

# Stanley Park Heronry Annual Report

2024 Season

## Overview

The 2024 Stanley Park heron breeding season has come to an end. SPES staff successfully monitored the Pacific Great Blue Heron (*Ardea herodias fannini*) colony located by the Vancouver Park Board office on Beach Avenue, adjacent to Stanley Park. SPES personnel noted another year of the herons returning to this colony, with sightings and behaviour consistent with previous years. This year, 2024, was the 24<sup>th</sup> consecutive year the great blue herons (GBHE) have returned to this location since 2001. Details regarding the colony, key metrics, and observations related to colony health, productivity and other important considerations are detailed in this report below.



*Figure 1. Heron at Lost Lagoon on 8 September 2024 (Photo: Frank Lin)*

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This year represents a novel change in Park conditions due to the beginning of the tree work removal associated with the *Hemlock Looper Response and Mitigation Plan* (VPB, 2024). Tree removal work in the Park started in late 2023, and continued in the early months of 2024, before pausing work during the regional bird nesting window (March 1 – August 31). The aim of this tree removal work is to mitigate fire and safety concerns related to dead hemlock trees via their removal after review and consideration by professional arborists, biologists, and with input from key Park stakeholders such as the Vancouver Park Board and the Local First Nations. It is important to consider changes in human activity in these surveys as the Pacific Great Blue Heron can be vulnerable to anthropogenic disturbance (Vennesland, 2006). The Phase 1 tree work was paused in April, meaning there was a small overlap of one to two weeks with the beginning of GBHE nesting behaviour. No tree work associated with Phase 1 of the hemlock looper response was carried out at the colony site. The Province of BC recommends a buffer zone of 60 m from any development work for urban heron colonies, plus an additional 200 m buffer during the nesting season (BC MOE, 2014). The closest Phase 1 worksite to the Stanley Park heron colony was 743 meters away, well beyond the recommended 260 m buffer zones.

This year also marked the second year of the new survey methods used by SPES. To minimize sampling bias and improve accuracy in heron productivity estimations, SPES shifted from rooftop surveys that focused on a sample of heron nests, to both rooftop and ground surveys. This change allowed SPES staff to monitor the entire colony, and measure key metrics without the need to make sampling estimations. This change was necessary as the colony itself has greatly changed in the past 20 years, and our previous methods were not capturing such shifts. With this second year of the new methodology, we can now make more effective year-to-year comparisons, starting with a comparison between 2023 and 2024.

Because the 2023 and 2024 monitoring methods and results differ from previous years, they must be compared within the context of these methodological changes. Pre-2023 data are not as easily comparable with data from 2023 and 2024. Now that we have two years of data collected with the new methods, we can make more effective comparisons between years. The way we measure productivity and nest success have been updated to reflect changes in colony dynamics since the formation of this survey back in the early 2000s. In addition, by updating our methods to be more in line with those used in surveys of other colonies in the Lower Mainland (e.g. Jones et al. 2013), our data can be used to compare the Stanley Park colony to other nearby colonies.

By updating our protocols and methods, SPES can now make more confident recommendations to the Vancouver Park Board with respect to heron management. Our

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findings last year suggested that the heron population at the colony is smaller than previously estimated, but that the colony remains stable. In 2024, our findings suggest the heron colony was more productive this year than in 2023, and that the colony size again remains stable.

## Background

This report presents key metrics for the heron colony (the “heronry”) located near the Vancouver Park Board office. An area map of the nesting trees can be found in **Appendix 1**.

Pacific great blue herons (*Ardea herodias fannini*) are protected under the *Migratory Birds Convention Act*, the *BC Wildlife Act*, and are designated as a blue-listed species (BC Ministry of Environment). With nearly 60% of BC’s Pacific GBHE population found in and around the Lower Mainland (BC Conservation Status Report, 2022), the productivity of this heronry has important conservation implications for the viability of the subspecies.

SPES has been actively involved in the monitoring and conservation of the GBHE colony within Stanley Park since 2002. Our findings contribute to the regional efforts of groups that study GBHE populations and are crucial to these birds’ conservation. Nest productivity and nest success are proxies for the suitability of the Stanley Park heronry’s current location; therefore, attention by SPES is continually dedicated to seek to improve accuracy of estimates of these metrics. Because herons are sensitive to disturbance in their immediate nesting area and feeding grounds within a 3 to 5 km radius (VPB, 2006), results from our monitoring may reflect changes in the quality of those habitats, or the overall habitat suitability for these herons. Sharp drops and sustained negative trends to these measures may precede colony abandonment wherein the herons discontinue using this location in favour of another.

