

Stanley Park Heronry Annual Report

2021 Season

Overview

Another Stanley Park heron nesting season has concluded with positive observations from this year's monitoring efforts. This is the 21st consecutive year the Great Blue Herons (GBHE) have returned to this location since 2001.

During this year, when human activity and visitation in Stanley Park began to increase after being reduced due to Covid-19, it was important to conduct the surveys consistently to aid in understanding the potential effects of human traffic on the heron colony. Results that can be linked to these unique conditions can inform future management decisions for the conservation of this species.

2021's monitoring results (Table 1) are consistent with historical data and suggest that this location continues to provide viable nesting habitat.



Figure 1. Caught in the act! A mating pair of herons in Tree Q in March 2021.

(Photo: Frank Lin)

Table 1. A summary table of results from this year's colony monitoring (details on page 3).

# Total nests	90	Colony productivity (fledglings/nest)	2.18
# Active nests	69	Estimated total fledglings	116
Nest success rate	77%		

Background

We present a report on the heron colony (or “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) and of special concern (COSEWIC). With nearly 80% of BC’s Pacific GBHE found in and around the Fraser River Delta (COSEWIC, 2008), the productivity of this heronry has implications for the viability of the whole subspecies.

SPES has been actively involved in their monitoring and conservation since 2002, and our findings contribute to the regional efforts of many groups that study their local populations and are crucial to these birds’ conservation. Nest productivity and nest success are key measures of the suitability of the Stanley Park colony’s current location, for this year and years to come. 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. 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

Methodology

Our methodology design was informed by GBHE survey protocols written for the Heron Working Group and similar organisations that research these herons (Vennesland, 2006).

From February to July, data was collected during 11 rooftop surveys, 6 ground surveys, and weekly monitoring of the Stanley Park Heron Cam. The Heron Cam was launched by the Vancouver Park Board (VPB) in 2015 and is used to supplement our observations from the rooftop and group surveys.

Until April, we obtained the total nest count from ground surveys. After that, ground survey observations became limited due to growing tree foliage. Therefore, for the rest of the season, only a number of nests were visible from the rooftop; these visible nests are the “sample nests”. Measures taken from the sample nests were used to infer results for the whole colony. For more details on our survey techniques, limitations, and results from the sample nests, please refer to [our website](#).

Results

Timeline

The first heron sighting in the trees was on February 17th, 2021 in nest B2 with the official return of the herons occurring the next day on February 18th, 2021. A volunteer noted that herons were partaking in a mass migration towards the nests. Similar to last year, the herons did not congregate on nearby rooftops to assess the area as is typical heron behaviour, but alighted in the trees immediately.



Figure 1. A male heron presenting a female heron with a stick that she will inspect before weaving into the nest in April 2021

(Photo: Frank Lin)

The first eggs were laid on March 26th, 2021, and the first hatchlings were recorded on April 23rd, 2021. Juveniles first started their “flight test” exercises on June 22nd, 2021, strengthening their wings for fledging, and the first fledges happened at the end of June with the first fledge recorded on June 22nd, 2021. While Pacific GBHE chicks usually fledge after 60 days (or 8-9 weeks) from hatching (VPB, 2006), the fledglings in this colony have been found to leave later than average, at 10-12 weeks after hatching.

The nest with the longest standing remaining chicks (15 weeks) was EM4, which may have double-clutched after its first clutch failed. These chicks fledged by June 29th, 2021. We detail this nest’s timeline in [Appendix 3](#), along with interesting observations around other notable nests. The first recorded fledge of the season occurred on June 22nd, 2021.

Colony Counts

We counted a **total number of 90 nests** in 2021. In comparison, 104 were counted last year and 113 in average over the last 20 years.

We found that **30 out of 39 sample nests were active** (36/40 nests last year, average of 25/36 nests in the last 10 years). At the end of the season, we counted **66 fledglings in the sample**, the same as last year's 66 fledglings and higher than the 10-year average of 54 fledglings.

Please refer to Table 2 in [Appendix 4](#) for an outline of all results from this year's monitoring and details on how they were obtained.

