

# Great Blue Heron Foraging and Flight Observations

## Courtenay River Estuary – 2014

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## TABLE OF CONTENTS

I	INTRODUCTION	
	A Background	3
	B Youth and Ecological Restoration	4
	C Purpose of the Study	4
	D Location	5
II	METHODS	6
III	RESULTS and DISCUSSION	
	III-A Heron Foraging Observations - Royston	8
	III-B Potential for Disturbance of Foraging Herons	12
	III-C Movement of herons to and from the nesting colony	13
IV	SUMMARY and RECOMMENDATIONS	15
V	ACKNOWLEDGMENTS	16
VI	REFERENCES	16

# I

## INTRODUCTION

### **I-A Background**

Great Blue Herons are among the most distinctive species of wildlife in British Columbia. For many they symbolise patience as they are seen perched on pilings or rocks and wading in shallow waters as they search for food.

Hérons require three types of habitat: foraging areas; sites for nesting colonies; and roosting sites for use outside of the breeding season. Over the past 25 years there has been much effort to locate and protect Great Blue Heron nesting colonies around the Salish Sea in south-west British Columbia and north-west Washington State. In comparison, there has been much less research done to inventory herons at their foraging areas. Anecdotal information over many years tells us that herons around the Salish Sea are most often seen foraging along the marine shore, particularly in intertidal areas at low tide.

The principles of ecological science determine that herons will do best if they are undisturbed and have easy access to foraging, nesting and roosting areas. Shorter distances between habitat areas saves herons the energy of commuting and allows them greater fitness for nesting and raising their young.

By monitoring heron nesting colonies we have learned that they often move, either as the result of human disturbance or natural causes. As forests are removed and lands developed it appears that we have an ever lessening amount of potential nesting and roosting habitat. In 2013 numbers of herons foraging were counted in various locations in the Comox Valley Regional District and at Oyster Bay (Moul and Birch 2013). This project will focus on heron foraging activity in the Courtenay River Estuary, with a look at heron flight directions at the Point Holmes heron nesting colony.

## **I-B Youth and Environmental Restoration (YER)**

The Youth and Environmental Restoration program (YER) provides work experience, training and support for youth aged twelve to eighteen (YER 2014). Studying the local environment with community members helps youth gain a sense of worth, belonging and place. The focus of YER, Phase I is to work one-on-one with youth conducting ecological restoration activities with a variety of environmental organizations; YER, Phase II has two youth and two adults concentrating on a specific project to further develop teamwork, research techniques and communication skills. The first three days of this YER Phase II program included counts of Great Blue Herons feeding in the Courtenay River Estuary and observations of herons arriving and departing at a Point Holmes nesting colony. On days four and five the focus was on the preparation and presentation of a public tour by the youth.

The four ecological inventory contributors were YER coordinator, Wendy Kotilla; Registered Professional Biologist, Ian Moul; and two youth participants, Aislynn Hessler and Jay Stierle. The five day program was from the 11<sup>th</sup> to the 15<sup>th</sup> of June 2014. The goal is to use scientific methods in ways that are interesting to the youth, helping them gain a more in-depth understanding of what makes up a functioning ecosystem, while at the same time collecting information useful in local land-use planning.

