Species at Risk Conservation and Stewardship in the Coquitlam Watershed

Final Report 2013-2014

Western Toad metamorph

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Executive Summary

In 2013, funding was approved for the Fish and Wildlife Compensation Program project titled “Species at Risk Conservation and Stewardship in the Coquitlam Watershed.” In cooperation with multiple Species at Risk (SAR) Recovery Teams and stakeholders, the project is working towards conservation and restoration using a multi-species approach that can also be applied to other watersheds. For this project, these initiatives will work towards outlining and completing actions that will compensate for some negative ecological impacts in the Coquitlam Watershed that resulted from the development of the Coquitlam-Buntzen Hydro Project. In order to comprehensively develop specific management and restoration recommendations several steps are being followed in this project as it relates to species at risk and their habitat.

The first year of this 5-year proposed project, was focused on ‘identifying’ species at risk and their habitat. Current occurrence information was compiled and tracking of undocumented occurrences was conducted. Mapping of these occurrences as well as species habitats were also undertaken for several priority species; Western Painted Turtles (*Chrysemys picta bellii*), Great Blue Herons (*Ardea Herodias fannini*) and several amphibian SAR (Red-legged Frogs (*Rana aurora*), Pacific Tailed Frogs (*Ascaphus truei)*and Western Toad (*Anaxyrus boreas*)) due to their high conservation framework and BC Hydro Species of Interest rankings. Habitat, including potential threats and opportunities for restoration, were assessed at several sites in Coquitlam Watershed.

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Species at Risk Conservation and Stewardship in the Coquitlam Watershed

1. Introduction

The Coquitlam-Buntzen generating complex includes two dams, a diversion tunnel, two outlet tunnels, and two power houses. Coquitlam Dam is at the south end of Coquitlam Lake Reservoir. The Coquitlam watershed area is 253 km^2 (193 km^2 above the dam and 60 km2 below), with elevations ranging from 153 m to over 2000 m. The Buntzen Lake watershed has an area of 21 km^2, with elevations of 127 m to 1257 m (BC Hydro, 2011a-c) (**Figure 1**). Although some information is available on dam construction impacts and its affect on both species distributions and available habitat in the Coquitlam Watershed, this information is limited. Therefore, further research to identify methods to compensate for any negative impacts has been identified as a top priority in this watershed (BC Hydro, 2011b).

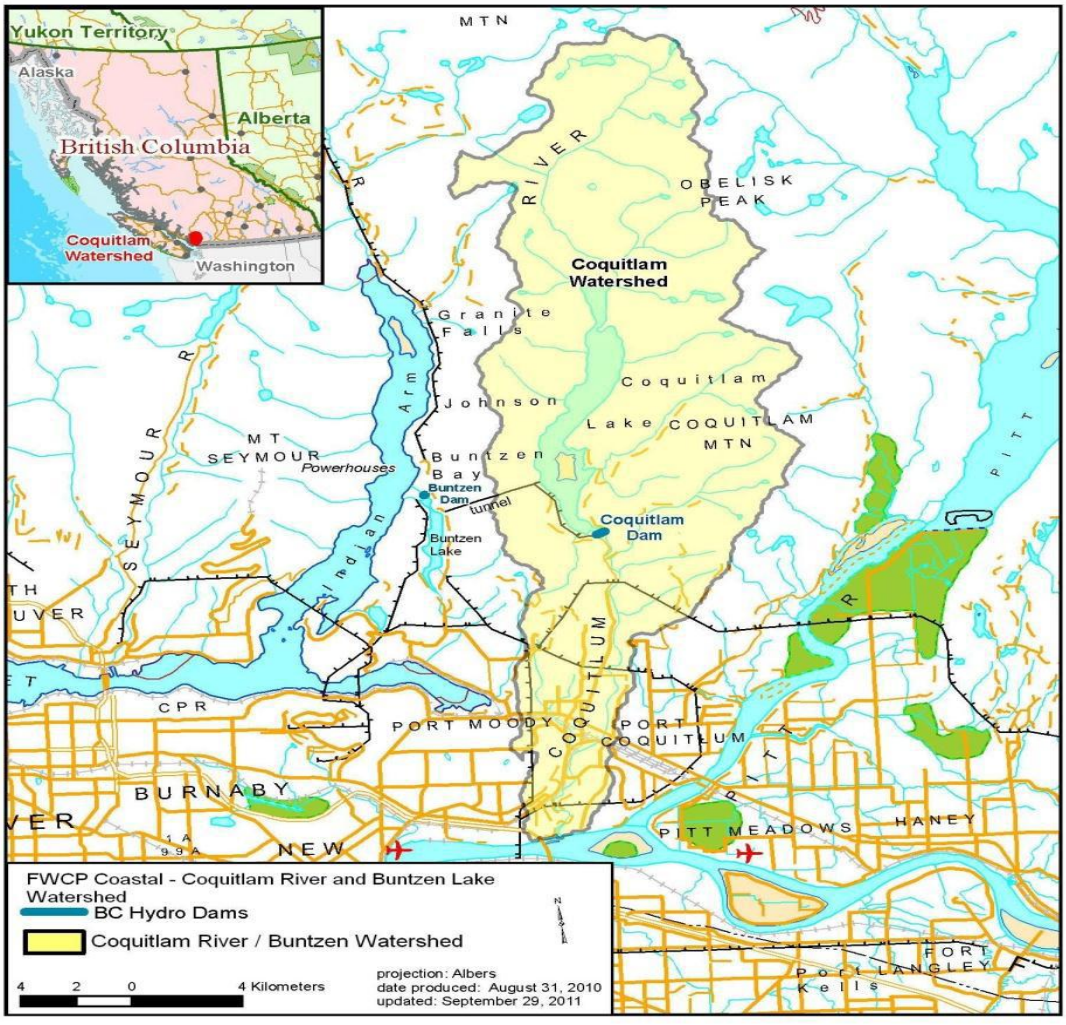

Figure 1. The Coquitlam River and Buntzen Watershed Hydropower project in the Lower Mainland, BC (BC Hydro, 2011a).

Construction of the dams has resulted in footprint issues and impacts on wildlife and habitats, including loss of instream, upland and riparian habitats habitats. Flooding of 17 hectares of river and lowland forest, the 30 kilometre perimeter of Coquitlam Lake, and 177 kilometres of upland forest has caused the loss of riverine and coniferous valley side habitats and associated wildlife losses (BC Hydro, 2011a).

Other impacts include migration barriers, particularly to fish and large mammals, altered flow regimes and diversions. There has also been reduction in the recruitment of large woody debris (LWD) downstream of the Dam and in the Coquitlam River (BC Hydro, 2011c).

