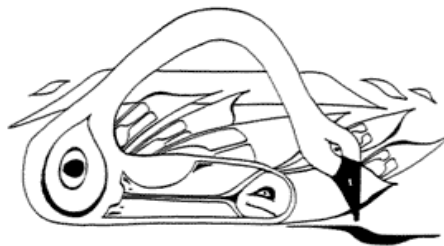


# Wetland Restoration Project Report 2013



Prepared by **Frank Hovenden**  
**Comox Valley Nature** (Comox Valley Naturalists Society)

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## 1 Acknowledgements

Our efforts to remove invasive plants and restore habitat would not be possible without the generous grants from our donors and sponsors. On behalf of the Comox Valley Naturalists Society I would like to thank the following organizations.



**Comox Valley Regional District**



**City of Courtenay**



**Ducks Unlimited Canada**

With reduced funding this year much of the slack has been taken up by our volunteers from Comox Valley Nature. I would like to especially thank Bob Bartsch for the special interest he has taken in the Airpark. Also deserving special mention from within the Society are Kathleen Hennig, Bill Heidrick, Ernie Stefanik and Murray Little. I would also like to thank our Contractor Ernie Sellentin. Ernie brings a vast body of experience and expertise to the project and we were happy to have him work for us this year.

A special thanks to Anita Wood our club treasurer who took care of all the financial details.

This report was written by Frank Hovenden of the Comox Valley Naturalists Society and is available on line at <http://comoxvalleynaturalist.bc.ca/>



## 2 Introduction

The Wetland Restoration Project is an initiative of the Comox Valley Nature. We are a membership-based non-profit society with charitable status which has been active in the Comox Valley for over forty-eight years. As an affiliated club of BC Nature we share their mandate "to know nature and keep it worth knowing."

This year the project faced a major reduction in funding. Although this was challenging, the nature of this project and our parent organization gives us a great deal of flexibility and resilience. I am happy to say that our volunteers stepped forward to insure the continued success of this project. There was an increase in the number of volunteer hours donated to the project. From within Comox Valley Nature a small and dedicated group of volunteers have emerged which have taken ownership of the project and the places where we work. The longevity of the Comox Valley Naturalists Society allows us to take a long-term view, which puts us in line with many of the ecological processes we are working to restore. The majority of our funding goes to the wages of our contractor. With reduced funding his contract is reduced and more work is hoisted upon the shoulders of our volunteers. This year all the native plantings were done by our volunteers. The City of Courtenay helped out by donating over 30 native plants to our project.

Despite the reduced funding this has been an exciting year for the Project. We successfully had a small prescribed burn in the Courtenay River Airpark. This involved the collaboration between Club volunteers, our contract crew, the City of Courtenay and the Courtenay Fire Department. The unpredictable coastal weather added a level of uncertainty which led to several postponements before we were able to burn in late March.

Also this year I feel we have started to take the initiative against Knotweed. This invasive plant is capable of dominating our riparian zones. We have experimented in "continuous cutting" for many years with limited success. This was done in the belief that a herbicide that could be safely used in sensitive habitats was on the cusp of release. As our patience waiting for this miracle herbicide has waned, we have gotten serious about "continuous cutting" along with rhizome removal. This year, as we have significantly weakened selected knotweed patches, we have begun to reintroduce native plants to these sites. With reduced competition from knotweed we are hoping these native plants can reclaim these sites.

In 2013 crews continued to tackle purple loosestrife (*Lythrum salicaria*) yellow flag iris (*Iris pseudacorus*), Himalayan blackberry (*Rubus discolor*), Scotch broom (*Cytisus scoparius*) and various members of the Knotweed complex (*Polygonum spp.*).

Public outreach and education has always been a vital component of the Wetland Restoration Project. We participated in several public events and have erected some new signage as well as distributing brochures pertaining to invasive plants. On a personal level I have completed a second course in the Native Species and Natural Process program at the University of Victoria. This has given me a great opportunity to interact with others working in the field of ecological restoration and keep current with new methods and findings.

Locally there seems to be an increased awareness of the problems posed by invasive species. The Comox Valley Regional District is in the process of updating their Weed Act. They have also produced an excellent brochure which we have helped distribute. The City of Courtenay has scheduled meetings with groups concerned with invasive species.

This report will document the work completed in 2013. This will include the numbers of plants removed and the time worked in the various areas. The financial details of the project as well as recommendations for the future direction of the project are included.

