

2013 SURVEYS FOR VANCOUVER ISLAND BEGGARTICKS (*Bidens amplissima*) IN
THE LITTLE CAMPBELL RIVER WATERSHED



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Executive Summary/Abstract

Basic distributional surveys and population counts are a critical first step in understanding the habitat preferences of, threats to, and potential management strategies or conservation measures for rare plant species. Vancouver Island Beggarticks (*Bidens amplissima*, VIBT) is an annual herbaceous flowering plant in the family *Asteraceae* found in a variety of wetland habitats in British Columbia and Washington State. It is a regionally Blue-listed species (BC Species & Ecosystems Explorer, 2013) and is listed as a Species of Special Concern under Canada's *Species at Risk Act* (SARA Registry, 2013).

In 2013, surveys were conducted to collect distribution and abundance information for VIBT in the Little Campbell River watershed, east of White Rock, BC. The surveys build upon a broader survey conducted in 2008 by Lee & Gebauer (2008) that included several sites in the watershed. Surveys were conducted both at sites where VIBT was previously identified during the 2008 survey and at potential sites not yet surveyed within the watershed. During the course of the survey, VIBT were found in two of the three surveyed locations. The project builds a more complete picture of the status and trends for VIBT in the watershed and highlights the need for further surveying to continue this work. Further study of identified populations is recommended in order to monitor the population trends and habitat changes. Increased knowledge pertaining to the variables affecting the distribution of Vancouver Island Beggarticks has the potential to aid and improve management strategies for Little Campbell River watershed and this rare species.

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Photo by Christina Lee, Vancouver Island Beggartick at the Western Toad Pond, 16th Ave Surrey, BC.

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Introduction

The Vancouver Island Beggarticks (*Bidens amplissima*, VIBT) is an annual herbaceous flowering plant in the family *Asteraceae*. It is very similar both genetically and morphologically to a number of other species including Nodding Beggarticks (*Bidens cernua*) and Three-parted Beggarticks (*Bidens tripartita*), both of which have similar habitat preferences (Zevit & Fairbarns, 2010). VIBT can grow to between 50 and 100 cm in height, producing relatively few and large flower heads (2.5–3.5 cm) bearing 6 to 11 ray florets that are bright yellow in colouration (Ganders et al., 2002; Klinkenberg & VANCOUVER ISLAND BEGGARTICK DISTRIBUTION IN THE LITTLE CAMPBELL

Klinkenberg, 2001). It is a wetland species found at the edges of rivers, creeks, ponds, lakes and marshes where there is seasonal fluctuation in water levels (Ganders et al., 2002). Generally the species blooms from late August to early September (or late summer to early autumn) and is found mainly in the wetland sites that are most frequented by waterfowl, which are thought to be the predominant means of seed dispersal (Ganders et al., 2002). The VIBT was initially thought to be endemic to coastal areas of British Columbia, but has recently been identified in adjacent areas of Washington (Klinkenberg & Klinkenberg, 2001). It is provincially Blue-listed (BC Species & Ecosystems Explorer, 2013) and has been listed as a species of Special Concern under the federal Species at Risk Act (SARA Registry, 2013) having been recently downgraded from Endangered due to the discovery of more populations.

The species was previously surveyed on a large scale across the lower mainland of BC in 2008 (between August 26th and October 16th) by Gebauer and Associates Ltd. for BC Ministry of Environment (Lee & Gebauer, 2008). During the 2008 survey, VIBT was identified in eight of the 17 survey locations prioritised. These locations were given priority because they had records of recent VIBT occurrence and were easily accessible (Lee & Gebauer, 2008).