Impacts to species at risk are also significant and many species likely to be found within the watershed were assessed for priority to the Fish and Wildlife Compensation Program. Thirteen mammal species were identified, with Pacific Water Shrew being one of four species assigned a high priority. There were 20 birds and 8 reptile/amphibian species identified , with Great Blue Herons, Western Painted Turtles and Red-legged Frogs, respectively, also assigned high priority (BC Hydro, 2011b)

2. Goals and Objectives

The goal of the project is to identify, conserve and restore priority species at risk and their habitat within the Coquitlam River watershed. This is following the goal of the Alouette Watershed Species at Risk Project for which intentions were to use the same model from that project, that began in 2011, and apply it to other watersheds (Mitchell, 2012). The first step for the project was to compile existing occurrences of all species of risk using Conservation Data Centre requests, reviewing reports available from various stakeholders and local residents. Updated occurrences were also tracked for all species. Western Painted Turtles (*Chrysemys picta bellii*), Red-legged Frogs (*Rana aurora*), Pacific Tailed Frogs (*Ascaphus truei),* Western Toad (*Anaxyrus boreas*) and Great Blue Herons (*Ardea Herodias fannini*) were selected as a priority species in this first year, due to their high Conservation Framework and BC Hydro Species of Interest Action Plan rankings.

Specifically these goals will be achieved through these objectives:

1. Mapping all species at risk occurrences, including historical and recent, to provide a spatial representation of overlapping occurrences and priorities for future conservation, restoration and stewardship efforts.
2. Mapping priority species habitat to guide future conservation, restoration and stewardship efforts.
3. Identifying specific threats to the priority species and their habitats, protecting occupied sites, and restoring degraded habitat
4. Preventing further population declines, habitat loss and degradation through increased accessibility to data, as well as public outreach and education designed to enhance awareness and stewardship of the species and its habitat.

3. Study Area

The Coquitlam River and Buntzen Lake watersheds lie in the southernmost extension of the Pacific Ranges of the Coast Mountains of British Columbia about 30 km northeast of Vancouver (BC Hydro, 2011a) (**Figure 2**). Our Area of Interest (AOI) for the project has been defined as the provincial Assessed Watershed boundary as well as additional areas where known species occurrences extend (i.e., Western Painted Turtle occurrences are connected and considered within the Federal and Provincial survival habitat designation) (WPTRT, 2014).

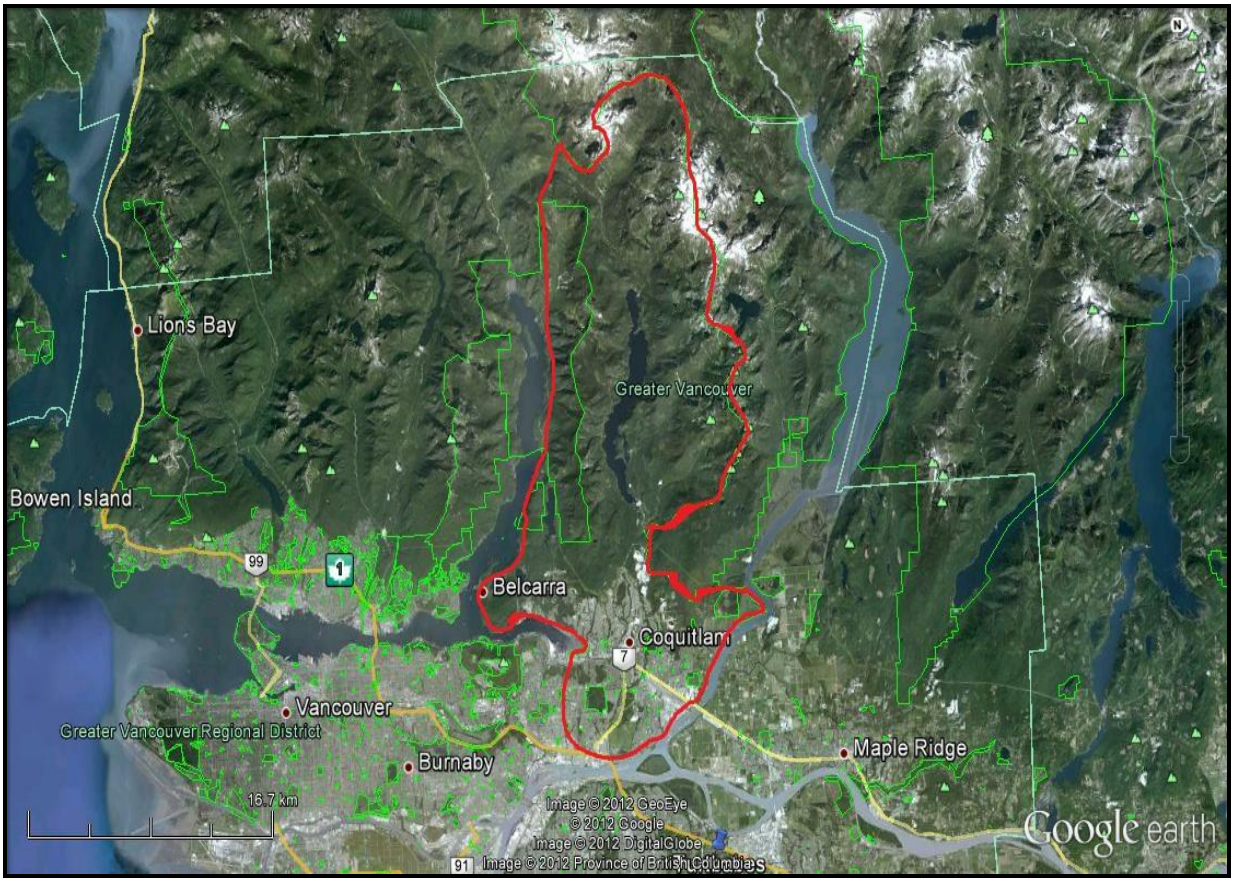

Figure 2. The Coquitam-Buntzen Watershed boundary (AOI for 2013-14 Coquitlam Species at Risk) Project.

4. Methods

a. Area of Interest Delineation and Mapping

The area of interest was delineated using an 'Assessed Watershed' Geographic Information Systems (GIS) layer from the provincial government site providing public access to GIS information, the GEOBC Gateway (source: http://geobc.gov.bc.ca/) and from description and map provided in the *BC Hydro Coquitlam/Buntzen Watershed Plan* (BC Hydro, 2011). Historic observations were obtained through the Conservation Data Centre (CDC) (source: http://www.env.gov.bc.ca/cdc/), whose data layers are also available through the GEOBC Gateway.

b. Surveying

Surveying in the first year of the project has been largely conducted via visual observations at sites visited as part of site assessments (see below). However, visits were also conducted at known and historical/existing occurrences for Western Painted Turtle, Red-legged Frog and Great Blue Heron. In addition, surveys for Western Toads were done in conjunction with Western Painted Turtle surveying as well as using similar techniques as with Red-legged Frogs, as there is some habitat overlap between species but timing for surveys differed. Pacific Tailed Frogs inhabit steep stream habitat not generally suitable for breeding for the other focal amphibian species, although incidental adult observations were also sought.