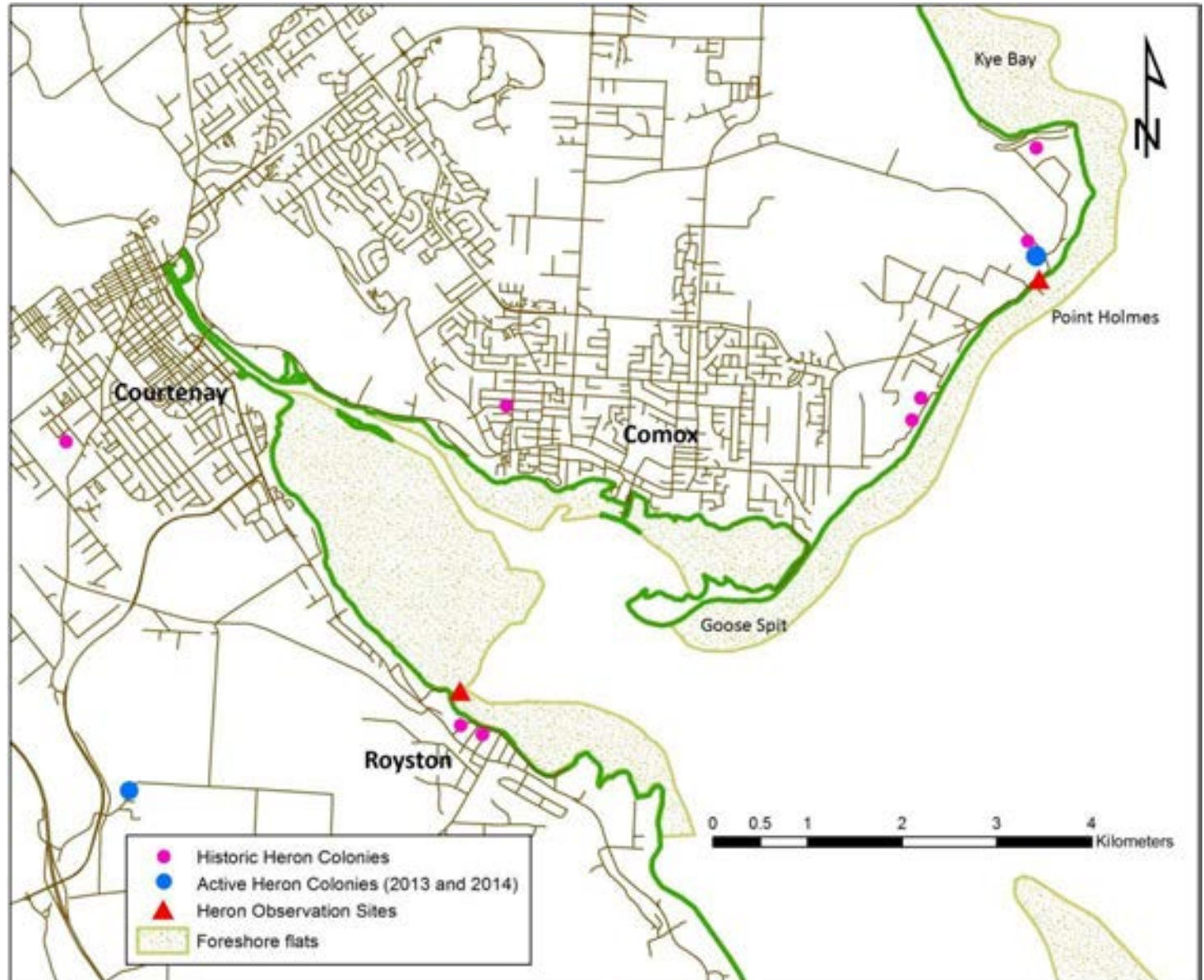
## **I-C Purpose of the Study**

The purpose of this study is threefold:

- 1) To count the number of Great Blue Herons foraging in the intertidal areas of the Courtenay River Estuary;
- 2) To describe the locations and the tide levels where most herons could be seen foraging;
- 3) To document any disturbance of the foraging herons;
- 4) To document heron flights to and from the nesting colony at Point Holmes;

## I-D Location

Map 1: Overview map showing the heron nesting colonies near the Courtenay River Estuary and at Point Holmes.



## II

## METHODS

This is a citizen science project with emphasis on collecting information on foraging herons and promoting public involvement and interest in the habitat needs of Great Blue Herons.

Counts of foraging herons were made from a public beach access at the Royston Wrecks (where many years ago scuttled ships were used to create a breakwater). From the end of a little point of land there is a commanding view of the tide pools and sand flats making up the greater part of the Courtenay River Estuary.