This project aimed to collect distribution and abundance information on VIBT in the Little Campbell River watershed, building upon information from the 2008 survey in which two potential VIBT sites were identified in the little Campbell River watershed, one of which contained VIBT. The project specifically focuses upon the area of the Little Campbell River watershed, with new surveying being conducted both at historic sites of VIBT occurrence identified during the 2008 survey and at potential sites not yet surveyed within the watershed. The project is crucial for building a more complete picture of the status and trends for VIBT in the watershed. This will help ensure that VIBT is adequately protected in the watershed. Furthermore it is hoped that the findings of this project will be integrated into broader conservation plans for the species as a whole; raising awareness of the existence of VIBT in previously un-surveyed locations and allowing for suitable action to protect it in areas where it is threatened either by human activities or otherwise. Additionally the project may help to increase understanding of the habitats in which VIBT best flourish, providing valuable insights for future habitat stewardship or restoration projects.

Methods

Site Selection

The focal area of this survey was the Little Campbell River Watershed. The 2008 study (Lee & Gebauer, 2008) identified two historical sites of VIBT populations within the watershed: one at Latimer Lake in Latimer Lake Park (south of 28th Avenue and east of the crossroads with 192 St) and one along the mainstem of the Little Campbell River in Peace Portal Golf Course (upstream of Highway 99). Of these two sites, only the Latimer Lake site was found to be occupied by VIBT in 2008 (Lee & Gebauer, 2008). Local knowledge and air photo interpretation were used to identify other potential sites of suitable habitat. Of these new sites, McLean Pond in Campbell Valley Regional Park (south of 16th Avenue, between 200 and 208 St) was prioritized due to a proposed restoration program aimed to aid the native Painted Turtle, Pacific Coast population (*Chrysemys picta*) and the consequent need to document the presence of other rare species in order to mitigate any potentially negative impacts. The historical site at Latimer Lake was also of high priority having been previously occupied by a large population in 2008. Of the remaining identified sites, the Western Toad Pond (north of 18th Avenue, near 197a St) was visited first due to the clear presence of suitable habitat as well as A Rocha's longstanding good relationship with the neighbors of the site providing easy access. Of the seven identified sites (see Appendix 3 for list with UTM coordinate locations), three were surveyed comprehensively. The other sites are not yet surveyed due to limited time for surveying during the appropriate VIBT growing season.

Survey Methods

Surveys took place from 20–26 September 2013. At each selected site, a method of surveying recommended by Lee & Gebauer (2008) was used, also described on E-Flora BC (Penny & Klinkenberg, 2013) and by the Alberta National Plants Council (Achuff et al., 2000). This floristic surveying methodology aims to achieve a survey of the entire site, rather than sampling of the site. This better suits rare plant surveying due to the often scattered and disparate growth of rare plants within a study site (Penny & Klinkenberg, 2013). The surveying team, ranging from 3 to 5 in number, used a combination of meander searching to locate areas of the site within which the species was thought to be present, and more systematic patterned traversing searches within these identified areas to ensure complete coverage of the areas. A GPS device (Garmin

GPSmap 60) was used to record and mark the locations of each identified population. In one case, a printed map was used instead and location coordinates were calculated subsequently. Height range (cm) and occurrence of VIBT plants, substrate type, immediate habitat type, and photographs were also recorded for identified populations. General habitat was additionally described for each surveyed site.

GPS locations were uploaded into ArcMap (9.1) to produce the maps of each survey site. A table was also produced in Microsoft Excel (2010) to record information about each of the surveyed sites.

Species Identification

As noted previously, VIBT is very similar morphologically to Nodding Beggarticks (*B. cernua*) and Three-parted beggarticks (*B. tripartita*). As such, positive identification of the species can be challenging. A collection of fact sheets, guide books, and papers containing written descriptions, as well as photographic descriptions on E-Flora BC, were used prior to surveying in order to become familiarized with the various appearances of VIBT and the similarities and differences between the three species in question (see Appendix 2 for list of relevant literature and Appendix 1 for further information about VIBT identification).

Results

Vancouver Island Beggartick Survey Results, Known Locations

For a detailed map showing specific locations of plants and the numbers of plants found at each location, please contact us at conservation@arocha.ca.

Site 1: Latimer Lake Park, Surrey

This site was located south of 28th Avenue, east of its intersection with 192 St. On 20 September 2013, 580 VIBT were observed either in flower or post flowering.