Surveying for Western Painted Turtle occurred during peak basking time (10 am – 3 pm) and were conducted using binoculars from shore or by boat. For areas where it is difficult to see basking locations from shore and difficult to access by boat, a spotting scope was used. When surveying by boat, care was taken to paddle away from shore (> 50 m away or in the middle of the water body) and look from a distance to determine turtle presence prior to potentially causing turtles to flee. Areas with woody debris appropriate for basking (e.g., not too far out of the water for turtles to climb and large enough for a turtle to rest its body) that are south facing have a higher likelihood of attracting turtles. Most times in spring and summer and even into fall, weather dependant, can be suitable to detect basking turtles (Kilburn and Mitchell, 2011).

In order to detect Red-legged frog presence, the primary method employed was egg mass surveys. These were conducted in spring (March for this project) and the number of egg masses per site was considered to be equivalent to the number of breeding females in the population (i.e., one egg mass per female) (Hallock and McAllister, 2009; Scott and Woodward, 1994). Egg mass surveying involved paddling edges of water bodies and visually observing egg masses with the aid of polarized glasses below the water surface (generally attached to vegetation or wood and at an average depth of 15 cm) (Hallock and McAllister, 2009, Matsuda et al., 2006). However, some water bodies were small and shallow enough that wading and/or observing with binoculars from edges were also used as methods to search for egg masses. Similar methods were employed for Western Toads at many overlapping sites; only egg strings, larvae (tadpoles) and/or toad metamorhps ('toadlets') were surveyed for May through to August rather than March.

Surveys for Pacific Tailed Frogs involve a Time-Constrained technique (TCS), which involves searching suitable stream habitat (cobble, pool/riffle, step pool) for 30-minutes (15 minutes for 2 people searching) (MELP, 2009). During this time larvae are sought and placed temporarily in a holding container. Following the survey, the larvae are counted and aged. Pacific Tailed Frogs remain in a larvae stage until approximately 4 years of age and based on size and limb growth can be classed into, hatchling, 1st year, 2nd year and 3rd year. The 4th year of life generally involves the 'meta' stage in which all limbs are formed but they remain aquatic and retain their tail.

Great Blue Heron historic colonies were visited in order to detect any recent activity. However, no suitable formal survey technique was available to this project that detects new colonies (aerial surveys are one of the few techniques that may be possible to detect new colonies but are very disruptive and expensive). New colony observations are almost exclusively incidental; provided through forestry, construction or other works as well as through public reporting. For this project, a stewardship approach was employed for seeking new colonies. Talks, newspaper articles, posters and brochures were all provided or produced to illicit novel colony observations (See **Appendix IV**: Summary of SAR Stewardship). Incidental observations of Great Blue Herons were also recorded while surveying of other SAR but primarily these are foraging observations which are not very useful for detecting nesting sites (herons can and often do forage up to 15 km from their nest or colony).

c. Site Assessments

Sites assessments in this first year of the project were very preliminary and were only made via observations during SAR surveys and Stewardship activities. Communication was initiated/maintained throughout the project year with the City of Coquitlam, Department of Fisheries and Oceans, Metro Vancouver Parks, Burke Mountain Naturalists, Colony Farm Park Association, Friends of Deboville, Watershed Watch Salmon Society, local residents/naturalists and any group currently conducting activities (or potentially in the future) in the watershed. A preliminary list was begun with the intention of formal assessment work, further SAR surveys and individual Restoration Action Plans to be developed in future years of the project (funding dependant) as had been done in the launch SAR project in the Alouette (Mitchell, 2013).

Figure 3. Potential restoration sites: Upper Coquitlam River Park (upper) and Kwikwetlam wetlands (lower). Photos by Aimee Mitchell

5. Results

a. Historic and Current Species at Risk Occurrences

Records, both sensitive and non-sensitive, were obtained from the Conservation Data Centre (CDC). In addition, meetings were held with the Burke Mountain Naturalists, Friends of Deboville, local naturalists and other stakeholders to obtain any records they may possess as well as to discuss any priority species or indications of declines observed by them (**Figure 4**).

Currently, 18 occupied sites are known for Western Painted Turtles in the Lower Mainland/Fraser Valley, with nearly all of the populations in the region at risk of extirpation, with less than 20 individuals present (WPTRT, 2014; Mitchell et al., 2013). Of these 18 sites, seven exist in the Coquitlam Watershed. However only half of these were previously known up to the dates available with the CDC and since the inception of the Coastal Painted Turtle Project work beginning in 2009. Some Red-legged Frog and Pacific Tailed Frog observations appear to have been known but likely unreported in several areas. No CDC records were available noting the Western Toad observations that were gathered just prior and during this project. Great Blue Heron declines have been observed in the Coquitlam Watershed. Of the 6 colonies in and around the boundary of the Coquitlam Watershed only one remains active, the Mary Hill Colony. However, the size of the Mary Hill Colony has also been declining, particularly over the last 2 years.

Since the initiation of the project 25 new species at risk occurrences have been documented in the Coquitlam Watershed (**Figure 5**).