Counts of foraging herons were conducted by telescope. Observations were in a clockwise direction covering eight identifiable “pie shaped” portions of the foreshore (Map 2). For two days, pairs of observers scanned the study area every 20 minutes for a three hour time period and recorded the numbers and locations of foraging herons. The observation sessions were timed to cover the descending tide to the point of low tide. Heron arrivals and departures at the study site, plus flight directions were recorded as they occurred during observation sessions (they were not restricted to the 20 minute sampling regime). We also recorded any incidences of human presence near the foraging areas and if there was a noticeable reaction by the herons. From a location immediately north of the Point Holmes public boat ramp (Map 1) we recorded heron arrivals and departures at the Point Holmes nesting colony. The flight directions of herons were recorded (Map 3). Incidences of eagle and herons interactions plus the presence of people and dogs on the beach near the foraging herons were noted.



Jay Stierle and Aislynn Hessler

**Map 2 – The Courtenay River Estuary divided up into eight areas for observing foraging herons. Two areas with no visible foreshore were not included.**

Royston North: The foreshore from the wrecks along the shore to a prominent pink house.

Airpark: From a prominent pink house to the public viewing stand along Dike Road.

IHOS: From the public viewing stand to a prominent white house near the base of Comox hill.

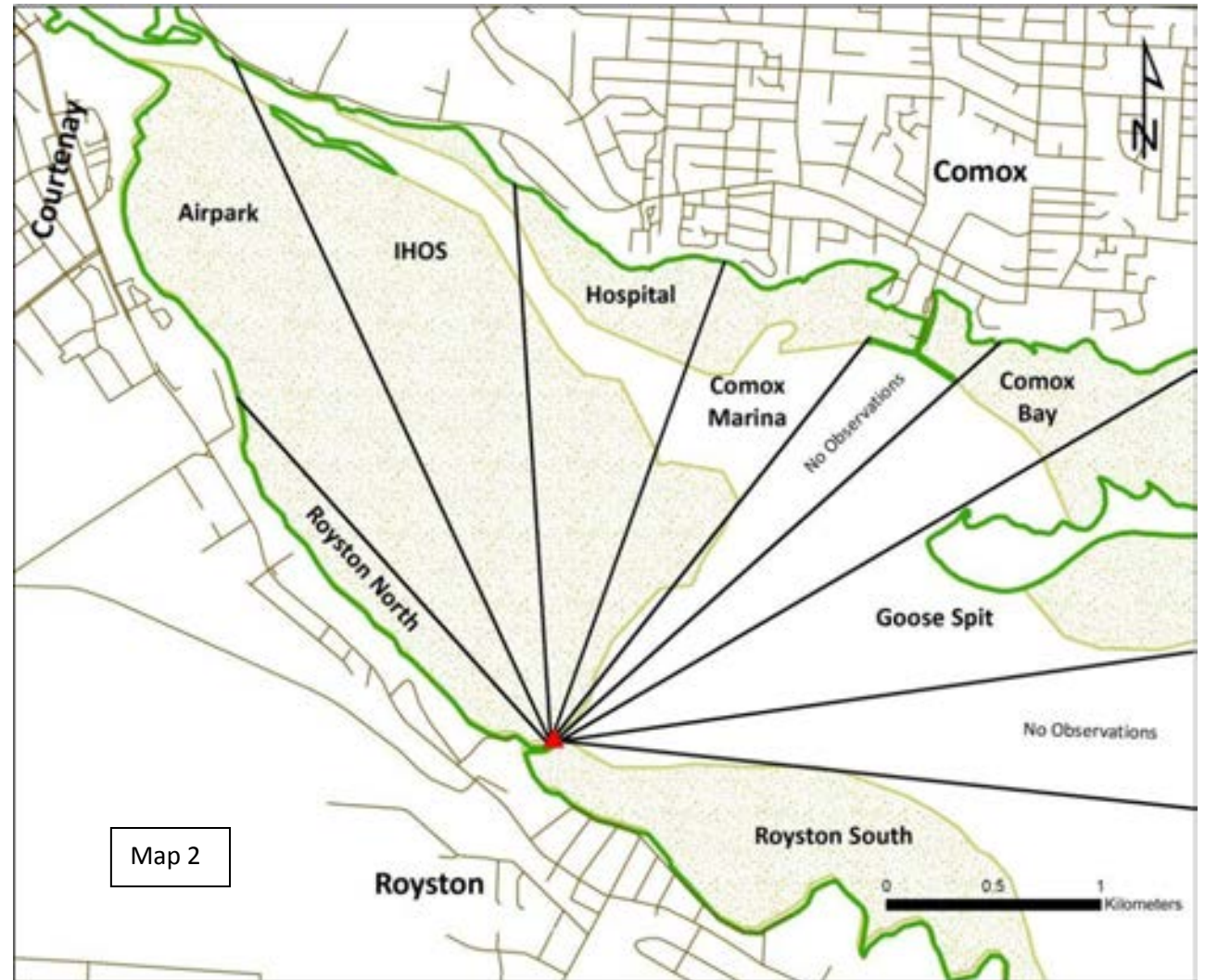
Hospital: From a prominent white house to below St. Joseph’s Hospital.