The pond itself is a flooded former gravel pit that has been turned into a City-owned nature park. The area is surrounded by roads and sites of new development. There are paths around the pond and a car park at the northern edge of the site. The area is clearly used for a number of recreational activities: three dog walkers and two fishermen were observed during the survey.

The vegetation immediately surrounding the edge of the pond is a mixture of mosses, grasses and shrubby plants. The surrounding woodland consists of coniferous and deciduous trees and some willow woodland. The pond fluctuates with season and, during the survey, water levels were at their lowest point. The substrate is classified as mainly sands, mud, fine gravel, and organic matter; much of the area was boggy and waterlogged.

Location 1a – *No. of VIBT plants = 3*

Three VIBT were located clustered together amongst the grasses and mosses close to the water edge on the western lake side. Thirteen *B. tripartita* were also located in the immediate area, but were less robust in appearance than the VIBT plants. Nevertheless all VIBT were small with heights ranging from 15 to 25 cm.

Location 1b – *No. of VIBT plants = 12*

VIBT were located on the western side of the lake in a more southerly location. Again, they were located amongst the grasses and mosses close to the water edge in close proximity to approximately 30 *B. tripartita*. The tallest VIBT at the site were located here. Heights ranged from 15 to 30 cm.

Location 1c – *No. of VIBT plants = 1*

A single VIBT plant was located growing in conditions similar to those above, again on the western side of the lake but in a more southerly position. Again 15 *B. tripartita* were identified nearby, some of which were extremely small and spindly.

Location 1d – *No. of VIBT plants = 138*

A Large group of VIBT was located on the northern lake side in an area of grasses and small willow shrubs. Heights ranged from 10 to 30 cm.

Location 1e – *No. of VIBT plants = 106*

Another large group of VIBT was located on the northern lake side in an area of grasses and small willow shrubs. Heights ranged from 10 to 30 cm.

Location 1f – *No. of VIBT plants = 197*

A large group of VIBT was located to the southeast of the lake in an area of grasses and small willow shrubs. Heights ranged from 10 to 25 cm.

Location 1g – *No. of VIBT plants = 121*

Another large group of VIBT was located to the southeast of the lake in an area of grasses and small willow shrubs. Heights ranged from 10 to 25 cm.

Location 1h – *No. of VIBT plants = 2*

Two small VIBT plants were located to the southwest of the lake in an area of grasses and small willow shrubs. Heights ranged from 10 to 15 cm.

[Vancouver Island Beggartick Survey, Potential Locations](#)

Site 2: Western Toad Pond, Surrey

The site was located north of 18th Avenue, near 197a St. On 21 September 2013, 1880 VIBT were observed either in flower or post flowering. The majority were of the tri-lobed leaf variant. The area is surrounded by private housing properties with cultivated yards. There are fences running across the southern parts of the site giving some areas a more managed field-like appearance. There is a path around the pond and one dog walker was observed during the survey. A horse was also observed fenced-in on the northern side of the pond.

The vegetation and soil across the whole area is somewhat varied, with some areas of scrubby willow woodland, some of lush grasses, some of marsh grasses and some of less riparian deciduous woodland. The pond fluctuates greatly with season and was much reduced from previous levels, suggested by the patterns of vegetation growth. The substrate is classed as mainly sands, mud and organic matter; there are some boggy waterlogged areas while other areas are well-drained.

Location 2a – *No. of VIBT plants = 236.*

A large group of VIBT was found in a partly shaded opening in willow woodland area. The area consisted of predominantly grassy vegetation with some shrubby plants and VIBT. The soil was boggy and marshy. The plants were mostly tall and healthy in appearance. Heights ranged from 25 to 75 cm.

Location 2b – *No. of VIBT plants = 89.*

A group of VIBT was found at the edge of, and partly surrounded by, a willow woodland area. The area consisted of dense grassy vegetation and shrubby plants. The soil was somewhat boggy. The plants were in a late stage in which they had lost petals but were not nodding and appeared more robust than *B. tripartita*. Heights ranged from 20 to 50 cm.