### 3 Background

The Comox Valley possesses great biodiversity in its natural ecosystems. Nature knows no boundaries and this biodiversity extends into our urban areas. Witness the salmon spawning in Puntledge Park or the winter overflights of trumpeter swans as examples of this. In fact the adjacent water bodies of Comox Harbour and Baynes Sound are the second most important in all of BC for over-wintering waterfowl. It is designated as an Important Bird Area with global significance. As citizens of the Comox valley it is incumbent on us to be caretakers and stewards of this area and all the flora and fauna that depend upon it.

In these days where it often seems everything must serve a financial purpose and meet the bottom line just where does nature fit in? Nature improves the quality of life in the Comox Valley. People move here and visit here because of it. It is an asset which must be recognized, cherished and protected. As local naturalist Father Charles Brandt would argue, man must have a "benign presence" on the landscape.

It is our hope that society is changing and coming in line with these views. The Trumpeter Swan so visible here in the Comox Valley can be held out as an example of not only our changing attitudes but the resilience of nature. This animal was once hunted to near extinction in North America and has rebounded to historic population levels. With half a chance, nature is resilient.

Invasive species have caused large environmental and economic impacts throughout British Columbia. The Invasive Plant Council of BC defines an invasive plant as any alien species that has the potential to pose undesirable or detrimental impacts on humans, animals or ecosystems. These plants usually have the ability to establish quickly and dominate sites, sometimes forming monocultures which exclude other species and thus reduce biodiversity.

Many of these plants destroy biodiversity by out competing our native plants and forming monocultures. The Wetland Restoration Project is a small attempt to limit and control invasive plants on some of our most sensitive sites. The Comox Valley Naturalists have taken an interest in combating

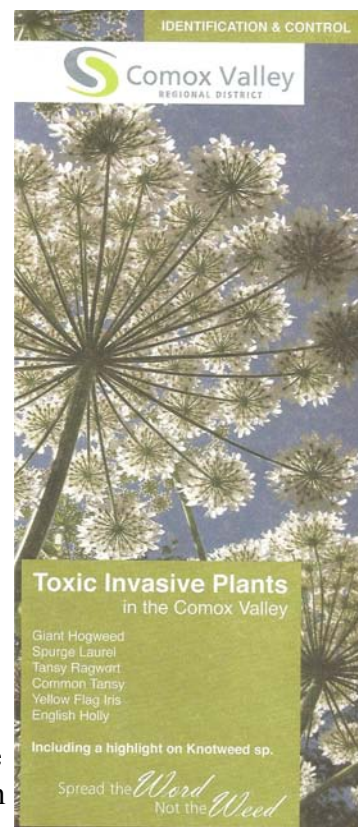


Figure 1: CVRD Invasive plant brochure

invasive plants on a local level. We have identified an area which has high biodiversity value (Courtenay River estuary) and which is threatened by various invasive plants. With our limited resources we have concentrated in keeping invasive plants at a manageable level in this area. At the request of our funders we have worked throughout the Comox Valley, although our focus remains the tidal waters and adjacent areas of the Courtenay River.

We are not alone in recognizing the importance of our waterways and estuary. We will continue to work with the many groups such as Project Watershed and the Millard Piercy Watershed Stewards. We are especially excited to support the breaching of the berm between the Courtenay River and the lagoon. This is a small but important step in returning complexity to our estuary. The sawmills and transportation corridor which required that the River be dredged, rip-rapped and armoured with steel plates, does not exist anymore. It is time we recognize this and returned the river to a more natural state. This will improve its ability to support fish and biodiversity in general.

On the local level the Comox Valley Regional District was not entirely successful in updating its Weed Control Act 2347 which was first passed in 2001. However personal communication with their bylaw enforcement officer indicates that there is a new awareness among the public and cooperation has been good.

Construction by the CVRD is currently in progress for the Royston trail. An inventory of invasive plants was done last year and was included in last years Wetland Restoration Report. Some invasive plant removal has been part of this project.

#### 4 Summary of Work Completed

The core areas of concern (except Area 8) surround the Courtenay River estuary and are located in the City of Courtenay and the Comox Valley Regional District (CVRD). Figure 3 is a map of our core areas. Area 8 is south of the core along the shores of Baynes Sound and contains an infestation of purple loosestrife. The core areas are identified as priority because they are areas where historically purple loosestrife has been found and therefore where the project started in its efforts to control it.