Analysis

This year's **sample nest success decreased to 77%** from last year's 80%. A nest is considered successful when it fledges one or more chicks, as opposed to failed nests that were occupied at one point but did not fledge any chicks. Nest success has been steadily increasing since a low point of 52% in 2017. The average productivity (number of fledged chicks per successful nest) in the sample increased this year at **2.18 fledglings/nest** compared to last year's 2.07 fledglings.

Active nests refer to all nests that are occupied at some point in the season, whether successful or failed. We estimate **69 active nests in the whole colony**, applying the sample nests' active rate to the total nest count taken from ground surveys. The 10-year average is 92 nests. Based on the count of fledglings and active nests in the sample, **we estimated 116 fledglings for the whole colony**. This estimate is a decrease from the previous year (155 fledglings) and is lower than the 10-year average estimate of 137 fledglings.

We note the limitations and assumptions from this study in [Appendix 2](#), which gives necessary context when interpreting the results reported above. These results remain a valuable reference for the condition and long-term trends of the colony and the health of the local GBHE population.

Trends

This year's results add to a consistent trend of colony success over the past 20 years. Figure 2 presents the results since 2007, when SPES began doing rooftop surveys with our current methodology.

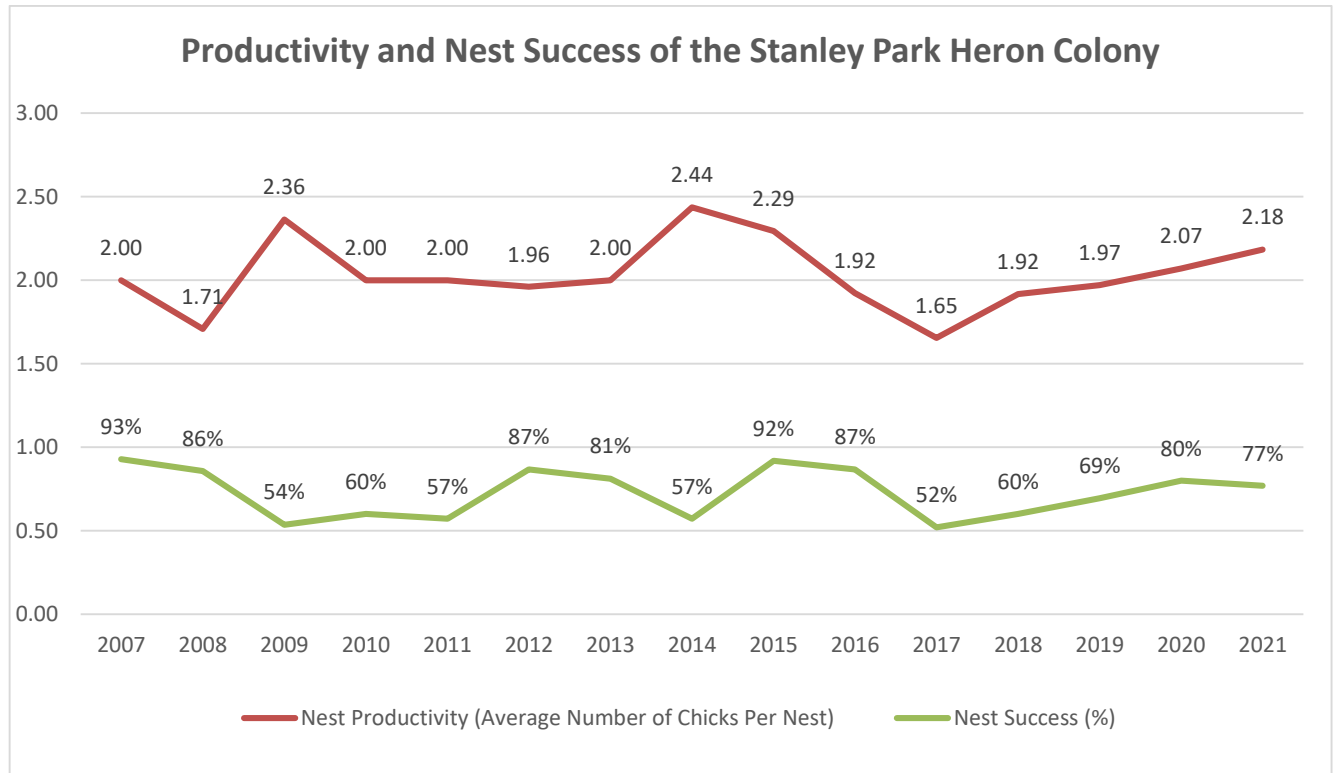


Figure 2. Productivity and nest success of the Stanley Park Great Blue Heron Colony (2007-2021).

There has been no significant change to nest productivity since 2007. **This year's outcome (average of 2.18 fledglings per nest) was higher than the historical average of 2.02 nestlings per nest.** There is also no significant change to nest success, despite **this year's outcome (77% of the total nests were successful) also being higher than the historical average of 72%.** Results for nest success have fluctuated between 54% and 93% over the years. Change in predation rates from Bald Eagles may play a role in this. We note that most years with low nest success such as 2009, 2011, and 2014 have yielded high productivities (2.36, 2.00, and 2.44 respectively). This may suggest that heron families that successfully reared chicks when other families failed were able to sustain more chicks, possibly due to lower competition. This may be a natural result of finite resources in the colony's proximate feeding habitat, though measures for habitat quality are beyond the scope of this study. However, 2017 did not follow this pattern, when both nest productivity and success were low, on a year of particularly high eagle predation through the season.

Figure 3 plots the estimates of active nests, total nests, and fledgling counts from 2007 to 2021.