Location 2c – *No. of VIBT plants = 583.*

A large group of VIBT was found within a fenced field to the southern side of the pond adjacent to the cultivated yard of a nearby property. There was relatively dry sandy soil, but lush grasses and shrubs covered approximately 75% of the area with VIBT growing well in these areas. Heights ranged from 10 to 60 cm.

Location 2d – *No. of VIBT plants = 466.*

A large group of VIBT was found close to the southernmost side of the pond. The substrate was generally moist but sandy. Areas of bare substrate or short grasses were present. The location had lush grasses growing on one side where the majority of the VIBT were located. No VIBT were located in the boggy areas of marsh grass immediately at the water's edge. Heights ranged from 10 to 40 cm.

Location 2e – *No. of VIBT plants = 400.*

VIBT were found clustered along the eastern shore of pond. The substrate was relatively boggy. The site was at the edge of the willow woodland and consisted of grasses and some shrubby plants. Plants were found both with and without petals. Heights ranged from 15 to 60 cm.

Location 2f – *No. of VIBT plants = 66.*

VIBT were found in low numbers scattered along the western shore of pond. The substrate was moist and earthier than in other areas. The area was mostly shaded by

large shrubs and birch trees. Plants were found without petals. Heights ranged from 10 to 35 cm.

Location 2g – *No. of VIBT plants = 40.*

Small clusters of VIBT were found in shaded areas of willow woodland on the eastern side of the lake. The substrate was moist. Some plants were found with petals, others without petals. Heights ranged from 10 to 30 cm.

Site 3: McLean Pond, Langley

This site was located south of 16th Avenue, between 200 and 208 St. On 26 September 2013, seven potential VIBT were observed and photographed. They were subsequently identified as *B. tripartita*. The area is across 16th Avenue from Campbell Valley Regional Park. The Little Campbell River borders the western side of the area; coniferous forest (predominantly Western Red Cedar) borders the northernmost edge; open rough grasslands border the southern side of the pond; whilst a mix of coniferous forest, Red Alder trees and a tree farm borders the eastern side. A path runs around the south-western, west and northern sides of the pond for the most part remaining well distant from the current pond edge, but coming within 5m of the pond at the northern edge. Two walkers were observed using the path during the survey. Riprap was present around parts of the eastern shore.

The vegetation and soil across the area is varied. In general the vegetation of the south-western edge of the pond was predominantly invasive Blackberry, Reed Canary Grass, and Yellow Flag Iris, although some areas more shaded by clusters of Red Alder trees provided locations in which VIBT could potentially grow. Similarly the north-eastern edge of the pond had a large amount of Reed Canary Grass, Blackberry and Yellow Flag Iris but the shade provided by the coniferous forest provided some areas within which VIBT could grow. The pond is made up of two parts that are joined together during wetter seasons. There was some indication of the edges of the pond fluctuating with season, with muddy areas left where the waterline had receded. Substrate was mostly dark, wet mud, with drier areas further back from the water edge.

The following locations document the presence of *B. tripartita* in the area, which may be of interest because the habitat preferences it shares with VIBT may enable its presence to be used as an indicator of the presence of suitable VIBT habitat.

Location 3a – *No. of B. tripartita plants = 2.*

Two *B. tripartita* were observed under the cover of a copse of Red Alder trees that shaded out the Reed Canary Grass and blackberries. The shade seemed to provide available habitat for grasses and other small plants as well as *B. tripartita*. The substrate was moist but not boggy. Heights ranged from 15 to 30 cm.

Location 3b – *No. of B. tripartita plants = 1.*

One *B. tripartita* was found in an area with similar characters to that of Location 1. It was 45 cm in height.

Location 3c – *No. of B. tripartita plants = 2.*

Two *B. tripartita* were found in the shade of deciduous trees in the presence of other small plants and mostly bare substrate and leaf litter. The substrate was moist but not boggy. Heights ranged from 25 to 35 cm.