Comox Marina: The foreshore to the west of the Comox Marina.

Comox Bay: The visible portion of Comox Bay east of the Comox Marina and north of Goose Spit.

Goose Spit: The foreshore along the west and south sides of the spit.

Royston South: The visible portion of the Royston foreshore from the wrecks to the mouth of the Trent River.



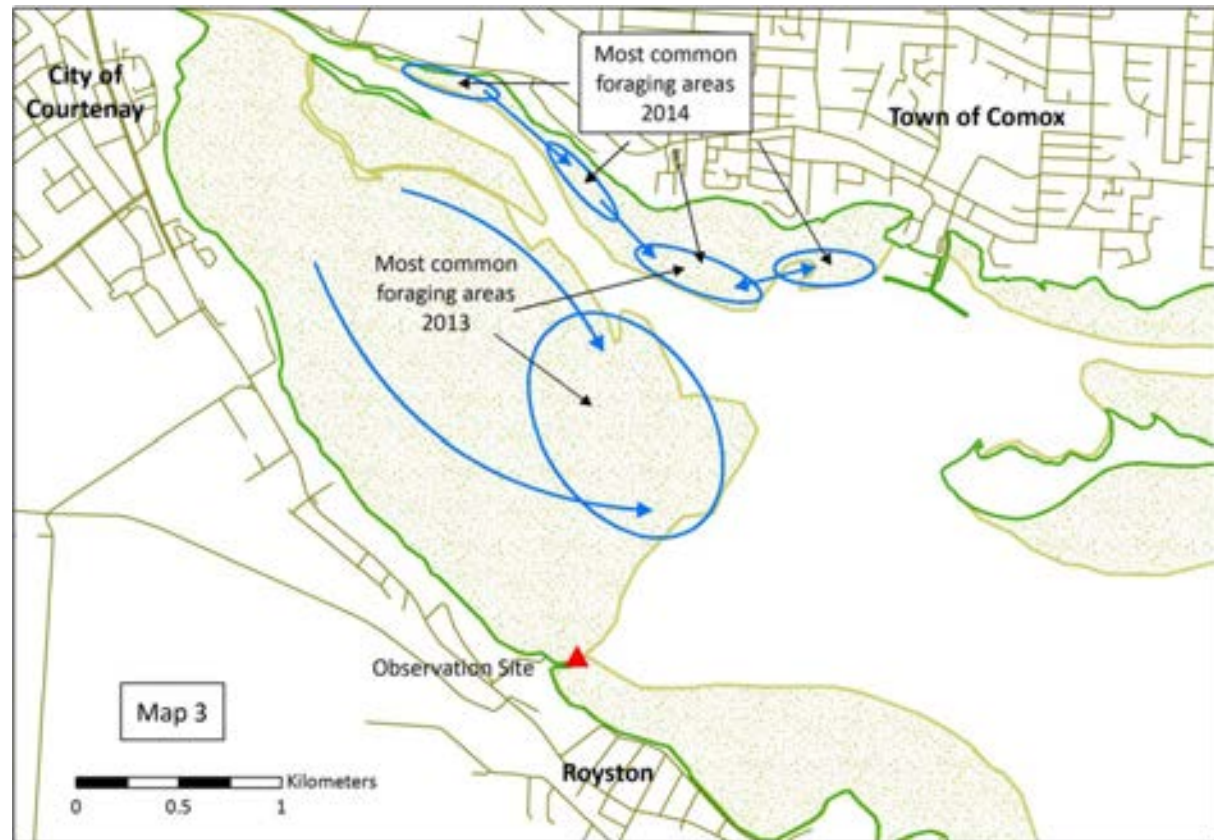
### III

## RESULTS AND DISCUSSION

### III-A Great Blue Heron Foraging Observations – Royston

Counts of foraging herons were made on the 11<sup>th</sup> and 12<sup>th</sup> of June 2014, during the descent to low tide. The heron counts made by the two pairs of observers were often different. The counts of heron numbers were averaged (Tables 1 and 2), with the exception of one count that was discarded as being unreasonably high. Assigning numbers of herons to the various locations in the estuary was based on comparing the two data sets and averaging the number of herons seen in each location.

During both 2013 and 2014, herons were seen foraging along the north shore of the mouth of the Courtenay River, moving east with the descending tide (Map 3). In 2014 we were surprised to see very few herons in the central portion of estuary.





Minutes from low tide	Royston north	Airpark,	IHOS,	Hospital	Comox Marina	Comox Bay	Goose Spit	Royston south	Total
