Post Point Heron Colony

2023 Monitoring – Annual Report

prepared for:

The City of Bellingham Department of Public Works
2221 Pacific Street
Bellingham, WA 98229

prepared by:

Matt Reed and Case Wyatt
Hamer Environmental
1023 S. 3rd Street
Mount Vernon, WA, 98273

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Executive Summary

First documented in 2000, the Post Point Heron Colony is the City of Bellingham's only known great blue heron nesting site. The colony is located in a city-owned forest patch in Bellingham's Fairhaven and Edgemoor Neighborhoods between the Post Point Resource Recovery Plant (PPRRP) and Shorewood Drive. In the fall of 2021 and spring of 2022, the city approved purchase of undeveloped parcels along Shorewood Drive considered critical buffer for the protection of the colony.

Due to the colony's location and sensitivity of heron colonies to human disturbances, in 2003 the City of Bellingham commissioned a management plan. A scientific baseline study of the colony followed in 2005 to analyze reproductive success, nesting tendencies, nearby habitat use and the status of the colony. Annual monitoring of the colony has been conducted every year since 2005 to further document colony productivity and success. The 2003 management plan was updated in 2019 and both documents along with all the annual reports are available online at Post Point Heron Colony Resources.

Results from the 2023 Post Point Heron Colony Annual Monitoring are provided in this annual report. Monitoring began on February 8th and ended on September 19th when it was determined that all the young had left the colony. A total of 32 site visits were needed for the 2023 nesting season, including a site visit during the Ski to Sea Race event at Marine Park.

In 2023, 44 nests were counted in 30 nest trees. A total of 88 young were observed throughout the season with an estimated 85 young surviving to fledging age. Bald eagles were observed flying over and perching in the colony, but no predation events were documented in 2023 or reported by the public to monitors.

Introduction

The Great Blue Heron (*Ardea herodia*) is a widely dispersed species that can be found throughout North America and is a year-round resident of western Washington. Washington Department of Fish and Wildlife (WDFW) categorizes herons as a Priority Species and their colony sites as Priority Areas. A heron colony is considered a Priority Area by WDFW due to heronries being vulnerable to human disturbance. Due to the Priority Species status of the heron colony, the City has protected it under the Critical Areas Ordinance as a Fish and Wildlife Habitat Conservation Area. The 2012 WDFW Management Recommendations for Great Blue Heron provides management guidelines and life history information pertaining to potential projects and activities near colonies.

The City of Bellingham has been proactive in supporting, researching, and monitoring the colony since it was first observed in 2000. The City funded the management plan of 2003, the scientific baseline study in 2005, the update to the management plan in 2019, and annual monitoring of colony since 2005.

The City of Bellingham also purchased the adjacent 1.72 acres along Shorewood Drive in 2022 to provide a buffer to the colony from residential development. The City has placed educational signs near the colony and at Marine Park informing the public about herons, the nesting colony and how to avoid disturbing them. In the fall of 2022, the temporary restoration protection fence installed next to the colony was removed. This fence was an effective means of deterring deer browsing vulnerable plants at the Post Point mitigation site. Once the plant establishment period ended, the fence was removed due to it being a risk to young herons that end up on the ground during their pre-fledging exploration flights around the colony. Between the end of the 2022 nesting season and the beginning of the 2023 nesting season, the City of Bellingham installed cottonwood trees to assist with forest regeneration; the success of those trees will be continuously monitored with any mortality replaced.

Priorities for the 2023 Post Point Heron Colony monitoring included:

- General monitoring that focused on behavior, in-colony activities, and nesting chronology.
- Disturbance monitoring for recording disturbances to the herons in or near the colony.
- Productivity monitoring documenting nesting and fledging success of young.
- Nest and nest tree survey for updating and mapping the colony for 2023.
- Foraging observations documenting the use of nearby foraging habitats and disturbances to herons while feeding.

Monitoring for 2023 was carried out by Matt Reed, Meg Harrison, Case Wyatt, and Jordan Riggins of Hamer Environmental over the course of 7 months beginning in February and ending in September. Hamer provides environmental consulting services to government, private industry, tribal corporations, and non-profits throughout the Pacific Northwest and Pacific Islands. Hamer has offices in Portland, Oregon, Mount Vernon, Bellingham and Seattle, Washington, and in the Pacific islands.

Matt, Meg, Case and Jordan were involved in the collection of data and observing the colony during the 2023 nesting season. Meg was primarily responsible for conducting field visits to the colony and collecting nesting data. Jordan assisted with colony visits to determine if the herons were staging in February. Case conducted some colony observation visits and provided data

compilation, organization and analysis, and report preparation. Matt was the lead biologist primarily providing project management expertise, some colony observation, assistance, and oversight in report preparation.

