts of grass and a few Mallard feathers (Table 1). Three nest boxes were occupied on piling 1 (boxes #1, 4, 5), two nest boxes were occupied on piling 2 (boxes #6, 8), and one nest box was occupied on each of piling 3 (box #14) and 4 (box #19). No unhatched eggs or dead young were observed during nest cleaning suggesting that the entire clutch fledged from each nest. Based on a clutch size of 3 to 6 eggs, it is estimated that 21 to 42 Purple Martin fledged at the Garry Point Park colony. None of the nest boxes contained European Starling nests.

**Table 1: Purple Martin Nest Box Locations and Occupancy Status, 2023**

Piling Number	Coordinates (Latitude, Longitude)	Box Number	Occupancy Status	Piling Number	Coordinates (Latitude, Longitude)	Box Number	Occupancy Status
1	49.126516, -123.201162	1	●	3	49.126992, -123.200005	11	○
		2	○			12	○
		3	○			13	○
		4	●			14	●
		5	●			15	○
2	49.127049, -123.202067	6	●	4	49.127008, -123.199334	16	○
		7	○			17	○
		8	●			18	○
		9	○			19	●
		10	○			20	○

● = occupied nest box; ○ = unoccupied nest box.



Figure 6: Adult Purple Martin carrying a dragonfly to feed its nestlings.



Figure 7: Old Purple Martin nest removed during nest box cleaning at the end of the nesting season.

# Acknowledgements

Thank you to the City of Richmond, especially Richard Kenny from the Parks Department and Councilor Carol Day, for supporting the Purple Martin Nest Box Project. Fisheries and Oceans Canada (DFO) and the Vancouver Fraser Port Authority (VFPA) provided permission to install nest boxes on lands under their jurisdiction. Thanks to Jesse Russell at Environment and Climate Change Canada for directing us to the appropriate people at DFO and VFPA to obtain permission. Thank you to Rob Lyske for building, installing, and helping clean the nest boxes, and to John Reynolds for using his boat to access the marine piling for nest box installation and cleaning.

## References

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