-112			9	16					25
-92			1	4	24			1	30
-72					29			2	31
-52					15	3			18
-32					11				11
-12					12				12
8					8			1	9
28					7	2		1	10
48					7	2		1	10
68					5				5
88	2			5					7
108	5			1					6
Total	7		10	26	118	7		6	174
Percent	4		6	15	68	4		3	100

On both days of observation in 2014 herons shifted east along the foreshore as the tide descended, and the largest numbers were counted in the area west of the Comox Marina (Tables 1 and 2). On both days the largest numbers of herons counted were in the period of one to two hours before low tide (Figure 1). This supports previous observations by youth in YER programs in 2013 and reported by Moul and Birch (2013) and Butler (1997). Observations suggest that at low and incoming tides when the prey fish are no longer being concentrated along the water at the tide edge, the herons will return to their nests and switch places with their mates (Ian Moul Personal Observations).

Minutes from low tide	Royston north	Airpark,	IHOS,	Hospital	Comox Marina	Comox Bay	Goose Spit	Royston south	Total
-174			1	7	1		2	1	12
-154		1	11	4	3		2	1	22
-134		1	23	7	8		2	3	44
-114			2	36		5	2	2	47
-94				35	17	1			53
-74				7	23				30
-54			1		23	1	1		26
-34					19			1	20
-14					14				14
6			1	9	9				19
Total	0	2	39	105	117	7	9	8	287
Percent	0	<1	14	37	41	2	3	3	100