Adult heron foraging in Post Point Lagoon

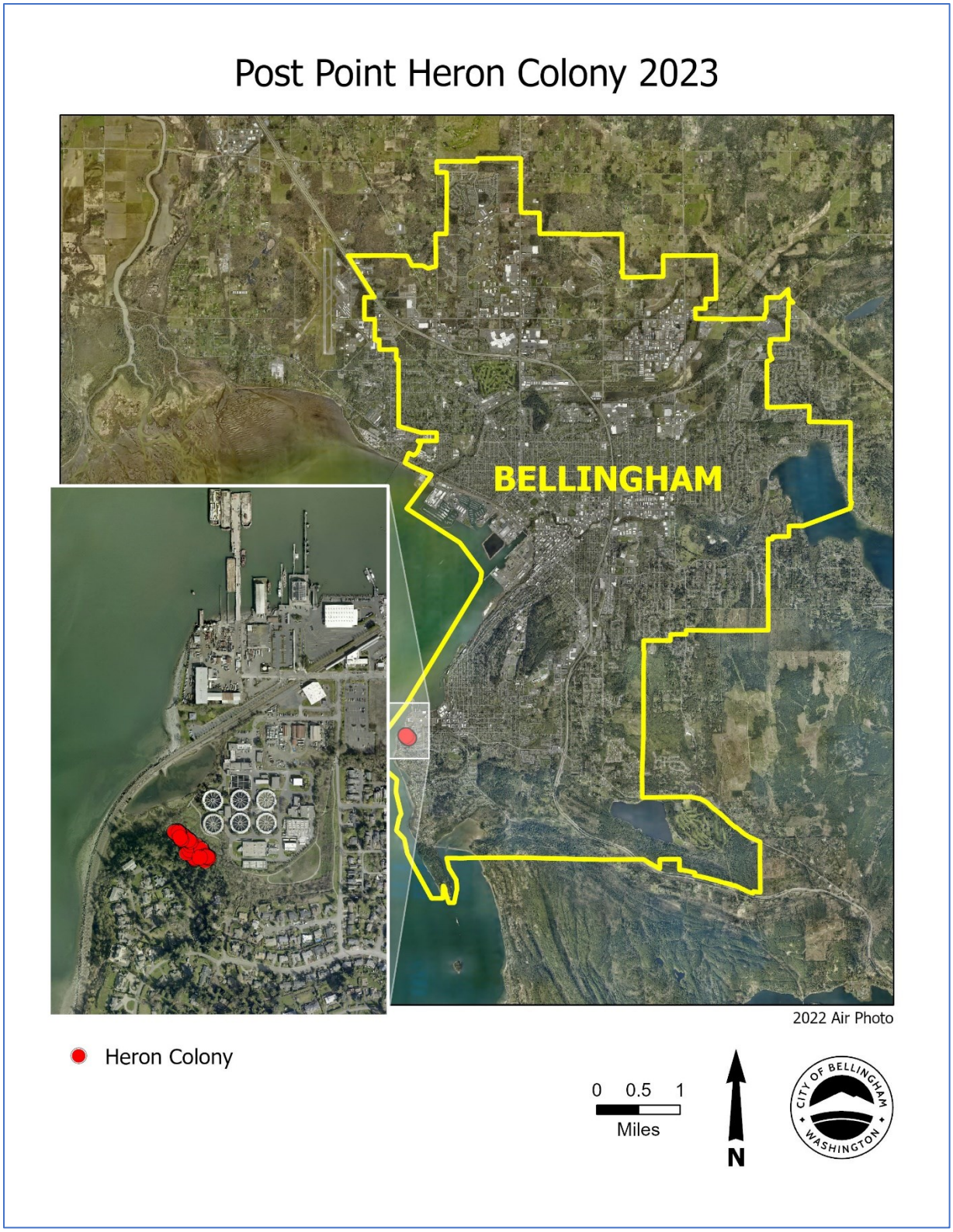

Figure 1: Post Point Heron Colony

Site Description

The Post Point Heron Colony is located near Post Point spanning the boundaries of Bellingham's Fairhaven and Edgemoor Neighborhoods (Figure 1). A forested slope extending to the south and west of the colony provides protection from prevailing winds and weather. The native mixed forest along the bluff has provided a buffer to the colony from residential and urban development. The proximity of the colony to Bellingham Bay provides direct access to foraging areas during the nesting season.

In 2022, the Bellingham City Council authorized the purchase of 1.72-acres in the Edgemoor Neighborhood adjacent to the property the colony is located on increasing the city-owned site to almost 32 acres. The forested area the colony is situated in is approximately 9 acres, the grassy and shrubby margins between the slope and the Post Point Resource Recovery Plant (PPRRP)is approximately 1.6 acres, and the Post Point Lagoon to the northwest is 3 acres. The BNSF railroad causeway west of the lagoon separates it from Bellingham Bay. The colony is situated between the residential neighborhood on Shorewood Drive to the southwest and the PPRRP to the northeast (Figure 2). The Lower Padden Park Trail borders the colony between it and the PPRRP.