Location 3d – *No. of B. tripartita plants = 2.*

Two *B. tripartita* were found again deeply shaded by a Red Alder copse, surrounded by Yellow Iris. The substrate was mostly bare and boggy. Heights ranged from 20 to 50 cm.

Discussion

Vancouver Island Beggarticks were found in two of the three survey locations. Of these two sites, one, Latimer Lake, had been surveyed previously (Lee & Gebauer, 2008).

Known Locations

During the 2008 surveying, 100 VIBT were identified at Latimer Lake (Lee & Gebauer, 2008). During this 2013 survey, 580 VIBT were identified in the same location. It is possible that the number of Vancouver Island Beggarticks may be rising at Latimer Lake, however it must also be noted that annual variation in climate and rainfall, amongst other factors, are likely to influence annual variation in populations (Lee & Gebauer, 2008). Additional monitoring of the Latimer Lake VIBT population is recommended in order to assess population distribution and abundance over several years.

Potential Locations

Five sites not surveyed previously were identified as potential VIBT locations. Of these, McLean Pond (Langley) and the Western Toad Pond (Surrey) were both surveyed. A healthy population was identified at the Western Toad Pond. In contrast, only *B. tripartita* was found to be present at McLean Pond where much of the area was overrun with invasive plant species. This suggests that the proposed restoration program aimed to aid native turtle species at the McLean Pond is extremely unlikely to harm any *B. amplissima* populations and may even facilitate future colonization by *B. amplissima* if the restoration program involves eradication of invasive plant species.

Future Directions

Further monitoring of the Western Toad Pond and Latimer Lake populations is recommended in order to determine the state of these populations, that is to say whether they are in decline, stable or increasing. Additionally, work should be done to determine any potential threats to these populations such as invasive plant species or human activities. It may also be of interest to continue to monitor McLean Pond over the course of the turtle restoration program to determine whether management of invasive plant species can facilitate future colonization by and healthy populations of *B. amplissima*.

Surveying the other newly identified potential locations (Appendix 3) as well as identifying more possible *B. amplissima* locations for survey using local knowledge and aerial photos will be crucial for adding to the utility and significance of this report.

It would be advisable for further surveying to be scheduled earlier on in the growing season to allow for successful surveying of a greater number of areas. It would additionally be of use to mark a number of positively identified VIBT and document their appearance throughout the year as this could greatly improve the ease of identification.

Further surveys and monitoring of VIBT are needed to enhance understanding of the distribution of Vancouver Island Beggarticks within the Little Campbell River watershed. Furthermore, increased knowledge as to the variables affecting the distribution of VIBT has great potential to aid and improve management strategies for this species in the watershed and for rare plant species in general.

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Appendix

Appendix 1: Guide to successful identification of Vancouver Island Beggarticks.

1. VIBT leaves can range between deeply tri-lobed (Appendix Figure 2) to unlobed (Appendix Figure 1). Nodding Beggarticks (*B. cernua*) leaves are always unlobed (Appendix Figure 3). Three-parted Beggarticks (*B. tripartita*) leaves are always tri-lobed (Appendix Figure 4).
2. In the presence of ray florets, if plant has tri-lobed leaves then it is VIBT. If plant leaves are unlobed then it may also be Nodding Beggartick and other characteristics must be used for distinguishing species. If plant flower heads nod as they age then plant is Nodding Beggartick, if plant flower heads do not nod as they age then plant is VIBT. Additionally, if leaves are 'strap-like', similar in width along entire length and slightly wider in the middle, plant is Nodding Beggartick (Appendix Figure 3). If leaves are widest at the base, tapering to a point then plant is VIBT.
3. In the absence of ray florets, if plant leaves are unlobed it may be either VIBT or Nodding Beggartick (refer to point 2. for key to identification). If plant leaves are tri-lobed it may be either VIBT (Appendix Figure 5) or Three-parted Beggarticks (appendix Figure 4). From general field observation and consideration of E-flora
4. BC photography it appears that Three-parted Beggarticks are of a less robust nature and this may be a distinguishing feature (Appendix Figure 4).
5. Achenes and shapes of flowerheads are also often described as distinguishing features, however at the time of this survey these features did not seem to help overly much, this may well be different for other surveyors.