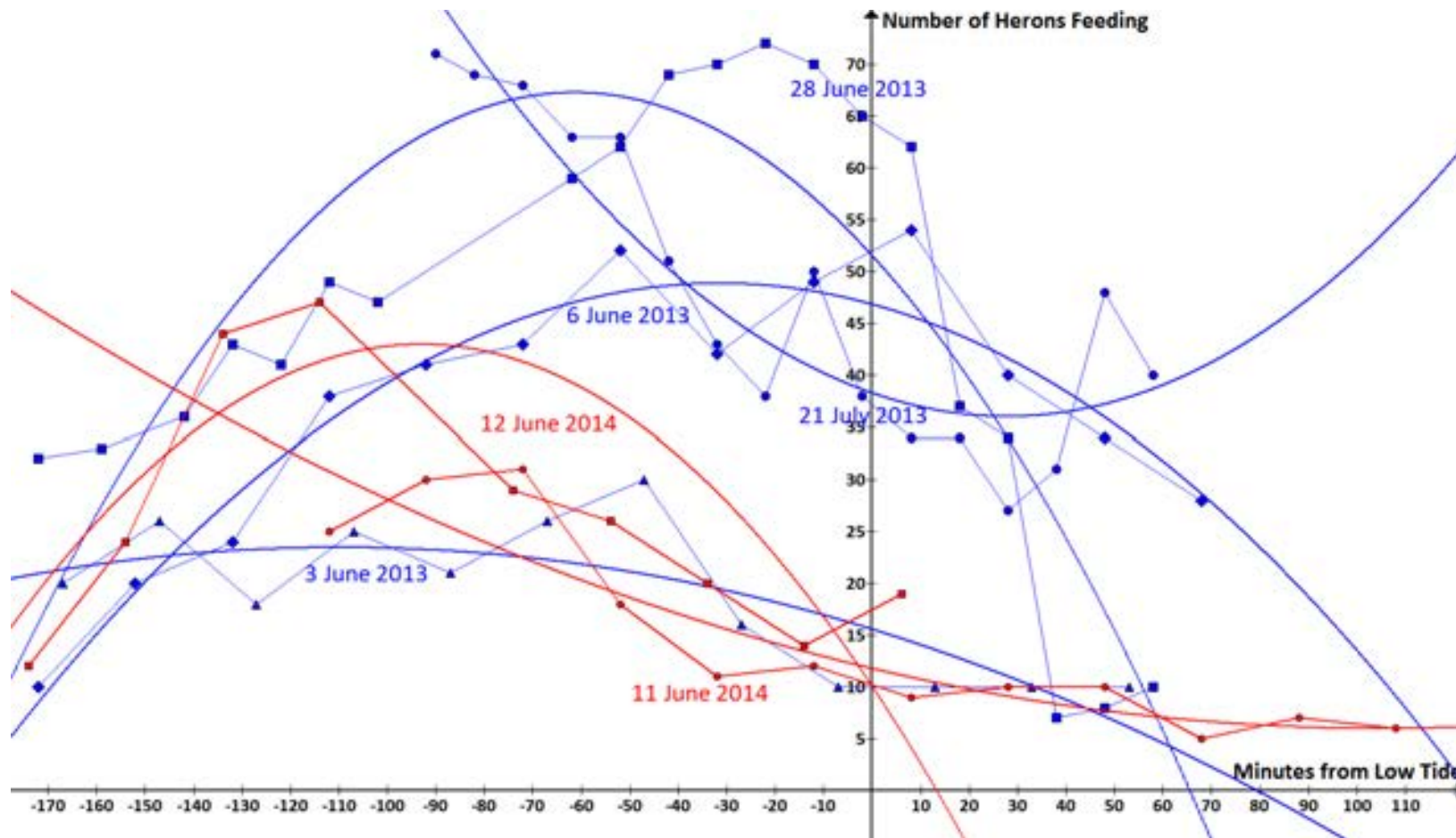


Figure 1: The numbers of Great Blue Herons foraging in the Courtenay River Estuary during four days of observations in 2013 and two days in 2014. The curved lines are the computer generated trend line.