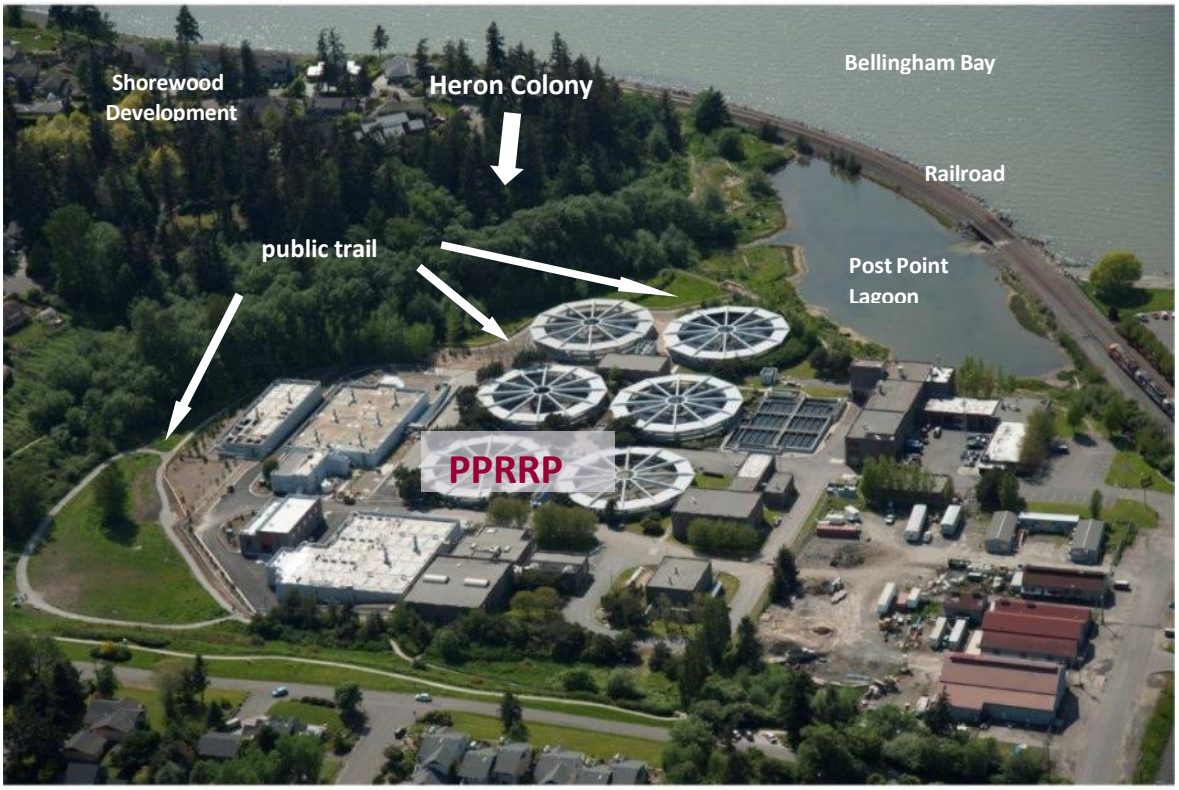

Figure 2: Post Point Resource Recovery Plant (PPRRP). (City of Bellingham Photo, 2014)

Heron Habitats

The area surrounding the colony provides a mix of habitat accessible to herons from mixed forest, wetland meadow, estuary, and marine shoreline. The buildings and clarifiers on the PPRRP grounds are occasionally used by the herons prior to nesting for staging. These habitats provide various benefits and uses for the heron colony throughout their nesting cycle.

The nest stand itself and the surrounding forest is a mixed age forest that provides the structure and material for the nests, the screening from wind, weather, and human activity. Red alder (*Alnus rubra*) and big-leaf maple (*Acer macrophyllum*) provide suitable support and material for large nests. Douglas fir (*Pseudotsuga menziesii*) provide screening and protection to the colony. Outside the nucleus of the colony, the forest provides cover for herons to loaf, roost, preen, stage, and collect nest materials.

Wetland meadow habitat found adjacent to the nest stand is the grassy margins near the lagoon that provide valuable foraging habitat for upland prey species, specifically meadow voles (*Microtus townsendii*). Herons are sometimes observed using this area throughout the nesting season.

Post Point Lagoon is a pocket estuary fed by surface water runoff and an unnamed seasonal stream that drains into Bellingham Bay under a BNSF railroad causeway bridge. The shoreline and salt marshes along the edges of the estuary are used for loafing and foraging. Eelgrass (*Zostera marina*) growing in the lagoon improves foraging opportunities for herons. The estuary also serves as a fledging spot as young herons start exploring outside the colony.