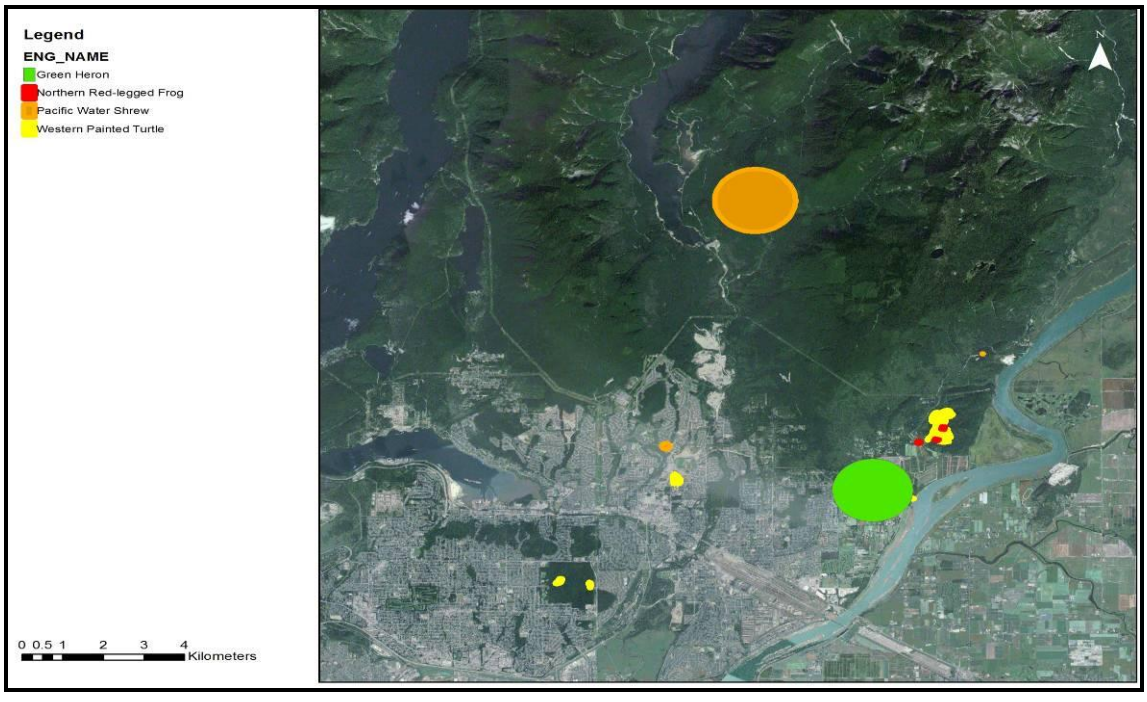

Figure 4. Existing Species at Risk Occurrences in the Coquitlam Watershed (prior to project inception)

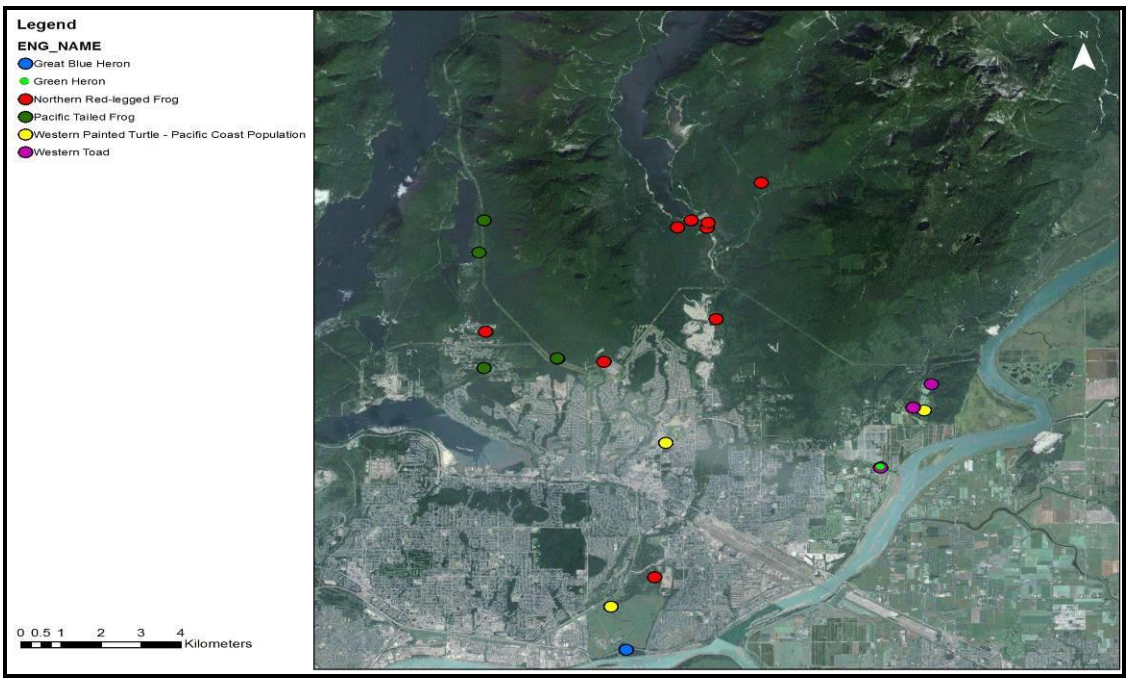

Figure 5. Current Species at Risk Occurrences in the Coquitlam Watershed (since project inception)

b. Species at Risk Surveys

Seventeen surveys for Western Painted Turtles were conducted at 13 sites for 73 person hours. Western Painted Turtles were confirmed at three sites in 2013; Colony Farm Regional Park, Minnekhada Regional Park and Lafarge Lake (Fig. 6 and Table 1). Thirty-seven surveys were conducted for Red-legged Frogs with detections at 10 sites; 3 in the lower watershed and 7 in the upper watershed, for 54 person hours (Fig. 6 and Table 1).

Western Toads were detected at 2 sites; Minnekhada Regional Park and Deboville Slough. Both an adult toad and >100 metamorphs (toadlets) were observed at Minnekhada, while a single adult toad was observed at Deboville Slough (Figure 7 and Table 1.). Thirteen sites for a total of 76.5 person hours were visited at ideal times for detecting breeding, while another 25 (which were not accessible until late winter/early spring 2014) did not have toads detected but have potential to be breeding sites.

Surveys for Pacific Tailed Frogs were attempted to be conducted at 16 sites, however five sites were either seasonal or unable to be surveyed for some reason. Of the 11 sites with surveys conducted for 7.5 person hours, Pacific Tailed Frogs were detected at four (Fig. 8 and Table 1).

Figure 6. Western Painted Turtle basking on shore at Colony Farm Regional Park, July 2013 (upper) and close up shot of Red-legged Frog egg mass in Coquitlam MV Watershed, March 2014 (lower). Photos by Aimee Mitchell and Chris Currie.

Figure 7. Western Toad metamorph at Minnekhada upper marsh, August 2013 (upper) and Adult Western Toad at Minnekhada lower marsh, August 2013 (lower). Photos by Aimee Mitchell.

Figure 8. Pacific Tailed Frog habitat on east side of Buntzen Lake, October 2013 (upper) and Pacific Tailed Frog larvae in Monsom Creek, October 2013 (lower). Photos by Aimee Mitchell.

In collaboration with the Heron Working Group, nesting monitoring was conducted in spring 2013 at the only known active Great Blue Heron nesting colony in the Coquitlam Watershed, the Mary Hill Colony, just south of Colony Farm Regional Park. Monitoring was conducted through this group by Dan Shervill (provided in-kind) of the Canadian Wildlife Service as part of yearly monitoring conducted at all active heron nesting colony in the Lower Mainland and Sunshine Coast and by contractors hired to monitor highway construction affects. In 2013, monitoring detected low fledging success of the 102 nests present. This is largely assumed to be related to the construction of the Port Mann Bridge and some birds from this colony are believed to have established a new colony at Deer Lake in Burnaby. No new colonies were detected in this project year, however, over 10 observations of herons were provided to members of the project through stewardship initiatives. In addition, herons were incidentally observed at six survey sites (Fig. 9 and Table 1).

Figure 9. Great Blue Heron Foraging at Lower Coquitlam River Park – Oxbow Restoration. Photo by Aimee Mitchell.

Overall, surveys were conducted at 51 locations throughout the watershed over the project year (April 2013-March 2014). This survey effort covered the expanse of the watershed with the exception of the far north portion past Coquitlam Lake due to snow cover that restricted access to this area at the time permission was granted to access this portion of the watershed (Fig. 10 and Table 1).