### III-B Potential for Disturbance of Foraging Herons

During the three days of observation sessions we counted the number of times that potentially disturbing stimuli was seen in the areas where herons were foraging (Map 2), or near the Point Holmes nesting colony (Table 3 and Map 4). Potentially disturbing stimuli included: People and/or dogs on the foreshore; boats or kayaks in proximity to foraging herons; low flying aircraft; and close flybys of Bald Eagles (Table 4). As the potentially disturbing stimuli were often clustered, each event received one count in Table 3, but each stimulus would receive individual score in Table 4. For example: three people and two dogs arriving by boat would be scored in Table 3 as one potential disturbance; in Table 4 we scored 1 boat event, 1 person event, and 1 dog event. For a heron to be disturbed, we would have to see them “flushing,” or flying up from where they were foraging

Day and Study Site	Hours of Observation	Number of Potentially Disturbing Stimuli	Number of Disturbances Observed
11 Jun 2014 – Royston Wrecks	3:50	18	0
12 Jun 2014 – Royston Wrecks	3:00	9	0
13 Jun 2014 – Point Holmes	3:50	9	4
<b>Total</b>	<b>10:40</b>	<b>36</b>	<b>4</b>

	11 Jun 2014	12 June 2014	13 Jun 2014	<b>Total</b>
Individual or Groups of People	9	8	2	<b>19</b>
Individual or Groups of Dogs	6	4	1	<b>11</b>
Boats or Kayaks	4	0	1	<b>5</b>
Low Flying Aircraft	1	0	3	<b>4</b>
Bald Eagle Flybys	0	0	5	<b>5</b>

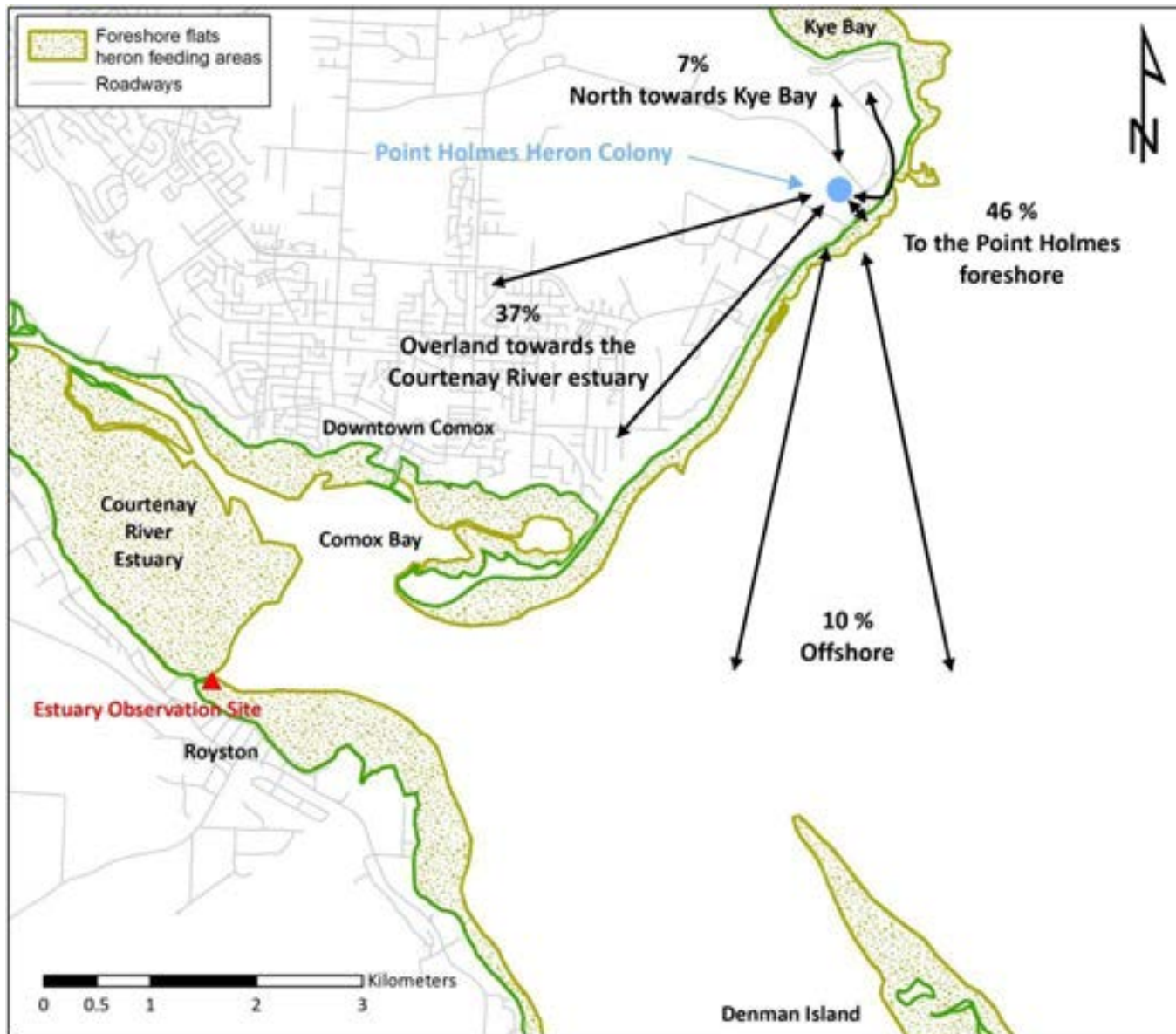
In ten hours and forty minutes of observations we recorded 36 potentially disturbance events in which the herons were observed to be disturbed four times, all by eagles flying over the Point Holmes Heron nesting colony. At no time did we see herons being disturbed at the foraging areas by the Courtenay River Estuary.