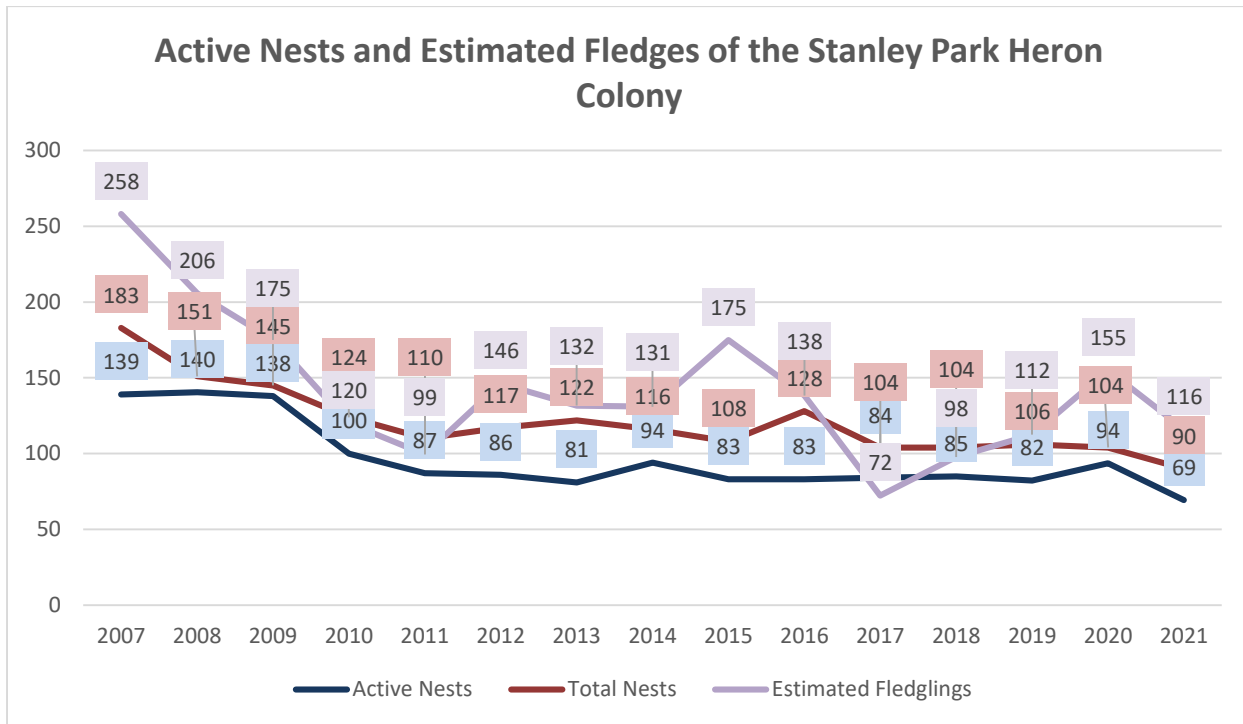


Figure 3. Active nests and estimated fledglings for the Stanley Park Great Blue Heron colony (2007-2021).

Active nest counts were at record highs between 2007 and 2009, which then stabilized to an average of 86 nests for the last 10 years. **This year's estimate of 69 is lower than the 10-year average.**

This year's estimate of 116 fledglings is lower than the 10-year average of 125, compared to last year's 155.

Environmental Factors

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 installation.

Eagle Predation

Bald Eagles (*Haliaeetus leucocephalus*) 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 (COSEWIC, 2008).

While **two (2) eagle mating pairs** successfully raised a total of **three (3) nestlings** in Stanley Park this year (SPES, 2021), eagle attacks occurred consistently. Late heron fledglings may have come from parents that double-clutched, possibly from eagle predation on their first clutch. Multiple eagle raids were first reported from May 11th, 2021 and May 12th, 2021 with 4 eagle raids spotted in the same day approximately a week later on May 19th, 2021. On June 7th, 2021 a local resident reported multiple eagle visits to the nests daily in previous weeks.

Surrounding Areas

We observed no incidents of commercial nor recreational operations proximate to the colony causing disturbance to the herons. On July 29th, 2021 a tree branch fell belonging to Tree G that housed two nests, thought to be G1 and G6, due to the drought conditions of the summer. The tree branch was large and blocked traffic on Park Lane. Before removal of the branch, SPES was on site to ensure that no herons remained in the neighbouring trees and that there were no fatalities caused by the falling branch. A ground and rooftop survey conducted on July 29th, 2021 confirmed that no herons remained in the nests and that the fallen nests were empty. A local resident reported not hearing any additional activity from the herons from July 25th, 2021 and all herons were assumed to be fledged from that date and the breeding season over for the year.