## Monitoring Program

### Methods

As previously mentioned, this year marked the second year employing our updated survey and analysis methods. Our current method design was informed by GBHE survey protocols written for the Heron Working Group and similar organisations (Vennesland, 2006). Changes in our survey protocol last year were intended to bring our protocol closer in line with that recommended by the Heron Working Group for the *fannini*

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subspecies (Vennesland & Norman, 2006), while still considering situational factors unique to our colony.

Staff surveyors completed a pre-season nest count on 16 February 2024. Staff and volunteer surveyors then completed ten (10) surveys of the colony from March – July as herons arrived, raised their young, and fledged. On 29 July 2024, the Urban Wildlife Programs Coordinator completed a walkthrough of the colony and surrounding area, observing no further breeding activity, and confirmed the end of the breeding season.

### *Method Updates*

In previous years, many heron nests were concentrated near Park Lane, in trees south of the tennis courts. Over time, because of a loss of these trees (due to conditions such as windstorms, tree age and poor soil conditions), herons have increasingly shifted to nests within London plane (*Platanus × hispanica*) trees further northwest, between the tennis courts. Previous methods involved conducting surveys to assess the nests in trees adjacent to Park Lane, then extrapolating this sample to the whole colony to estimate key population metrics. Due to the shifting conditions of the heronry, as time progressed, this sample became less representative of the colony, increasing the risk of sampling bias. SPES determined it was therefore necessary to change how these surveys were conducted.

In 2023, SPES began surveying the entire colony through both rooftop and ground surveys. This was done to reduce overrepresentation of heron nests visible only from the rooftop. To account for more nests being built in areas less visible from our rooftop vantage point, SPES began also surveying from the ground. The new method allows us to survey all nests across the colony, ensuring that these newer nests located in trees between the tennis courts were not underrepresented.

In our previous methods (prior to 2023), our population metric estimates may have been biased, as we were not accurately capturing the shifting nature of the colony. By amending our methods and surveying the whole colony via the addition of ground surveys, we no longer need to extrapolate results from a subset of the colony's population.

It is important to re-evaluate survey methods periodically, as over time surveys may need to be adjusted as conditions change. SPES observed that conditions around the heron colony have changed within the past few years, including the survey area. A potential future avenue for exploration may be whether the loss of historic nesting trees along Park Lane is linked to these new nesting observations.



Monitoring the entire colony was not feasible for SPES several years ago. However, SPES now feels more confident in being able to assess the entire heron colony.

Another change made in 2023 was in relation to when we assessed observed juveniles as fledged. In reports before 2023, we counted only chicks we directly observed at an estimated ten weeks of age as fledged and used this count to calculate nest success. This was an overly restrictive criteria compared to the suggested methodology published by the Heron Working Group (Vennesland & Norman, 2006).

We are now following the criteria in the Heron Working Group Survey Protocol, which recommends chicks observed at the age of 4 – 6 weeks be counted as likely fledged if their nests become later obscured by foliage during the survey. We continue to count juveniles who remain visible throughout the survey and fledge between 8 – 10 weeks as expected.



*Figure 2. Heron with eggs on 12 April 2024 (Photos: Frank Lin)*

Based on our two seasons of the new methodology, SPES will be making some additional minor updates to improve the ease and consistency of sampling. Once the trees in the heronry are bare of leaves for the winter, SPES will be mapping the existing nests in the colony from the ground. In accordance with Vennesland (2006), the new map will identify nests with absolute metrics (bearing and distance from a set vantage point) rather than relative to one another. This will preclude confusion when new nests are built, and when old nests fall or are cannibalized.

Capturing estimates of chicks that likely fledged (despite their nests becoming obscured) helps prevent artificially deflating nest productivity estimates for the colony.

These method changes mean that results from 2023 onward will look different from previous years. Raw count totals will appear markedly different from previous years' totals, and are not directly comparable. We provide summary results for 2023 and 2024 (see **Table 1**) as well as a summary of the past five years of nest success and colony productivity counts (see **Figure 6**). Finally, modifying our existing methods to follow the Heron Working Group protocol more closely makes our reports more comparable to other reports that use the same protocol.