### III-C Movement of herons to and from the nesting colony

Great Blue Herons are known to fly in fairly straight lines between nesting colonies and foraging areas. It may be suggested that the most efficient use of the herons energy is to forage as close to the nesting colony as possible. This was supported by our observations, where 46 % of heron flights to and from the Point Holmes foreshore were within 1km of the nesting colony (Table 5).

Flight direction	Arrivals	Departures	Total	%
North, over the airfield towards Kye Bay	6	5	11	7
Shore by Point Holmes	19	47	66	46
South and South-east, overwater	9	5	14	10
West and South-west, overland	10	43	53	37
<b>Total</b>	<b>44</b>	<b>100</b>	<b>144</b>	<b>100</b>

Hérons were also seen flying in fairly large numbers towards the Courtenay River Estuary (37%) where presumably there is an abundant food supply. Most surprising was to see that 10% of the herons flew in what appeared to be a direction straight out to sea towards the general direction of Denman Island. The unexpected aspect of this observation is that during times of high winds, which often occur at Point Holmes it would seem to be energetically very inefficient for herons to fly in this direction.



Map 4: Heron flight direction to and from the Point Holmes Heron Colony

## IV

### SUMMARY AND RECOMMENDATIONS

This study has documented foraging herons in the Courtenay River Estuary and heron flights incoming and departing from the Point Holmes heron nesting colony. The observations collected during 2014 were a valuable contribution to assessing the habitat needs of Great Blue Herons in the Comox Valley.

Maintaining healthy eelgrass meadows on the tidal flats of the estuary supports the fish population that provides food for herons. By documenting herons feeding in the Courtenay River Estuary we increase our understanding of wildlife usage of this area and support the importance of three local conservation indicatives:

- 1) The Courtenay River Estuary Management Plan (CREMP 2013);
- 2) Eelgrass restoration by Project Watershed (Project Watershed 2013); and
- 3) The Comox Valley Conservation Strategy Community Partnership goal of securing sensitive ecosystems, landscape connectivity and provide sufficient habitat to meet the current and future needs of species like the Great Blue Heron (CVCS 2013)





**Heron Study Team: (left to right) Wendy Kotilla, Aislynn Hessler, Maj Birch, Ian Moul, and Jay Stierle**

## **ACKNOWLEDGMENTS**

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## **V**

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**Public Tour led by Aislynn Hessler and Jay Stierle, sharing their knowledge about Great Blue Herons, Purple Martins, and the importance of the natural environment of the Courtenay River Estuary.**