Bellingham Bay provides nearby marine shoreline habitat of eelgrass meadows and open intertidal areas suitable for heron feeding year-round. At low tide, the shoreline area at Marine Park provides access to a wide margin of suitable foraging habitat. While herons use other areas for foraging, this is the nearest marine foraging area to the heronry.

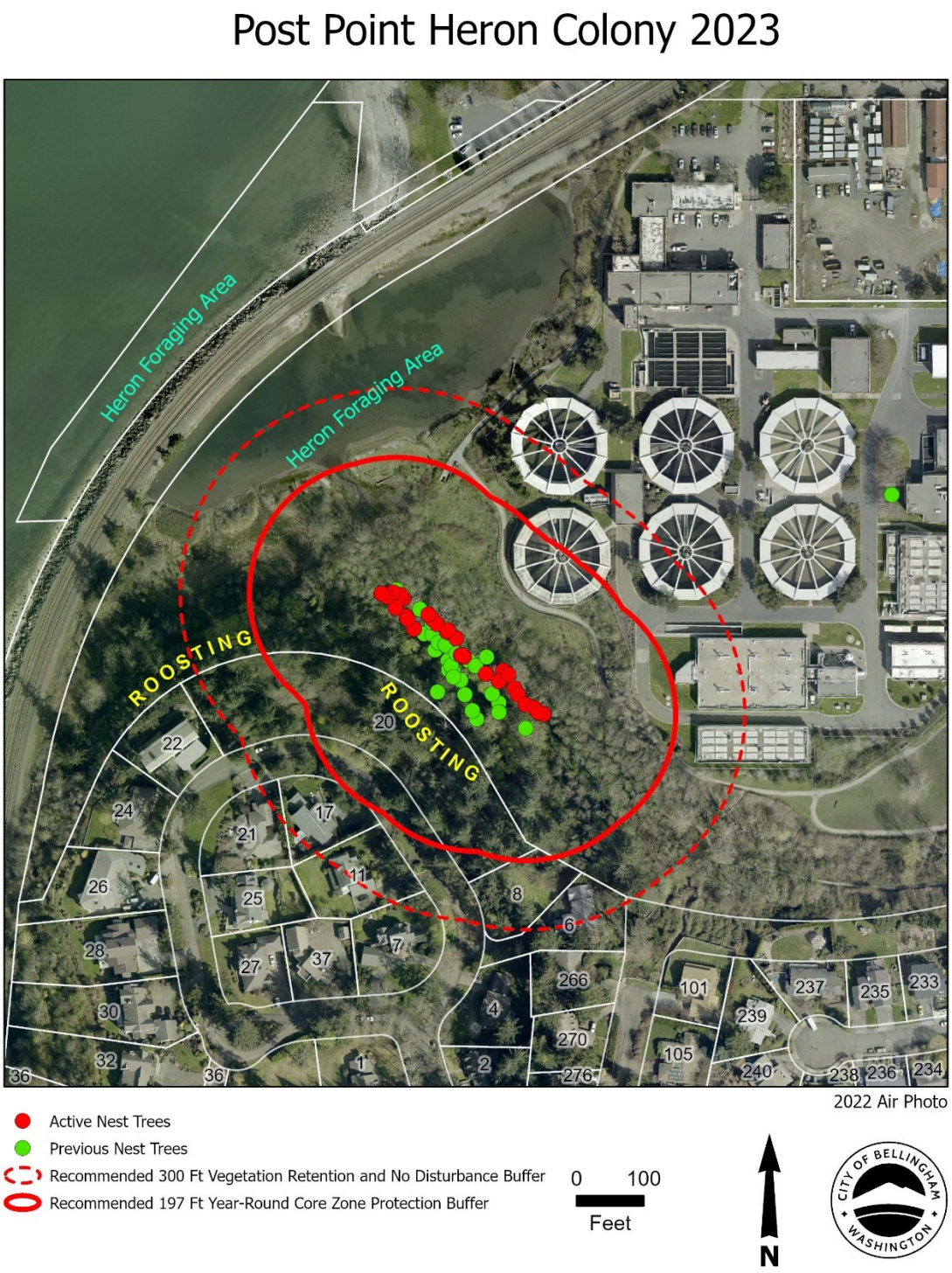

Figure 3: Overview of the Post Point Heron Colony and the Post Point Resource Recovery Plant

Monitoring Methods

Continuous monitoring of the colony since 2005 has provided an ongoing record of the colony's status, productivity, and health. The 2023 monitoring methods for the Post Point Heron Colony were a continuation of the 2022 monitoring methods that were developed based on Ann Eissinger's long-time monitoring of the colony and in part based on the Heron Working Group - Survey Protocol (Vennesland/Norman 2006).