Appendix Figure 1: Photograph of Vancouver Island Beggarticks (*B. amplissima*), Unlobed Variant, Latimer Lake Park by Stephanie Bryant.



Appendix Figure 2: Photograph of Vancouver Island Beggarticks (*B. amplissima*), Tri-lobed Variant, Western Toad Pond by Christina Lee.



Appendix Figure 3: Photograph of Nodding Beggarticks (*B. cernua*) by Jack Pine (Pine, 2008).



Appendix Figure 4: Photograph of Three-parted Beggarticks (*B. tripartita*), Latimer Lake Park by Patrick Lilley.



Appendix Figure 5: Photograph of Vancouver Island Beggarticks (*B. amplissima*) lacking ray florets, Latimer Lake Park by Patrick Lilley.

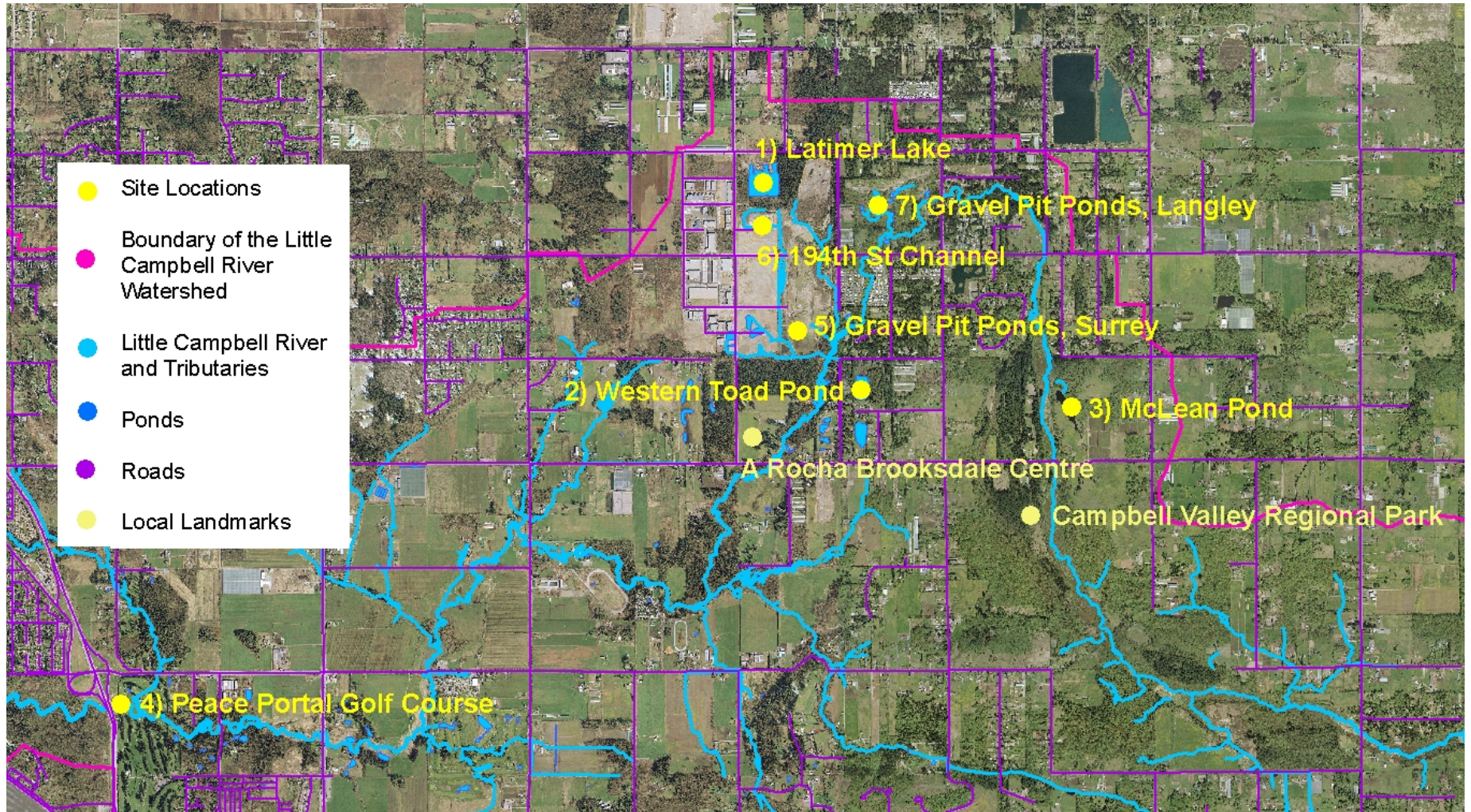
Appendix 2: List of Literature Used as Identification Aid