*Figure 3. A heron chick branching and practicing flapping, 20 June 2024 (Photo: Frank Lin)*

## Results

### Timeline

Last year, the herons were observed to have arrived on 7 February 2023, with nest building and breeding behaviour being observed on 28 March 2023. This year showed a later arrival at the colony, with a volunteer first observing herons at the colony site on 8



March 2024. However, the time between arrival at the colony and onset of nesting behaviour was shorter this year than in 2023. Nesting and breeding behaviour was observed on 15 March 2024, only one week after first observation at the colony (compared to six weeks in 2023). The first recorded observations of eggs at the colony occurred on 28 March 2024. Eggs were observed at the colony as late as 20 June 2024.

“Branching” behaviour was recorded for the first time on 20 June 2024. Branching can be described as when juvenile herons begin moving from their nest to nearby branches by hopping and gliding to strengthen their wings. The first fledges likely began in mid-June 2024 with the first fledge recorded on 20 June 2024. While Pacific GBHE chicks usually fledge approximately 60 days (or 8 – 9 weeks) after hatching (VPB, 2006), some fledglings in this colony have been found to leave later than average, at 10 – 12 weeks of age. Many young herons were observed hunting for fish at Lost Lagoon after fledging (**Figure 4**). Please refer to **Appendix 3** for additional details on nesting behaviour.



*Figure 4. Juvenile heron beside the Stanley Park tennis courts, 20 July 2024 (Photo: Frank Lin)*

## Colony Counts

Provided below is a summary of the observations made by surveyors in the season (**Table 1**). Pre-season nest counts are taken prior to herons arriving at the colony to determine how many pre-existing nests remain at the heronry. Maximum nest numbers are taken from the survey week with the highest numbers of observations for each category. Other definitions pertaining to population and nesting metrics can be found in **Appendix 4**.

*Table 1. A summary table of results from this year's colony monitoring.*

Year	Maximum Observed Nests	Observed Active Nests	Successful Nests	Fledges	Nest success rate	Colony productivity*
2024	90	73	40	68	55%	0.93

Changes in the numbers of nests, adult herons, eggs, and juvenile herons throughout the 2024 breeding season are shown in **Figure 5**. The total number of nests stayed relatively constant throughout the season, with a high of 90 on 15 March 2024 and a low of 83 on 28 March 2024. The number of adults present at the colony peaked at 103 on 28 March 2024 and declined thereafter, reaching zero at the final survey on 18 July 2024. Eggs were first spotted on 28 March 2024 with a peak of 21 visible eggs on 12 April 2024. Note that most eggs at a breeding colony are not visible. Most are covered by the parents incubating, but some may be seen briefly when the parent stands to change position, turn the eggs, or switch places with its mate. The first hatchlings were documented on 24 April 2024, and the number of juveniles peaked at 90 on 20 June 2024.