Weekly on-site visits to the colony from February to August involve collecting data based on visual and audible observations of heron behavior, nests and nest trees, and potential disturbances or predations in the colony. Binoculars are the primary visual tool for observing herons perched in or near nests. Data is collected on standardized field forms and each visit compiled into a colony tracking spreadsheet. All visible nests are tracked throughout the nesting season and new nests are recorded as they are constructed. Any incidents or reports of disturbances were noted during weekly visits.

The timing of the visits throughout the monitoring season encapsulates the 6 stages of the nesting season.

- **Staging** near the colony in February as the herons prepare for reoccupation.
- **Colony reoccupation** in March as large concentrations of herons were active in the colony.
- **Courtship, mate selection** and **nest construction** coincided with colony reoccupation in March and remained active into May.
- **Egg laying** which takes each heron approximately 7 days and **Incubation** of the eggs that takes 28 days.
- **Hatching** of the nests and **Brooding/Rearing** of the young.
- **Fledging** is when young leave the nest typically around 8 weeks old.

2023 Monitoring Results

Monitoring for the 2023 Post Point Heron Colony nesting season began on February 8th and ended September 19th. Monitoring occurred on a weekly basis.

Staging and Colony Reoccupation

Three visits to the colony were conducted throughout February to determine if staging was occurring. There was not a clear delineation between herons staging and colony reoccupation in 2023 with only two herons observed by monitors in the colony prior to reoccupation. Only a single heron was observed resting on a PPRRP clarifier on February 17th. On February 23rd, a single heron was observed loafing in the Post Point Lagoon.

Photos of herons staging on a PPRRP clarifier and perched in a Douglas Fir on February 17, 2022.

Reoccupation of the colony was first observed on March 1st with 7 herons standing in or near nests in the colony. Heron nesting activity within the colony increased throughout March culminating in 38 herons observed actively constructing or standing in nests on March 22nd. Visits on April 1st and April 2nd found that all nesting activity had ceased with 12 herons April 1st and 9 herons on April 2nd observed perching on the PPRRP clarifier and in the Douglas Firs surrounding the colony. On April 13th, herons had returned to actively constructing and repairing nests, nest construction continued throughout April, May and into June.

Herons active in the colony on March 22, 2023.

Empty heron colony on April 2, 2023.

Egg-laying and Incubation

Egg-laying and the onset of incubation at the Post Point Heron Colony in 2023 was later than 2022 as result of the herons temporarily ceasing nesting activities at the end of March and beginning of April. In March, some herons were observed in a horizontal position in nests. While this posture is often indicative of egg laying or incubation in herons, this would be the last visit where the behavior would be observed until late April. The cause for temporary desertion of nesting activities and delayed egg-laying is unknown. Similar late nesting circumstances occurred in 2011 when Bald Eagle depredation resulted in a second successful nesting attempt in May. There have also been instances of colony abandonment that occurred in 2008 and 2009, with abandonment occurring after a second nesting attempt in 2008 and after Bald Eagle depredation in 2009. In both seasons, abandonment occurred after some young had hatched and herons did not return to the colony following abandonment. The 2023 nesting season was the first documented instance at the colony of nesting activity beginning, ceasing with only a few herons observed in the colony, and then restarting in mid-April.

On April 28th, herons were observed horizontal in six nests. Herons will lay 4-5 eggs asynchronously but not all of those will survive to fledging. Incubation follows egg-laying and is also indicated by herons taking a horizontal posture on the nest. Egg-laying continued throughout April, May and into June. Young herons hatch over several days after approximately 28 days of incubation. On May 19th, 35 nests were observed showing signs of activity and evidence of egg-laying or incubation in 29 nests.

Hatching and Rearing

May is typically the busiest month for young hatching in the Post Point Heron Colony. Since 2005, young have been documented in the colony by the first week of May in 17 out of the 19 nesting seasons. 2023 was unusual with the first young in a nest not being observed until June 9th, 41 days later than 2022. 2011 is the only other year where young were first documented in early June. Throughout June, young were increasingly observed in nests throughout the colony culminating into 32 nests with young on a June 30th visit. The hatching of young begins the onset of the 8-week rearing period.

The young will be brooded while adults continue to incubate unhatched eggs in the nest. Young are most susceptible to predation, heat and cold in the first few weeks of their life. They start out covered only by sparse downy fuzz but will be completely covered by feathers within three weeks. One adult will remain near the nest for the first 4 weeks of rearing to provide the young with protection from predators.

Adult heron brooding a young in the nest.

Fledging

The last stage for young herons as they leave the nest is fledging. Most young will fledge at about 8 weeks in age. To prepare to fledge, young are observed exercising their wings by flapping them, exploring limbs near the nest, and eventually taking test flights around the colony. As young explore further out from the colony nucleus, they can be seen loafing or

foraging in the Post Point Lagoon or on its shoreline. Nests will fledge over the course of a week or more as the older young of a brood leave to follow adults to better foraging grounds first.