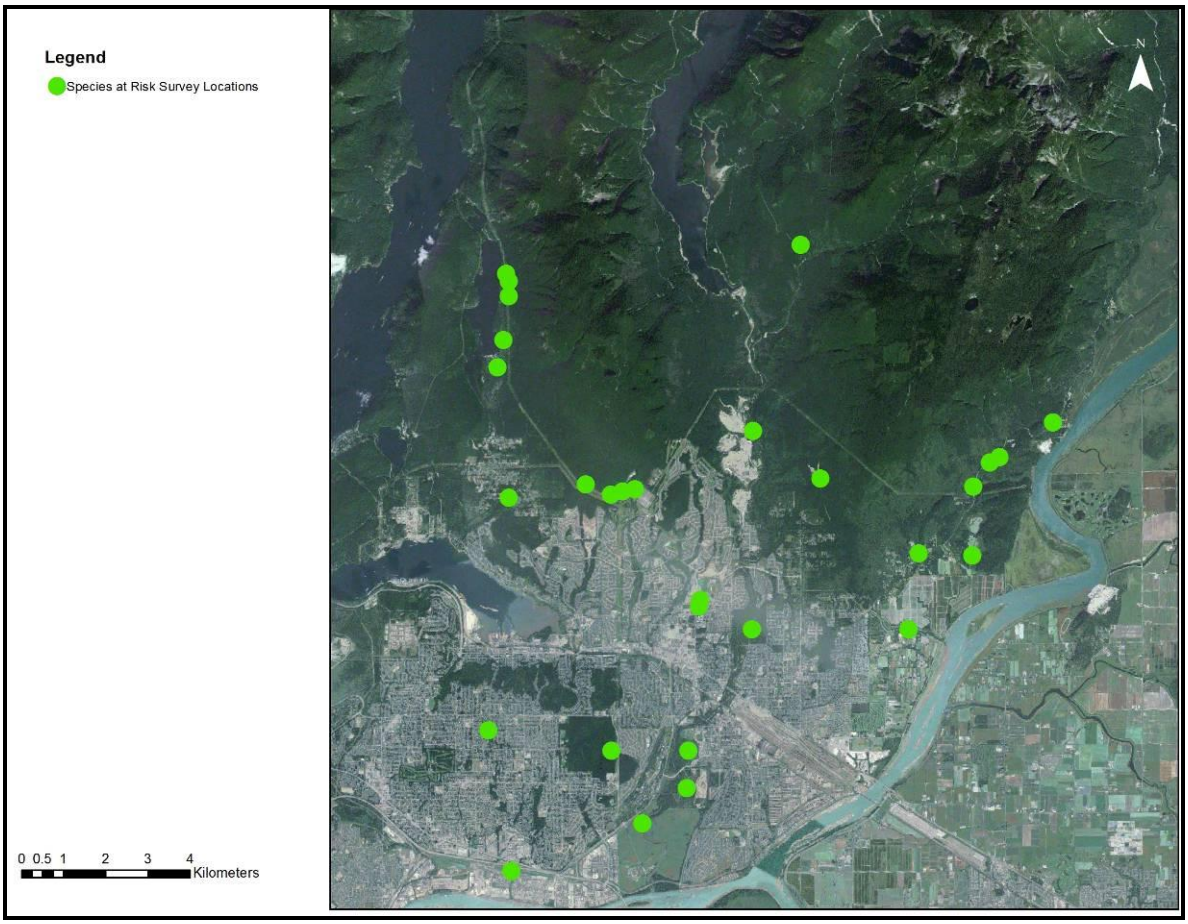

Figure 10. Sites surveyed for Western Painted Turtle and Amphibian SAR in the Coquitlam Watershed in 2013-14

c. Sites for potential restoration

Sites for potential restoration noted in year 1 included, Upper Coquitlam River Park (observation of Red-legged Frog breeding), Lower Coquitlam River Park (Great Blue Heron observed, possible Red-legged Frog Breeding habitat), Eagle Mountain Park (Red-legged Frog breeding confirmed, Western Toad breeding likely), Kwikwetlam Wetlands (Red-legged Frog confirmed breeding site and prior Western Painted Turtle observation) and Colony Farm Regional Park (Great Blue Heron foraging site, Western Painted Turtle occupied site). Restoration activities planned would vary from site to site depending on habitat and species observations and also could range from a cooperative effort with other projects (i.e., ensuring Red-legged Frog breeding habitat is maintained when conducting works at Upper Coquitlam River Park) or undertaking novel restoration (conducting turtle habitat enhancement at Kwikwetlam wetlands; removal of invasive species and installation of nesting habitat).

Table 1. Survey summary for Species at Risk in the Coquitlam Watershed in 2013-14

Site/Location Name	Easting	Northing	CHPI confirmed	TRSC-E confirmed	RAAU confirmed	ANBO confirmed	ASTR Confirmed	GBHE Confirmed
Minnekhada Regional Park	521830	5460540	Y	Y	Y*	Y	-	Y
Lower Coquitlam River Park - Oxbow restoration	516598	5458784	X	X	Y?	X	-	Y
Deboville Slough-Mclean Creek-ditch to WMA	520311	5458796	Y*	Y	X	Y	-	Y
Como Lake	510332	5456385	Y*	Y	X	X	-	X
Mundy Lake	513246	5455907	Y*	Y	Y*	X	-	X
Lost Lake	515330	5459339	Y*	Y	X	X	-	X
Lafarge Lake	515358	5459492	Y	Y	X	X	-	X
Como Creek - 3 locations	510875	5453051	Y*	X	X	X	-	-
Kwikwetlam Wetlands	515041	5455023	Y*	X	Y	X	-	Y
Colony Farm - Kwikwetlam Band Office to Sheep Paddocks	513983	5454174	Y	X	Y*	X	-	Y
PoCo Trail Tremblay ponds - Coquitlam River pools	515085	5455911	X	X	X	X	-	X
Quarry Road	521855	5462181	-	-	-	X	-	-
East of Buntzen Rec Area - Buntzen Creek	510547	5465015	-	-	-	-	X	-
At end of Eagle Mtn Road and hike along hydro road	513517	5462066	-	-	-	-	X	-
Noons Creek	513244	5461986	-	-	-	-	X	-
West Noons Creek	512636	5462230	-	-	-	-	Y	-
Partington Creek	520557	5460590	-	-	-	-	X	-
McIntyre Creek	522248	5462754	-	-	-	-	S	-
Diener Creek	522477	5462878	-	-	-	-	S	-
Munro Creek	523749	5463704	-	-	-	-	X	-
Burke Mtn - Near Provincial Park Gate	518223	5462372	-	-	-	-	X	-
East side of Buntzen Lake - km 0.5	510681	5465664	-	-	-	-	Y	-
East side of Buntzen Lake - km 1.5	510813	5466699	-	-	-	-	Y	-
East side of Buntzen Lake - km 2.2	510809	5467056					S	
East side of Buntzen Lake - km 2.9	510754	5467242					X	
Monsom Creek	510808	5461921	-	-	-	-	Y	-
Eagle Mountain Park	513808	5462115	X	X	Y	X	X	X
Upper Coquitlam River Park	516613	5463509	X	X	Y	X	-	X
Coquitlam MV Watershed - 23 locations	517747	5467927	-	-	Y	X	-	Y

CHPI = Western Painted Turtle, TRSC-E = Red-eared Slider (non-native), RAAU = Red-legged Frog, ANBO = Western Toad, ASTR - Pacific Tailed Frog, GBHE = Great Blue Heron

Y*- previously confirmed but not during project, Y - confirmed during project, X - surveyed but not detected, S - Seasonal creek and '-' Not suitable to survey for species/not surveyed.