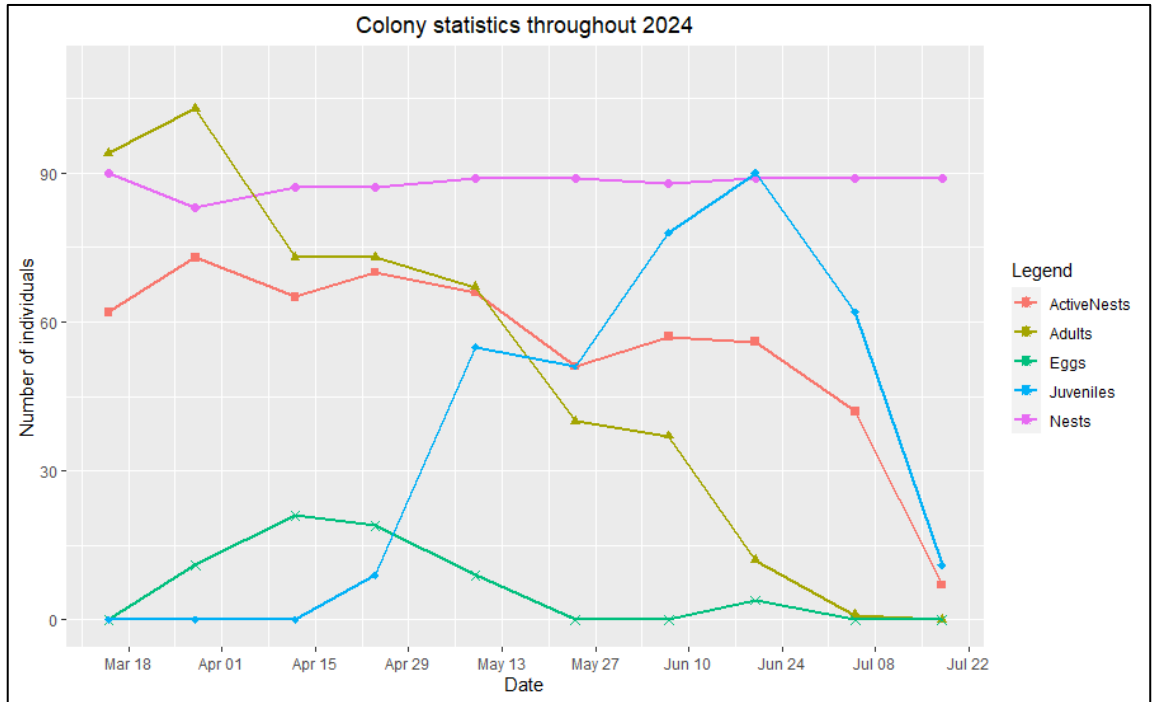


Figure 5. The numbers of active nests, total nests, adult herons, eggs, and juvenile herons observed at the Stanley Park heronry over the 2024 breeding season.

The number of juvenile herons we estimated fledged at the colony in 2024 is 68 herons across 40 successful nests. Of these juveniles, 39 were determined “fledged,” and 29 were determined “likely fledged” according to the decision tree based on recommendations outlined by the Heron Working Group by Vennesland (2006). Forty nests were successful out of 73 active nests, making the nest success (proportion of nesting attempts that resulted in at least one juvenile fledging) 55%. The average number of fledglings per nesting attempt was 0.93, with the average number of fledglings per successful nesting attempt being 1.70. These numbers slightly increased from 2023, with last year having a nest success rate of 53%, 0.79 fledglings per nest, and 1.49 fledglings per successful nest.

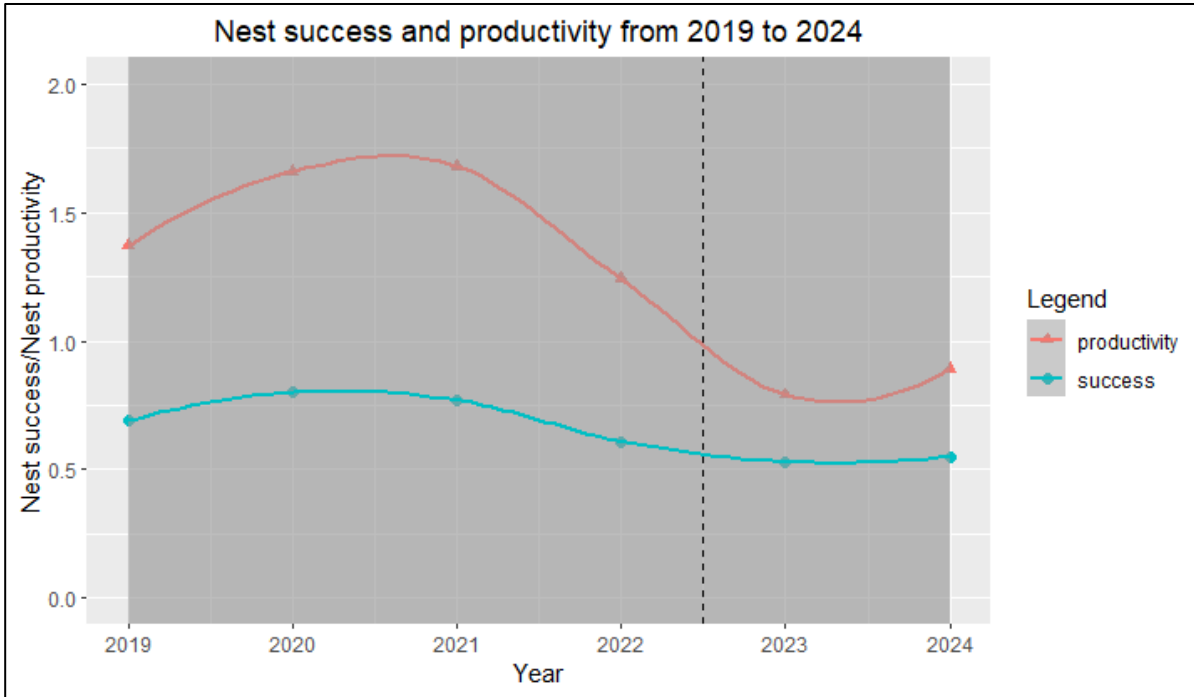


Figure 6. Nest success and colony productivity at the Stanley Park heronry from 2019-2024. Survey methods were updated for 2023; the dashed black line indicates when the change in methods was implemented.