- 1) Develop with Care 2012: Environmental Guidelines for Urban and Rural Land Development in British Columbia Wetland Ways: Interim Guidelines for Wetland Protection and Conservation in British Columbia – Fact Sheet # 16. Vancouver Island Beggarticks. For more information: <http://www.env.gov.bc.ca/wld/BMP/bmpintro.html#second> (Accessed 22/10/2013).
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- 3) BC's Coast Region: Species & Ecosystems of Conservation Concern, Vancouver Island Beggarticks (*Bidens amplissima*). For more information: <http://www.geog.ubc.ca/biodiversity/factsheets/> (Accessed 22/10/2013).
- 4) E-Flora BC: Electronic Atlas of the Flora of British Columbia. For more information: <http://www.geog.ubc.ca/biodiversity/eflora/> (Accessed 22/10/2013).
- 5) The publications listed in the references also contain useful written descriptions.

Appendix 3: Table of Identified Potential Vancouver Island Beggartick Sites
for Surveying

Site Number	Name	Location	Surveyed (Y/N)	UTM Eastings (Zone 10)	UTM Northings (Zone 10)
1	Latimer Lake (Historical Site)	Latimer Lake Park. South of 28 th Avenue, east of crossroads with 192 St.	Yes	522769	5433135
2	Western Toad Pond	Brooksdale. North of 18 th Ave, near 197a St.	Yes	523540	5431564
3	McLean Pond	Campbell Valley Regional Park. South of 16 th Ave, between 200 and 208 St.	Yes	525146	5431421
4	Little Campbell River, Peace Portal Golf Course (Historic Site)	Peace Portal Golf Course, 4 th Ave, Surrey, upstream of Highway 99.	No	517802	5429097
5	Gravel Pit Ponds, Surrey	Ponds in City of Surrey Gravel Pit. Area bordered by 194 th St to the west, 196 th St to the east, 20 th Ave to the south and 28 th Ave to the north.	No	523049	5431894
6	194 th St. Channel	Channel starts 100m east of 192 St at 26 th Ave, runs east (along south of Latimer Lake) before turning south at 194 th St alignment, until meeting a large pond at 20 th Ave alignment that feeds into the Little Campbell River.	No	Start: 522643 End: 522931	Start: 5432958 End: 5431846
7	Gravel Pit Ponds, Langley	Ponds in Township of Langley Gravel Pit. Area bordered by 196 th St to the west, 200 St to the east, 24 th Ave to the south, and 28 th St to the north.	No	523771	5432867

Appendix 4: Map Showing the Seven Identified Potential VIBT Sites in Relation to the Little Campbell River Watershed and Local Landmarks (for scale note that road grid squares are approximately 800 m in length)



VANCOUVER ISLAND BEGGARTICK DISTRIBUTION IN THE LITTLE CAMPBELL RIVER WATERSHED