Figure 4. Image of fallen tree branch from Tree G on Park Lane on July 29th, 2021.

(Photo: Nadia Xenakis)

With this year's monitoring results falling within range of those of previous years, this suggests breeding success is not strongly affected by human activity around the Stanley Park colony despite being located in a high-traffic area. This colony appears to be very habituated to urban activity.

Public Outreach

Public education and interpretative programming were identified as an integral component of the heronry's conservation management (VPB, 2006).

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

SPES EcoRangers —with support from the Park Board— continued to offer **live, in-person, weekly interpretation at the colony**. EcoRangers directly engaged with over 828 people (our largest count yet) in over 26 tabling sessions in July and August.

Visitors enjoyed the education service and the chance to see the herons, interacting with physical distancing measures in place.

SPES also led **one online webinar for the public** on the heron colony in July 2021.

Acknowledgements

We would like to thank our **volunteers** for their efforts in counting Great Blue Herons through the year—in all kinds of weather and through a world-changing pandemic. Without their help, the data for this report (and our continued heron conservation work) would not exist. Frank Lin continued to contribute observations of fascinating heron behaviour and several high-quality images through the season. We also thank Bruce Mohun for providing regular observations and updates and attending the heron surveys.

Thank you to 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 **48 Adopt a Heron Nest donors** of the 2021 season. These contributions go directly towards monitoring the herons and raising awareness about this species at risk. We welcome new adopters through 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 2022!