## Analysis

### Trends

In a review of nesting success and productivity, Vennesland & Norman (2006) found that the metrics for our region regarding the *fannini* subspecies of heron ranged from 1.70 – 1.80 fledges per successful nest between 2002 and 2004. As noted by the BC Conservation Data Centre (BCCDC 2022) in their 2022 update on the *fannini* subspecies, population level trends are currently uncertain, though nest productivity may be declining.

The nest productivity for the Stanley Park colony during the 2024 season was 1.70 fledges per successful nest (Table 1). In light of downward trends in nest productivity region wide since 2008 (BCCDC, 2022), it is not unexpected for nest productivity numbers to decline. In 2023, the fledges per successful nest at the Stanley Park heronry were 1.49. The new survey methods employed starting in 2023 suggested that there are fewer herons on site than previously estimated, and the addition of ground surveys may capture more empty nests than the previous methods. Pre-2023 estimates of nest success (the proportion of active nests that successfully fledged one or more young) may

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have been artificially inflated by sampling bias. This may be reflected in the calculated fledges per active nest for 2023 and 2024 being lower than previous years. However, the calculated 1.70 fledges per successful nest for 2024 are at the bottom end of the regional average of 1.70-1.80 (Vennesland & Norman 2006), and show a slight increase from 1.49 fledges per successful nest in 2023. Please refer to **Appendix 4** for an outline of all results from this year's monitoring and details on how they were obtained.

Pacific great blue herons are known for a relatively high level of nest abandonment, as they repurpose old nests as well as construct, deconstruct, and reconstruct nests (Vennesland & Norman, 2006). Our previous methodology was limited in capturing the impacts of this behaviour and identifying trends associated with nest use. During ground surveys in 2024, SPES observed several nests being built that were not subsequently used for breeding. These nests were counted as "active" because nesting behaviour (for example, a male presenting a female with a stick, and her weaving it into the nest) was observed in them. However, in this example the pair was not observed at that nest again. Whether this constitutes a nest failure, abandonment, or something else such as relocation of the pair to another nest is unclear. Being able to capture behaviours like this with ground surveys can lead to a better understanding of nest use. The nest in this example was at the edge of the colony, a low-quality spot. The use of nests at the periphery of the colony is something to consider in future research.

## Environmental Factors

Numerous environmental factors can influence the productivity, nesting success and other key metrics related to the heron colony within Stanley Park. Shifting environmental factors may influence overall colony health; therefore, SPES tracks these qualitative factors to better understand their impacts on the herons throughout the nesting season.

### Raccoon Predator Guards

In 2010, SPES installed bands of metal flashing near the base of the nesting trees to block raccoons (*Procyon lotor*) from climbing up to prey on the heron eggs. The flashing continues to be effective; no raccoon attacks have been reported since the flashing was installed. SPES continues to periodically remove and update flashing where necessary, especially as herons shift to nesting in new trees. In 2024, SPES reattached flashing to Tree E, as the clasps holding it in place had corroded.

## Eagle Predation

Bald eagles prey on herons and are one considerable factor influencing productivity of heron colonies. Both species' ranges overlap in coastal and riparian habitats, and both also overlap in their breeding season timing. The presence of eagles can affect the choice of location for heronries as well as fledgling success due to eagle predation on heron eggs and chicks (BC CDC, 2022). Some emerging research indicates that the recovery of eagle populations may be influencing heron nesting behaviour (Jones et al., 2013).

There were five (5) active eagle nests recorded in 2024, producing three (3) eagle fledglings (SPES, 2024). Volunteers and members of the public reported eagle predation at the colony through the season. SPES observed eagles fly overhead during our surveys on 15 March and 9 May 2024. When the eagles flew overhead, all adult herons were flushed from their nests. This leaves any eggs or small chicks in the nests vulnerable not only to eagles themselves, but to crows (*Corvus brachyrhynchos*) as well.