Pre-fledging behaviors were observed on July 14th with young seen flapping their wings and venturing out onto nearby limbs. Flights through the colony from young herons were increasingly common through the end of July. Fledging of young was first observed on a July 21st visit with the first nests documented as fully fledged on July 28th. Most of the fledging of young occurred between July 21st and August 3rd. The remaining young fledged throughout August with the last two young not fledging until September 19th.

2023 Colony Fledging Progression

- On July 28th, 15 nests out of 43 active nests had fledged (35%).
- By August 13th, 30 nests out of 43 active nests had fledged (70%).
- By August 31st, 38 nests out of 43 active nests had fledged (88%).
- From August 31st to September 19th the final 5 nests fledged (12%)

In 2022 the majority of the colony's young, 62%, fledged over the first 3 weeks of July. In 2023, the first fledged nests were documented on July 21st. This was 20 days later than 2022 but does correlate with the disrupted nesting starting in mid-April and the first young being seen in June. Most of the fledging still occurred over a 6-week period with the remaining young fledging only a couple weeks later than the last young of 2022.

Post Point Heron Nesting Chronology Summary 2023

2023 was another successful nesting season for the Post Point Heron Colony. A chronology of the season is summarized below:

- February 17: one heron observed staging on the PPRRP clarifier
- March 1: seven herons observed reoccupying the colony
- March 22: active nest construction and potential onset of egg-laying
- April 1: no nesting activity observed, some herons are staging in the colony
- April 13 & April 21: herons have returned to the colony; nesting activity is occurring and breeding behaviors are observed
- April 28: herons are horizontal on 7 nests indicating that egg-laying or incubation has started
- May 19: egg-laying or incubation occurring in 33 nests
- June 9: the first heron young is documented
- June 23: there are more young herons (41) in the colony than adult herons (34)
- June 23 – July 28: peak period for total young in the colony
- July 28: the first nests are documented as fledged
- July 21 – August 3: fledging of young peak during this period
- September 19: all young herons are considered fledged

Total duration for the 2023 Post Point nesting period was just over 30 weeks from when herons were first seen near the colony in February and the last heron young left in September.

Productivity

Visible nests in the Post Point Heron Colony are monitored annually for productivity which is determined by each on-site visit prior to fledging. This measure has been an important indicator of the health and stability of the colony. While herons have the potential to fledge a maximum of five young, nests are most likely to produce two to three surviving young.

Productivity surveys for the Post Point Heron Colony are measured by counting the number of young in every visible nest each visit. The best time to observe young in the nest generally corresponds to an adult feeding. The counting of young is then divided by number of nests to express colony productivity in 1 of 3 ways:

Throughout 2023, 48 nests were located without intruding into the colony. Two nests disappeared prior to the start of incubation with the nesting material possibly taken to repair a different nest or to build a new nest in a different tree. Two more nests failed during the season possibly with young when the limbs supporting the nests broke. One nest was determined inactive for the entire nesting season. Including the two failed nests during the season, the number of active nests was 45 with 43 nests considered successful. Weekly observations of the 43 successful nests observed determined 88 young in the colony. Out of the 88 total young, 85 were estimated to have survived until fledging. The carcasses from three heron young were located under nest trees during the annual nest tree count in November.

Two young close to fledging on September 12, 2023.

Productivity of active nests is calculated by dividing the number of young counted by the number of active nests. The productivity of successful nests is calculated by dividing the number of young fledged by number of successful nests. Productivity rates for the Post Point Colony in

2023 were 1.95 per active nest and 1.98 per successful nest. The number of successful nests remained consistent with previous years at 43. The disrupted nesting season may have resulted in lower productivity per nest in 2023 compared to previous seasons.

Table 1: Post Point Productivity since 2017

Year	Number of active nests	Number of successful nests	Number of young counted	Number of young fledged	Number of young per active nest	Number of young per succesful nest
2023	45	43	88	85	1.95	1.98
2022	46	45	100	93	2.17	2.08
2021	42	39	104	95	2.47	2.4
2020	40	37	103	94	2.51	2.54
2019	40	38	103	103	2.57	2.7
2018	44	41	97	97	2.2	2.3
2017	35	35	89	89	2.51	2.5

Disturbance

Monitoring potential disturbances to the colony during the nesting season is an important objective of on-site monitoring annually. Disturbance, by definition, is an adverse behavioral and/or physiological response to a natural or man-made event (Sutherland 1996, Walker et al. 2006). Repeated disturbances to the colony can cause declining productivity, failure to reproduce or may even cause fragmentation, abandonment, or relocation.