Indicates important documented sightings

d. Partnership building and Species at Risk Stewardship

Since the inception of the project multiple partnerships have been formed. In attempts to partner and coordinate on any works that have occurred or will potentially occur in the Watershed, connections have been made with: the Kwikwetlam First Nations, the Burke Mountain Naturalists, The Friends of Deboville, City of Coquitlam, Department of Fisheries and Oceans, Metro Vancouver Parks, South Coast Conservation Program, BCIT Fish and Wildlife Program, local naturalists, private landowners and others (See Appendix IV and Figs. 11 and 12).

Figure 11. Species at Risk Partnership building and Stewardship; Kwikwetlam First Nations members assisting with surveying in Kwikwetlam wetlands, July 2013. Photo by Aimee Mitchell

Figure 12. Species at Risk Partnership building and Stewardship; training with BCIT Students at Lower Coquitlam River Park (upper) and attendance at City of Coquitlam Canada Day Event at Lafarge Lake (lower). Photos by Aimee Mitchell

6. Discussion

An increase in Species at Risk (SAR) occurrences in the Coquitlam Watershed has already been observed in the first year of the project. With SAR occurrences identified, partners and others working in the watershed can now become more aware of species presence and consider them and their habitat into the works, whether it is restoration or development. Success has already been displayed in the project with the various partnerships that have been formed, communications opened and commitments made to working towards common multi-species approach to conservation.

7. Recommendations

The Western Painted Turtle Recovery Team is currently proposing augmentation (via head-started hatchlings) for turtle populations with high risk of extirpation. All sites in the Coquitlam Watershed fall under this category. Future works and management at these occupied sites should considered turtles and promote habitat improvements to provide for a potentially augmented and recovering population of Western Painted Turtles suitable and safe habitat to thrive. This involves construction, enhancement and/or maintenance (such as at existing sites of Colony Farm Sheep Paddocks and Minnekhada Regional Park) of nesting and basking habitat. Interpretive signage at any recovery site is also highly recommended.

Species at Risk Amphibians have varying specific recommendations depending on habitat, but overall protection and monitoring of identified breeding habitat is critical. Although there are several observations for Red-legged Frog breeding sites, they are easily impacted by development (draining or filling of ponds) and road maintenance. It is recommended that ditch cleaning avoid breeding times for Red-legged Frogs. This recommendation was already considered and employed at the Coquitlam MV Watershed sites. Minnekhada is the only known breeding site for Western Toads in the watershed and should be monitored closely. Pacific Tailed Frogs, particularly adults which have limited data collected on them, should be considered in logging activities and maintenance of hydro roads. While breeding streams are often identified and provided some consideration, the surrounding terrestrial habitat where adult inhabit is often not included when making land use/management decisions. Adult spend the majority of the life terrestrially and are known to travel close to 200 m from their breeding streams.

Current management recommendations for Great Blue Herons in the Coquitlam River Watershed are focused on the Mary Hill Colony, the only currently active site in the watershed. However, because disturbance was a factor versus habitat change, the only real recommendation is to continue monitoring this site post-disturbance. If other factors come to light following monitoring, then those should be addressed in the best way possible. Further reporting of Heron nesting (and other SAR) observations are encouraged through the SCCP (http://www.sccp.ca/)

Sites with potential for restoration should be shared with partners and stewards to ensure the observations made during this study are being considered in continuing or future work and management decisions.

8. Acknowledgements

Partners/Supporters:

The project was made possible by funding of BC Hydro's Fish and Wildlife Compensation Program. In addition to inspiring the model the proposal for this project was built on, Kym Welstead, the Species at Risk Biologist at the Ministry of Forest, Lands and Natural Resource Operations (MFLNRO) for the South Coast Region, provided in-kind project advisement. Kym Welstead has also provided direction, contacts, field support and information on the species at risk occurrences in the Watershed. The British Columbia Conservation Foundation (Joanne Neilson and Kerry Baird) provided administrative support for this project, including co-coordinating various members of the project in terms work contracts and reporting.

The Kwikwetlam First Nations, including Craig Orr, has provided support and coordination. Two Kwikwetlam Band Members, Carl and Marvin, enthusiastically surveyed Colony Farm and their local wetland (Kwikwetlam wetlands) which they had never ventured in by boat. Through this project these members were able to use their traditional territory in culturally-significant way, canoeing.

The South Coast Conservation Program (SCCP) provided a variety of information of species at risk such as presented in Factsheets. Tasmin Baker, who was hired as the Stewardship Coordinator for this project also worked cooperatively with the SCCP through another project sponsored by Habitat Stewardship Program.

The Burke Mountain Naturalist, Colony Farm Park Association and Friends of Deboville (primary contact Elaine Goulds) provided any species records they possessed and provided valuable information on any priority species or indications of declines observed by them. These groups also provided important contacts in terms of projects they had previously worked cooperatively on or intended to work on in the watershed, helping direct the development of the Sites for potential restoration list.

Alison Evely of Metro Vancouver Parks has been extremely helpful in providing access and expressing interest in cooperative efforts for restoration at their sites in the Watershed. City of Coquitlam (Caresse Selk) has provided support in terms of providing contacts, sighting information, working cooperatively on SAR sign installation and expression of interest in coordinating restoration at assessed sites in Municipal Parks.

Ken Juvik and Mike Mayers of the MV Coquitlam Watershed along with many other staff members were extremely helpful in providing reports and mapping information as well as assistance with surveys.

***Research**:*

Christopher Currie of the Coastal Painted Turtle Project (CPTP) contributed to survey efforts for turtles and SAR amphibians. In addition, Christopher Currie, Aimee Mitchell, Andrea Gielens, Deanna MacTavish, Justin Suraci and Vanessa Kilburn of the CPTP, primarily sponsored through *Habitat*

Stewardship Program (HSP) funding, contributed background survey information and links to outreach and restoration initiatives at the currently Western Painted Turtle occupied sites in the watershed.