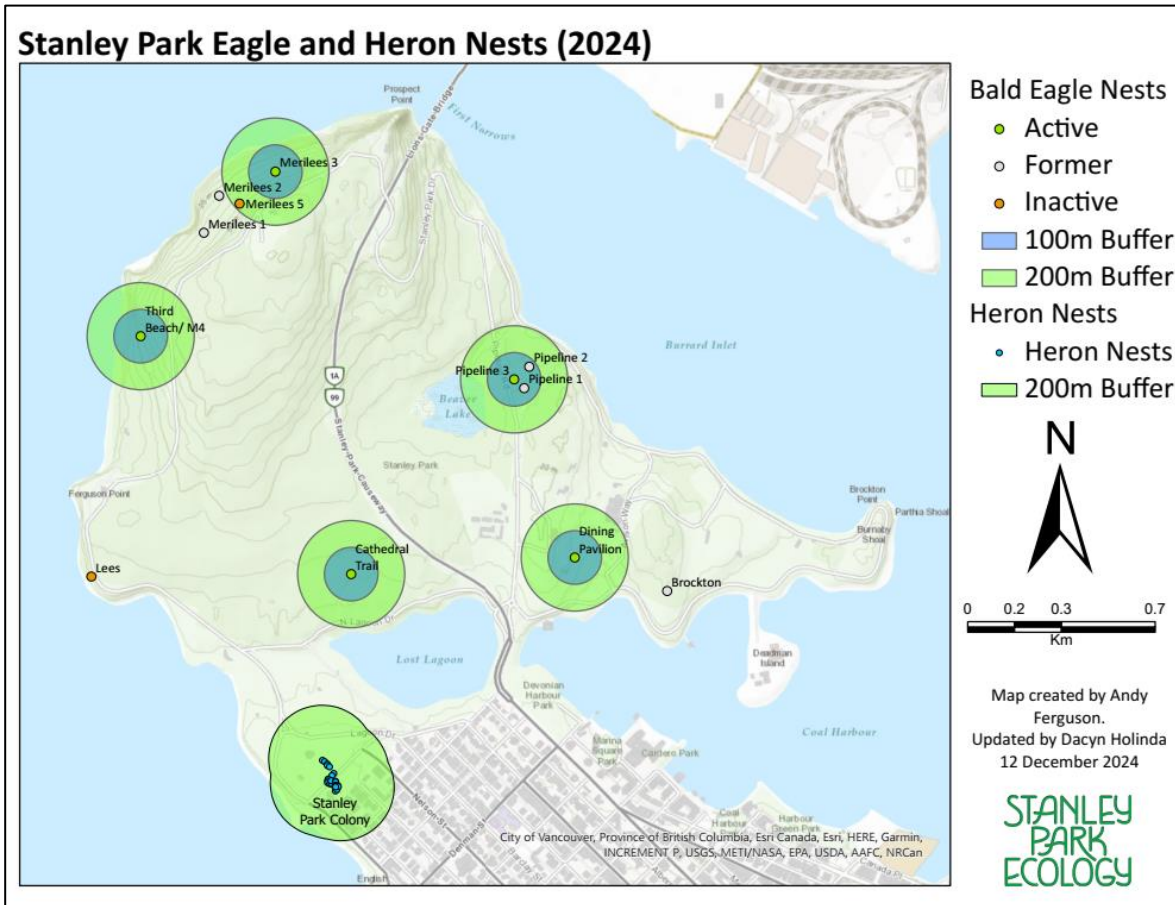


Figure 7. Eagle nest and heronry locations in Stanley Park (2024).



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## Surrounding Areas

This year marked the third Celebration of Light fireworks at English Bay since the two-year closure during the COVID-19 pandemic. The event occurred on 20, 24, and 27 July 2024. SPES proactively monitored the status of the colony to determine if the herons would fledge before the event.

In 2024, SPES survey personnel observed 11 juveniles and zero adult herons at our survey on 18 July 2024, two days before the first night of fireworks. The small number of fledglings remaining was a positive sign that fledging was mostly complete by the time of the Celebration of Light events, meaning that disruptive noise impacts to the colony were likely minimal. During that final survey, the juveniles that remained in the colony were known to be at least 10 weeks of age, meaning they were old enough to fledge and would be considered fledged had they been gone from the nest. Concern of disruptive impacts to these juveniles was minimal given their age and the absence of adults from the colony, suggesting their parents had already left them to find food on their own. SPES concluded that the impact of the Celebration of Light 2024 on the colony was likely negligible.

## Discussion

### Eagle Presence

‘Predator protection’ is a phenomenon observed in nature where a prey species will choose to live near their own predator when that predator is a territorial animal that will defend its territory from other predators (Jones et al., 2013). This phenomenon has been observed in several species, including various birds. Jones et al., (2013) also examined the relationship between eagle populations and heron colonies in the Fraser Delta to understand if the rapid recovery of eagle populations affected heron reproduction and colony dynamics. They found evidence that many of the largest and most successful colonies in the region were not only within 200 meters of a territorial eagle nest, but that some herons had shifted their nests to be within range of an already present eagle nest. The researchers hypothesized that herons in the Fraser Delta may be adapting to higher numbers of eagles for a survival benefit. Their data supported this hypothesis, as while resident eagles did prey on herons and heron chicks, overall colony productivity was higher when colonies were within 200 m of an eagle nest.