Written by: Nadia Xenakis, SPES Urban Wildlife Programs Coordinator

More information: <http://stanleyparkecology.ca/herons/>

Contact: nests@stanleyparkecology.ca or (604) 689-2473

References

[COSEWIC] Committee on the Status of Endangered Wildlife in Canada. 2008. COSEWIC assessment and update status report on the Great Blue Heron *fannini* subspecies *Ardea herodias fannini* in Canada. Ottawa. vii + 39 pp.
(www.sararegistry.gc.ca/status/status_e.cfm)

[SPES] Stanley Park Ecology Society. 2020. Stanley Park Bald Eagle nest update 2020. Internal Document.

Vennesland, R. and D.M. Norman. 2006. Survey protocol for measurement of nesting productivity at Pacific Great Blue Heron nesting colonies. Internal Document.

[VPB] Vancouver Park Board. 2006. Stanley Park heronry management plan. Internal Document.

Appendices

Appendix 1: Area map and nesting trees

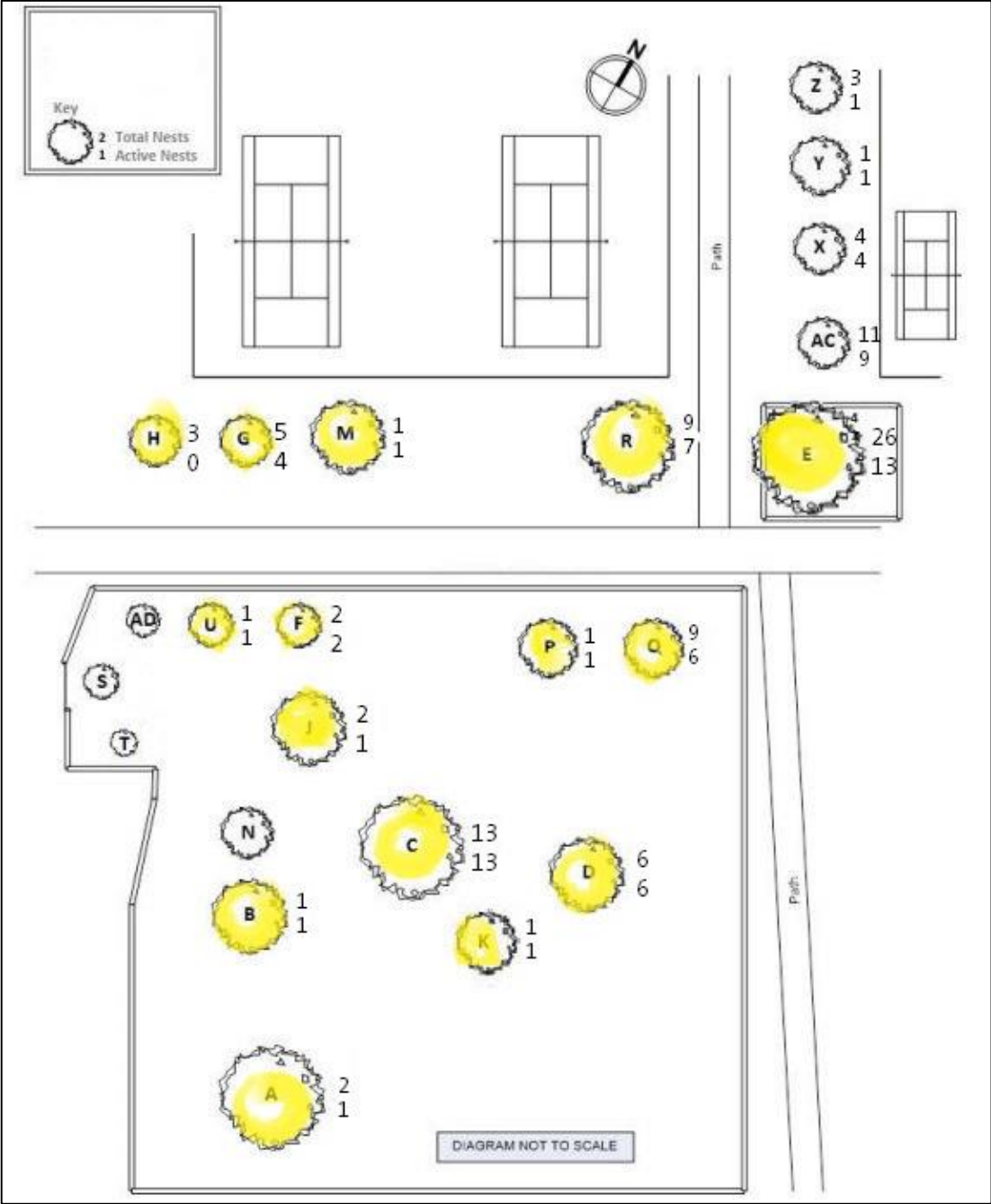


Figure 5. Map of the Stanley Park heron colony layout with nesting trees labelled. Trees with sample nests are highlighted yellow. Number of active and total nests in this figure were

recorded at the last ground count (April 23, 2021) and do not include all results from rooftop surveys; they should be considered the minimum confirmed nest counts.

Appendix 2: Survey methods and limitations

Please visit our website to learn more about our survey methods and limitations.

Appendix 3: Nests of note

Tree K, Nest 1

- This is the only nest in the colony built in a coniferous tree. It is fairly easy to follow the success of this family due to the nest's season-long visibility from both the rooftop and Heron Cam.
- Although this nest had great success the previous year it was likely raided by eagles in May 2020 and was not an active nest this year in 2021.



Figure 13. Nest K1, with one parent and three huddled little hatchlings at five weeks old. Photographed on May 25th, 2020. (Photo: Heron Cam/Vancouver Park Board)

Tree E, Nest M4

- Adults were quick to enter this nest as the first sighting of two adults occurred on March 12th, 2021 on the second survey.
- Two eggs and 1 young chick were observed in this nest on April 23rd, 2021 proving to be a prolific nesting site
- Three chicks were observed in the nest on May 7th, 2021, however, by the next survey only one chick remained. The others may have fallen victim to an eagle raid.