Any disturbances to the colony or disruptions to herons within the colony or using habitats near the colony are documented. In 2023, no direct disturbances or disruptions by human activities were observed within the colony or surrounding habitats. Human/heron interactions of herons along the shoreline of Marine Park were documented between herons and beachgoers, dogs, and water-sports enthusiasts. Other potential passive disturbances to the colony include the BNSF train and aircraft flying over. The colony and herons were observed closely when any of these events occurred to see how the herons would respond to the intrusion.

The Ski to Sea Race returned to Marine Park on May 28th in 2023 and colony monitoring was conducted to overlap with the event activities that day. For May 28th, low tide was 2.1 feet at 6:25 PM resulting in marginal foraging conditions along the Marine Park shoreline for the duration of the Ski to Sea Race events. During peak afternoon event times, tide levels would have exceeded ideal foraging conditions being between 4.6 to 2.1 feet. The City coordinated with the Port of Bellingham and event organizers to place signs and temporary fencing along the shoreline to educate and deter eventgoers from venturing into foraging habitat during low tide. Event organizers informed the media of the no-fly area for drones surrounding the PPRRP and the heron colony. Temporary protection signs were posted along the wooden fence on the trail adjacent to the colony. The noises emanating from the event such as music, bell wringing, and announcers were only slightly louder than the background noise at the colony. No herons were seen foraging in the waters off Marine Park or in the Post Point Lagoon during the event. There were no signs of distress from the adults or young at the colony.

Bald Eagles (*Haliaeetus leucocephalus*) are the greatest predatory threat to the Post Point Heron Colony. Bald Eagles can disturb the colony by consuming unhatched eggs, preying on the young or flushing flightless young from the nests. Some eagles may even attempt to prey on adult herons. Bald Eagles are a common sight flying over the colony or perching nearby. Most of the Bald Eagle flights over or near the colony elicit no response from the herons. On March 3rd, a Bald Eagle was witnessed flying over the colony causing all 7 herons to flee the area. The herons did not return to their nests throughout the remainder of the survey but had returned by the next visit. On March 17th, a Bald Eagle was again observed entering the colony and perching nearby.

Other raptor and corvid species are seen in the area with crows nesting near the colony. Crows were seen chasing Bald Eagles that flew over the colony.

Foraging

Foraging surveys were conducted during the nesting season to document how the Post Point Herons are using the nearby foraging options at the Post Point Lagoon and along the Marine Parke shoreline. During the height of rearing season, additional monitoring was conducted at Marine Park during low tides when herons would most likely be accessing eelgrass meadows for foraging.

Herons were observed actively using the forage location on 2 out of the 6 foraging survey days. Two young herons were seen foraging in Marine Park in July. Herons were often seen loafing and foraging along the shoreline of the Post Point Lagoon.

Nest Survey and Map Update

Conducting an annual nest count at the Post Point Heron Colony is an important tool for defining the overall health of the colony. Annual variation and/or fluctuation in nests may point to a change in the available nesting habitat, predation pressure, or abundance of prey resources in relation to the colony itself. Tracking nests throughout the nesting season can be difficult as nests are often masked by the leaf cover provided by the nesting habitat. The best time to assess the annual number of nests at the colony is in the fall after leaves have fallen from the nesting trees.

In 2023, the annual nest count was conducted by Hamer Environmental on November 9th and 20th. A total of 44 nests were counted in 30 nesting trees. Most nesting trees contained a single nest (21), while five trees contained 2 nests, three trees had 3 nests, and the remaining nest tree had 4 heron nests. Of the 30 nest trees found in 2023, 29 were previously identified as being used in the past while 1 new nest tree was identified. Data collected during the annual nest count included the nest tree # (if the nest tree was identified in previous years), tagging and GPSing new nest trees using a sub-meter GPS receiver, and the number of heron nests found in each tree. Other incidental information is also recorded, including the presence of eggshells, fallen nests, and deceased herons.