This potential trend in heron nesting strategies in response to eagle resurgence in the Pacific Northwest is notable in the context of Stanley Park. While none of the Bald Eagle

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nests currently surveyed by SPES are within 200 m of the Stanley Park heronry (see **Figure 7**), SPES has observed eagle flyovers and direct predation at the heron colony. The interaction between herons and eagles is a potential subject to monitor in future years to gain a better understanding of how the Stanley Park heron colony may be adapting to eagle presence.

## Public Outreach

The Vancouver Park Board (VPB, 2006) identified public education and interpretive programming as an integral component of the heronry's conservation management. SPES, in coordination with the VPB, has worked to bolster public outreach in relation to the heron colony, raising awareness of this important species, while highlighting key educational aspects around colony management.

The [Vancouver Park Board Heron Cam](#) was active 24/7 from March until late August, when nests visible to the camera no longer had any herons. This interactive web tool allows viewers to control the camera for short periods by scrolling through different pre-defined views and directs them to SPES' email service for questions about the herons.

SPES also continued with its successful 'The Herons Are Here' education series. This series consisted of two in-person tours of the rookery on 11 May and 15 June 2024, called 'The Herons are Here: Colony Tour'. One (1) online webinar for the public called 'The Herons are Here: Heron Highlights 2024' was completed on 17 October 2024. The webinar discussed the results of this year's breeding season and included stunning photos taken throughout the season by SPES Nature House Educator Frank Lin. This educational series was offered free of charge to Adopt a Heron Nest donors.

## Acknowledgements

We would like to thank our volunteers for their efforts in counting Pacific Great Blue Herons through the year—in all kinds of weather and varying conditions. Without their help, our continued heron conservation work would not be possible. SPES would also like to acknowledge the continued efforts of Frank Lin, who contributed various observations of fascinating heron behaviour as well as numerous high-quality photos throughout the breeding season. We also thank Bruce Mohun for providing regular observations and updates and attending the heron surveys.

SPES also wishes to thank the Vancouver Park Board for their support of the colony through the [online Heron Cam](#) and the promotional efforts of their Communications team. Their efforts have allowed thousands of people from all over the world to connect with nature and view these magnificent birds.

We are deeply grateful to the **147 Adopt a Heron Nest donors** this 2024 season. These contributions go directly towards monitoring the herons and raising awareness of this blue-listed species. We welcome new adopters throughout the year and invite you to [visit our website](#) to learn more!

Lastly, we thank everyone who comes out to the colony to enjoy and learn about these birds. We wish the fledglings well this winter and await the colony's return in 2025, which will mark the 25<sup>th</sup> year of the colony nesting at this site!