- At 15 weeks this nest still had one fledgling in the nest, it is unclear if this fledgling was a result of an additional egg being laid after the eagle raids. If not, this is an extraordinarily long time for a fledgling to stay in the nest.



Figure 14. Fledgling seen at 15 weeks since the breeding season started

(Photo: Frank Lin)

Appendix 4: Data tables

Table 2. Number of nests and fledglings at the Stanley Park heron colony in 2021. We indicate the measures' definitions and surveys they are sourced from.

Measure	Definition	Result
Total nests	A total count of all nest structures in the trees, both active and inactive. We used the highest number of the season recorded on April 16, before tree foliage started to obstruct visibility. (Source: Ground survey)	90
Sample total nests	Total number of nests surveyed from the rooftop, both active and inactive, that remained observable through the whole season. (Source: Rooftop survey)	39
Sample active nests	Number of nests within the sample total that were occupied by a mating pair. Not all active nests successfully produced young. (Source: Rooftop survey)	30
Sample successful nests	Number of sample nests that successfully reared young to the fledging stage. (Source: Rooftop survey)	30
Sample fledgling count	Number of fledglings assumed to have survived the nesting season and flown their nests. (Source: Rooftop survey)	66

Table 3. Sample success rate, sample productivity, number of active nests, and estimated total fledglings at the Stanley Park heron colony in 2021. We indicate the measures' definitions and how they were calculated.

Measure	Definition	Result
Sample nest success rate	Percentage of nests in sample that successfully produced young. $(\text{Sample successful nests} / \text{Sample total nests})$	77%
Sample nest productivity	The average number of fledglings produced per successful nest. $(\text{Sample fledgling count} / \text{Sample successful nests})$	2.18
Active nests	The number of nests in the whole colony that were assumed as occupied by a mating pair (whether successful or not). $[(\text{Sample active nests} * \text{Total nests}) / \text{Sample total nests}]$	69
Estimated fledglings	The estimated number of fledglings from the whole colony which now contribute to the regional population of GBHE. $[(\text{Sample fledgling count} / \text{Sample total nests}) * \text{Active nests}]$	116