Dan Shervill of the Canadian Wildlife Service Canada (CWS) and in cooperation with the Great Blue Heron Working Group, provided background survey and population baseline data for the currently known and active heron colony (Mary Hill). Ross Vennesland, of Parks Canada, and Kym Welstead, of the BC Ministry of Forests, Lands and Natural Resource Operations, provided historical and recent monitoring data on the Mary Hill Colony and advice on behalf of the Great Blue Heron Working Group. Chris Lee, of Aquaterra, also contracted to conduct some heron monitoring and part of the GBHWG provided updated colony monitoring data and also provided other SAR occurrence observations in the watershed.

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Appendix II: Performance Measures-Actual Outcomes

Performance Measures

Using the performance measures applicable to your project, please indicate the amount of habitat anticipated to be restored/enhanced for each of the specified areas (e.g. riparian, tributary, mainstream). The same table will be used in the final report to summarize project results.

Performance Measures – Target Outcomes													
Project Type	**Primary habitat benefit targeted of project (sq.m.)**	**Primary Target Species**	Estuarine	In-stream Habitat – Mainstream	In-stream Habitat – Tributary	Riparian	Reservoir Shoreline Complexes	Riverine	Lowland Deciduous	Lowland Coniferous	Upland	Wetland	**Other**
Impact Mitigation													
Fish passage technologies	Area of habitat made available to target species		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Drawdown zone revegetation/ stabilization	Area turned into productive habitat		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Wildlife migration improvement	Area of habitat made available to target species		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Prevention of drowning of nests, nestlings	Area of wetland habitat created outside expected flood level (1:10 year)		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Habitat Conservation													
Habitat conserved – general	Functional habitat conserved/replaced through acquisition and management	Red-legged Frog	☐	☐	☐	☐	☐	☐	☐	☐	☐	☒	Northwestern Salamander
Habitat conserved - general	Functional habitat conserved by other measures (e.g. riprapping)		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Designated rare/special habitat (subset)	Rare/special habitat protected	Western Painted Turtle	☐	☒	☒	☒	☐	☒	☐	☐	☐	☒	Western Toad, Red-legged Frog, Great Blue Heron

Performance Measures – Target Outcomes - Continued													
Project Type	Primary habitat benefit targeted of project (sq.m.)	Primary Target Species	Estuarine	In-stream Habitat – Mainstream	In-stream Habitat – Tributary	Riparian	Reservoir Shoreline Complexes	Riverine	Lowland Deciduous	Lowland Coniferous	Upland	Wetland	Other
Maintain or Restore Habitat forming process													
Artificial gravel recruitment	Area of stream habitat improved by gravel placement		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Artificial wood debris recruitment	Area of stream habitat improved by LWD placement		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Small-scale complexing in existing habitats	Area increase in functional habitat through complexing		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Prescribed burns or other upland habitat enhancement for wildlife	Functional area of habitat improved		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Habitat Development													
New habitat created	Functional area created		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
Other													
Identification, monitoring	Habitat area of occupation known	Western Painted Turtle, GB Heron	☒	☒	☒	☒	☐	☒	☒	☒	☒	☒	
		Red-legged Frog, Tailed Frog	☐	☐	☒	☒	☐	☐	☐	☐	☐	☒	
		Western Toad	☐	☐	☐	☒	☐	☒	☐	☒	☐	☒	
			☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

Appendix III: Confirmation of FWCP Recognition
(See Appendix IV for signage, brochure and media coverage)

Appendix IV. Species at Risk in the Coquitlam Watershed Stewardship Summary – Tamsin Baker

Summary of the Coquitlam River/Buntzen Lake Watersheds Species At Risk Project: Stewardship Activities 2013-14

Report Prepared by

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South Coast Conservation Program Stewardship Coordinator

March 2014

Report Prepared for:
BC Conservation Foundation and BC Hydro's Fish and Wildlife Compensation Program

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FISH AND WILDLIFE COMPENSATION PROGRAM

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Executive Summary

The stewardship component of the Coquitlam River/Buntzen Lake Species at Risk (SAR) project raised awareness about local endangered species in the following ways. Local stewardship organizations were contacted, public SAR signage in City of Coquitlam parks was created, local media were contacted, and a SAR brochure for the Tri-Cities Area was designed and printed. Additionally, information was compiled about local environmental projects and SAR sightings. Contact with local environmental groups and the public encouraged additional sightings of SAR, with a focus on the nesting Great Blue Herons.

Stewardship Initiative

Purpose

As part of the Coquitlam River/Buntzen Lake Species at Risk project, this stewardship initiative was to prevent inadvertent losses of population and habitat for species at risk (SAR) through increased awareness and improved accessibility to data. Targeted species included the Western Painted Turtle, Red-legged Frog, Western Toad, Coastal Tailed Frog, Western Screech Owl, Pacific Water Shrew and Great Blue Heron.

Results

Contacted Local Stewardship Organizations and Individuals:

The main messages were:

- Introduction to the local SAR that may be present.
- Inquiry if they have any recent recordings of SAR (not already reported).
- To be on the lookout for SAR and to encourage the recording and reporting of any possible sightings
- If they are undertaking any projects that may impact local SAR populations, and if there are any projects where activities can occur to support the recovery of SAR.

A spreadsheet was created to list the local stewardship initiatives.

Groups contacted:

- Friends of DeBoville Slough – PowerPoint presentation given at February meeting and arranged for heron poster to be put up in kiosk.
- Hoy/Scott Creek Streamkeepers – PowerPoint Presentation given at January meeting and delivered heron poster to be put up at hatchery location.
- Burke Mountain Naturalists – Outreached in person to various members, and included a detailed article in their February 2014 newsletter
- Maple Creek Streamkeepers – Contacted through email. Possible Red-Legged Frog habitat.
- Riverview Horticultural Society – Tour of site and transfer of information
- Colony Farm Park Association (Wildlife Committee) – Contacted to discuss heron count.
- Coquitlam River Watershed Roundtable – Participated in June 2013 meeting.

- Watershed Watch Salmon Society (Craig Orr) – Made inquiry regarding past and existing projects.
- Hyde Creek Watershed Society – Outreached in person at community event and delivered heron poster at hatchery.
- Coquitlam River Watch – Outreached via email to explore sharing of SAR sighting information.

Other individuals contacted:

- Maurice Coulter-Boisvert: DFO, Salmonid Enhancement Community Advisor
- Dave Nanson, DFO
- Mike Pearson, Biologist
- Chris Lee, Biologist
- Niall Williams, local naturalist, affiliated with multiple initiatives
- Kiyoshi Takahashi, local naturalist, affiliated with multiple initiatives

Community Events Participation:

- Canada Day in Coquitlam (Lafarge Lake)
- Salmon Come Home in Coquitlam (Hoy creek) – October 2013

South Coast Conservation Program (SCCP) partnership

The SCCP works to facilitate the conservation and restoration of species and ecosystems at risk on BC's South Coast. Partnering with the SCCP increased the ability to outreach to various groups and individuals in the Tri-Cities. The SCCP's website and general contact email was used to encourage individuals to find out more information about this project and to report SAR sightings. The SCCP is currently undertaking a Landowner Contact Program in the Lower Mainland/Fraser Valley, which encourages landowners to protect and enhance wildlife habitat in their backyard. One site visit on private land resulted in the follow-up monitoring of possible Red-legged Frog habitat for this project.