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## Appendices

### Appendix 1. Area Map and Nesting Trees

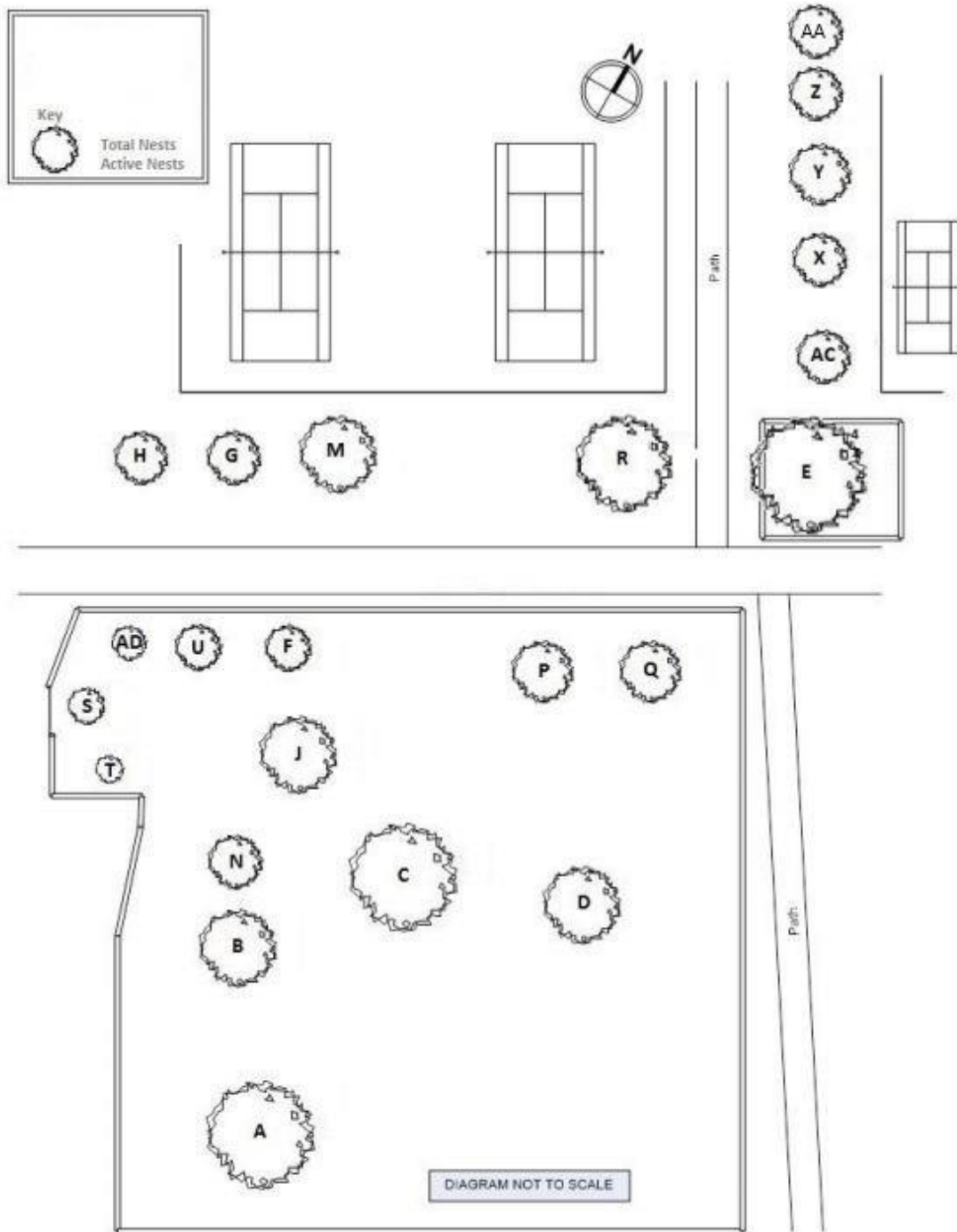


Figure 1. Map of the Stanley Park heron colony layout with nesting trees labelled.

## Appendix 2. Survey Methods and Limitations

Please visit our [website](#) to learn more about our survey methods and limitations.

## Appendix 3. Notable Trees

### Tree AA

Tree AA is a small tree north of Tree Z. Herons first built nests in Tree AA in 2023, but did not appear to use them that season. In 2024, herons again built nests in Tree AA but we did not detect any breeding in those nests this season either. Herons building nests in Tree AA is consistent with the trend of the colony expanding into the London Plane trees between the tennis courts. It is possible that the herons that built the nests in Tree AA were inexperienced breeders, just learning how to build.

## Appendix 4. Data Tables

Table 1. Survey counts for total nests, active nests, successful nests, and fledges at the Stanley Park heron colony in 2024. Each measure, associated definitions, and survey sources provided.

Measure	Definition	Result
Total nests	A total count of all nest structures in the trees, both active and inactive. We used the number recorded on the pre-season ground survey. (Source: Ground survey)	90
Observed Nests	Maximum number of nests observed during a single survey during the season. (Source: Rooftop and ground surveys conducted 31 May 2023)	90
Maximum Active nests	Maximum number of nests within the colony occupied by a mating pair during a single survey. Not all active nests successfully produced young. (Source: Rooftop and ground surveys conducted 20 April 2023)	73
Successful nests	Number of sample nests that successfully reared young to the fledging stage. (Source: Survey final analysis)	40
Total Fledges	Number of fledglings assumed to have survived the nesting season and flown their nests. (Source: Survey final analysis)	68

*Table 2. Colony success rate and nest productivity at the Stanley Park heron colony in 2024. Each measure, associated definitions, and calculations shown below.*

<b>Measure</b>	<b>Definition</b>	<b>Result</b>
Nest Success	Percentage of nests in sample that successfully produced young. <i>(Successful nests / Total nests)</i>	55%
Nest Productivity/Colony Productivity	Measure of fledges compared to number of nests with observed breeding activity. <i>(Fledges observed / Maximum active nests)</i>	0.93