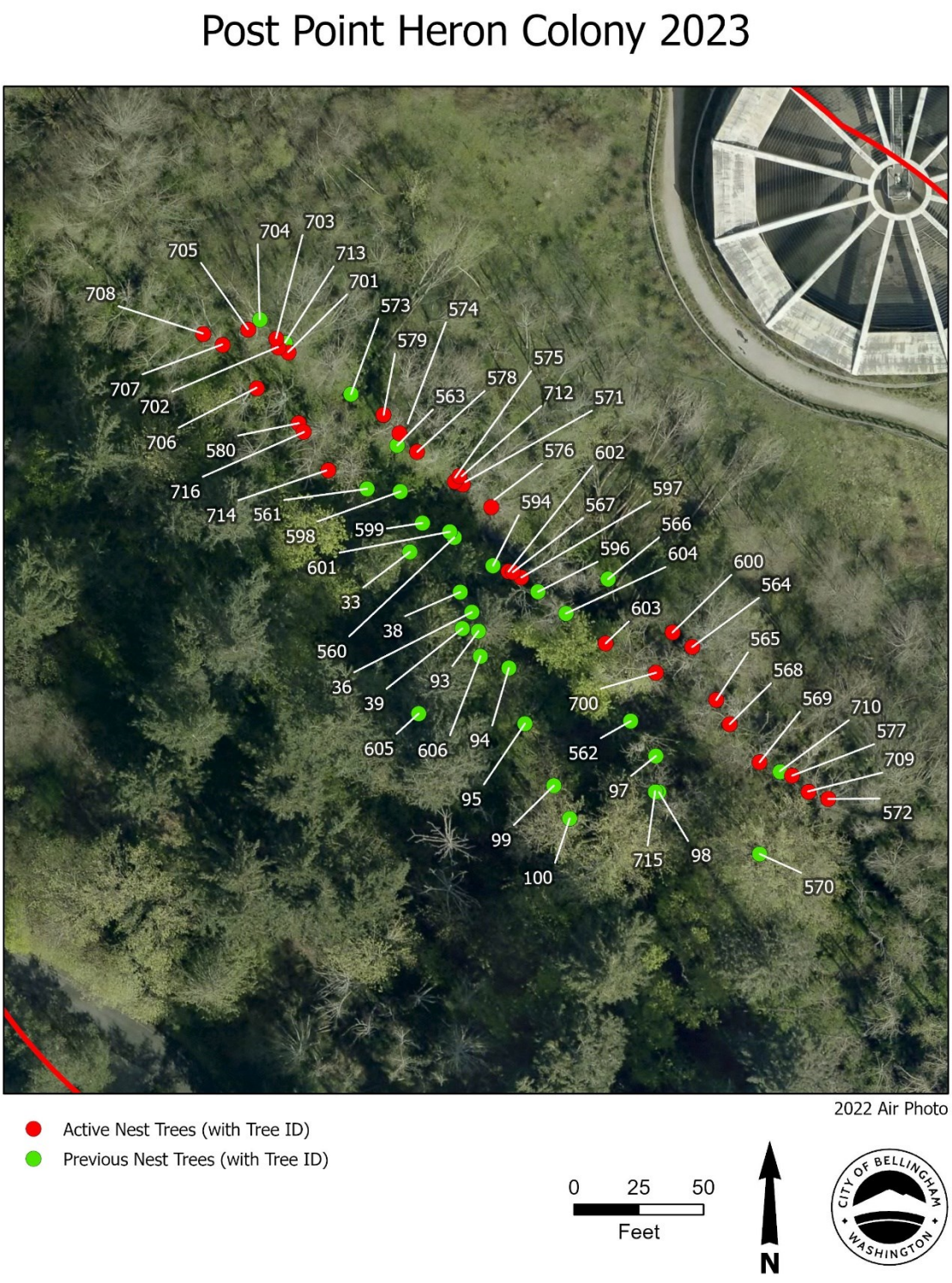

Figure 4: 2023 Post Point Heron Colony Nest Tree Map

Conclusion

The Post Point Heron Colony is important to the health and stability of the Great Blue heron population in the Salish Sea. It serves as a glimpse into nature for many local residents as they stop along the trail to watch in fascination as the herons take twigs for nest construction or feed their young. This is the 24th season of herons returning to nest demonstrating a high level of fidelity to the colony and resilience to remain in an urban landscape.

In 2023, 46 total heron nests were noted from observing the colony from the nearby Lower Padden Trail. Out of those 46 nests, two nests would fail during the season, and one would remain inactive for the whole season leaving 43 successful nests. A total of 88 young herons were counted in the 43 successful nests visible from the trail. The colony would fledge 85 young starting in late July and continuing until mid-September.

The 2023 nesting season at the Post Point Heron Colony was unusual with nesting activities beginning in March, reverting to staging in early April with only a few herons present in the colony and then nesting activities recommencing in mid-April. This resulted in the onset of egg-laying and incubation being delayed compared to previous nesting seasons. This was only the second time in the Post Point Heron Colony monitoring history where the first young were observed as late as June. Colony productivity in 2023 was down, 1.95 per active nest and 1.98 per successful nest, from previous nesting seasons. However, the colony produced over 80 young per season for the 7th consecutive year, the number of active nests and successful nests have consistently remained in the 30's and 40's every year since 2017. Therefore, the 2023 nesting season was successful despite the delayed start to the nesting season for the Post Point Heron Colony.

Acknowledgements

Hamer Environmental would like to show appreciation to the City of Bellingham for supporting the continued conservation of the colony and all the assistance provided for the 2022 and 2023 nesting seasons. Finally, we acknowledge the passion that so many of the citizens in the neighborhood surrounding the colony demonstrated over the 2023 nesting season.

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