Local Government

Contact was also made with various local government staff. I worked with the City of Coquitlam staff to raise awareness and on creating and installing signs in several parks. Metro Vancouver Regional Parks staff at Colony Farm was contacted primarily to discuss the Great Blue Herons nesting. Information was also passed along to the Environment committee for the Village of Anmore. The resulting SAR brochure was distributed to all five City Halls and respective staff.

Signage

The City of Coquitlam agreed to put signs regarding SAR in several of their parks. The text and photos were provided, and the City's designers created the signs. Printing was paid for by the FWCP. The resulting signs are to be put up at four locations: Mundy Lake, Lost Lake, DeBoville Slough and Coquitlam River Park. See Figures 1 and 2.

Figure 1: Horizontal sign designed for City of Coquitlam parks.

Figure 2: Vertical sign designed for City of Coquitlam parks.

Brochure

With edits from the SCCP and the Canadian Wildlife Service, the resulting brochure was created (see Figure 3). 2600 were printed. Distribution occurred to various local stewardship groups and local government.

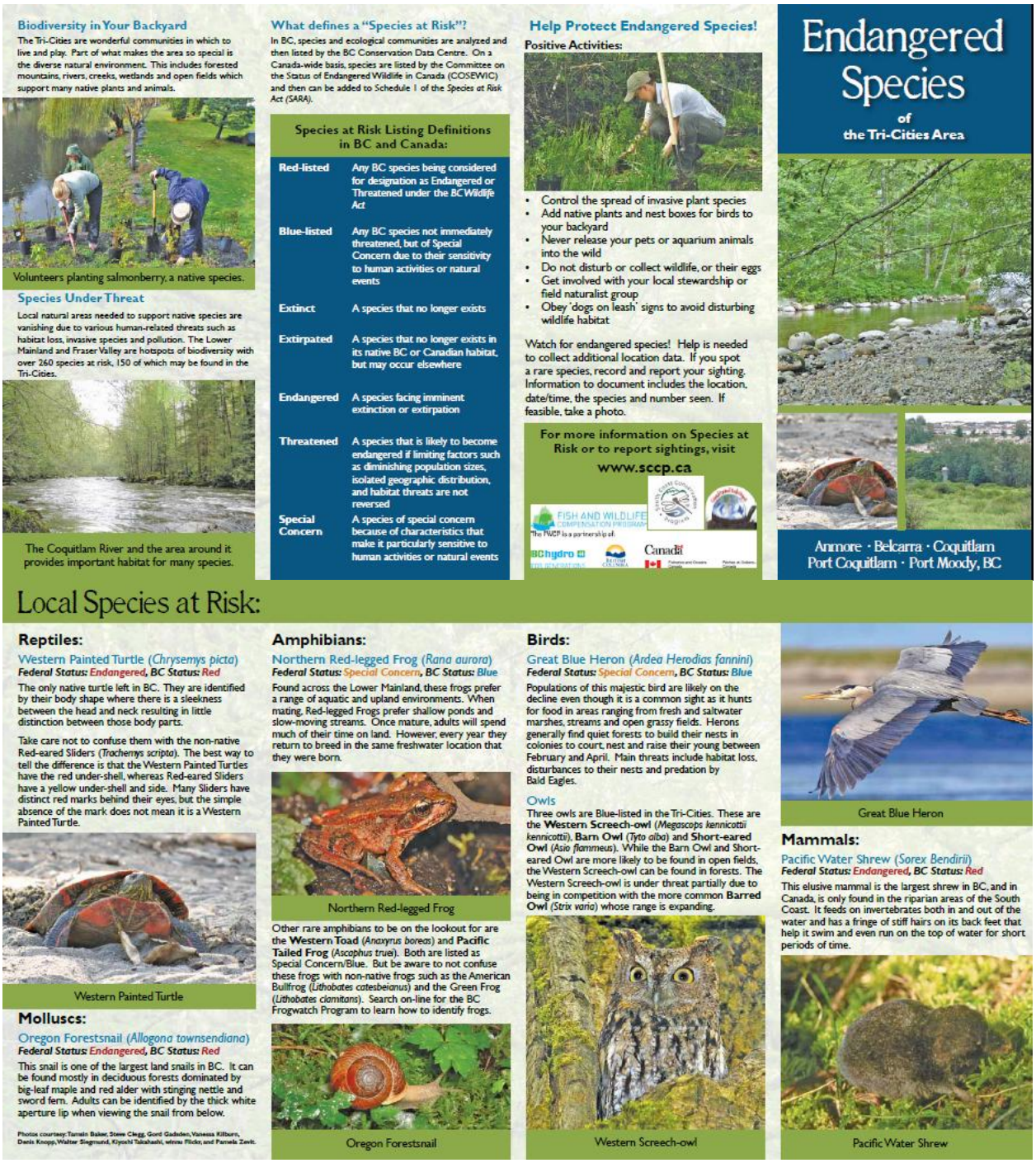

Figure 3: Endangered Species of the Tri-Cities Area brochure

Species at Risk sightings

The Great Blue Heron used to have several colonies in the Tri-Cities. Most recently, it appears as though the last known nesting area (near Colony Farm) has also been abandoned. To discover unknown nesting sites and to encourage the participation of the local stewardship groups and the public, an effort was made to encourage new sightings of heron nests (as well as other endangered species). A poster was created and distributed, a press release was sent out, and the initiative was mentioned in the article

published by the Burke Mountain Naturalists. See Figure 4. The SCCP website was the main source for additional information. 16 SAR sightings were made, with the majority of them being Great Blue Herons. Unfortunately none of the sightings resulted in new nests being found in the Tri-Cities area. However, the high level of community interest and support was one positive outcome.

Figure 4: Poster distributed to encourage sightings of nesting Great Blue Herons

Media Stories

The following are links to the stories that were published about this project.
Tri-City News: http://www.tricitynews.com/community/252330921.html

Anmore Times (March 2014 Print edition, p.13): https://docs.google.com/file/d/0B-MZnkyJ2P-0UTNEN0dFZ3VnblU/edit?pli=1
In addition, I did a 5 minute interview on the CBC Radio 1 Vancouver program *The Early Edition* on March 27, 2014 regarding the issue of the missing herons in Coquitlam.
http://www.cbc.ca/player/Radio/Local+Shows/British+Columbia/ID/2445017613/