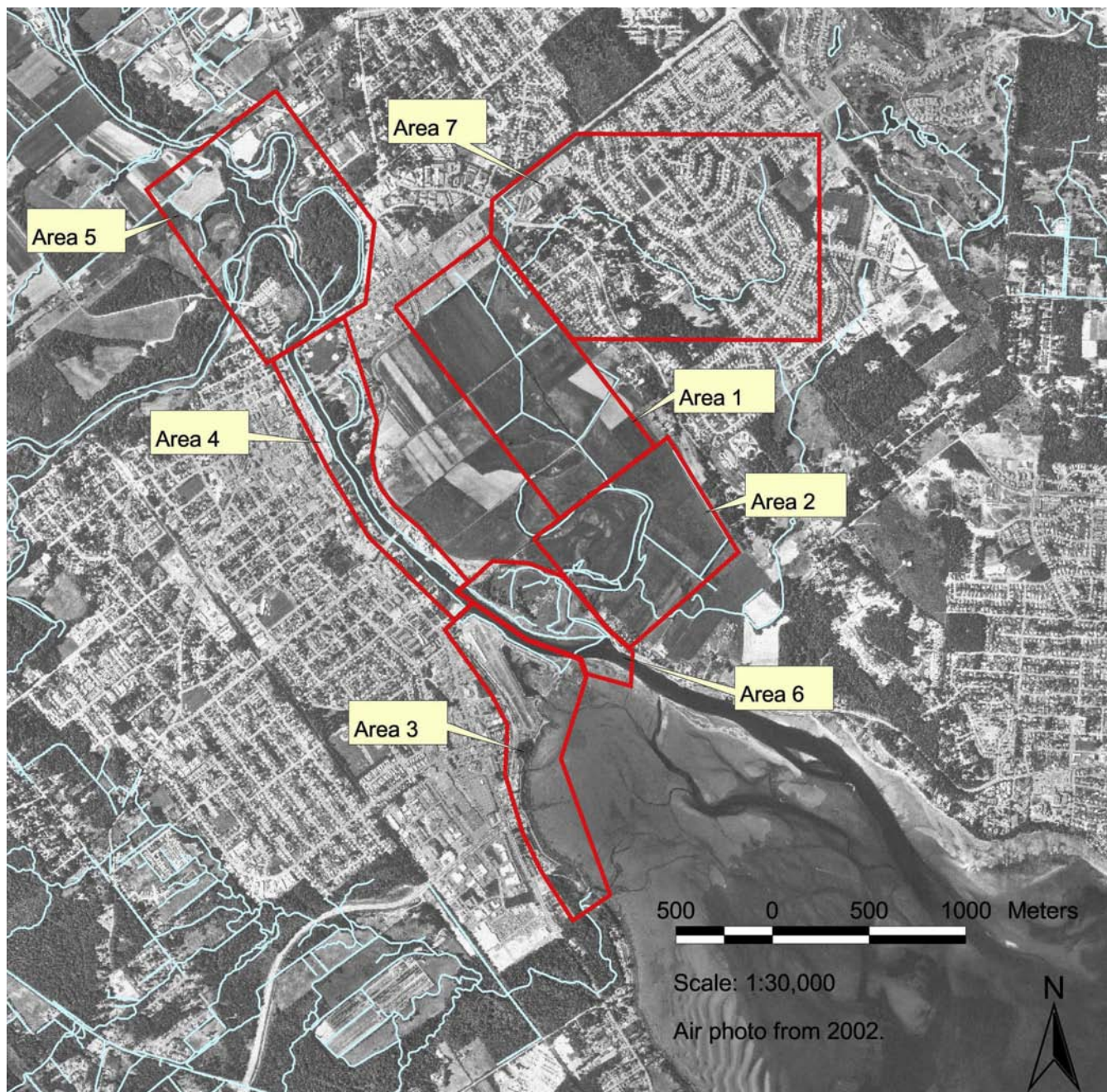
Our species of concern also include Scotch broom, yellowflag iris, knotweed and Himalayan blackberry. In recent years we have put a greater emphasis on knotweed as it seems to be spreading at a greater rate than other invasives and occupying a wider range of sites. These can range from dry upland sites to tidal flats.



Figure 2: Hollyhock Flats (area 6): Note the Henderson's checker-mallow which is sometimes called marsh hollyhock

Our work is focused primarily on public lands however access to private lands such as the Comox Bay Farm and the Berry farms has been established through informal agreements that must be renewed annually. A high priority is given to lands of high ecological significance such as Area 6 which is commonly called Hollyhock Flats. This area is fairly undisturbed in terms of human modification and also contains the blue-listed plant Henderson's checker-mallow (*Sidalcea hendersonii*). Close to 90% of the purple loosestrife removed this year by the project comes from this area. We have been successful in keeping knotweed out of area 6. The knotweed infestations that we are actively fighting are located in the adjacent areas 3 and 4.

Figure 3: Core areas of concern for the Wetland Restoration Project



### CV Nature 2013 Wetland Restoration Hours

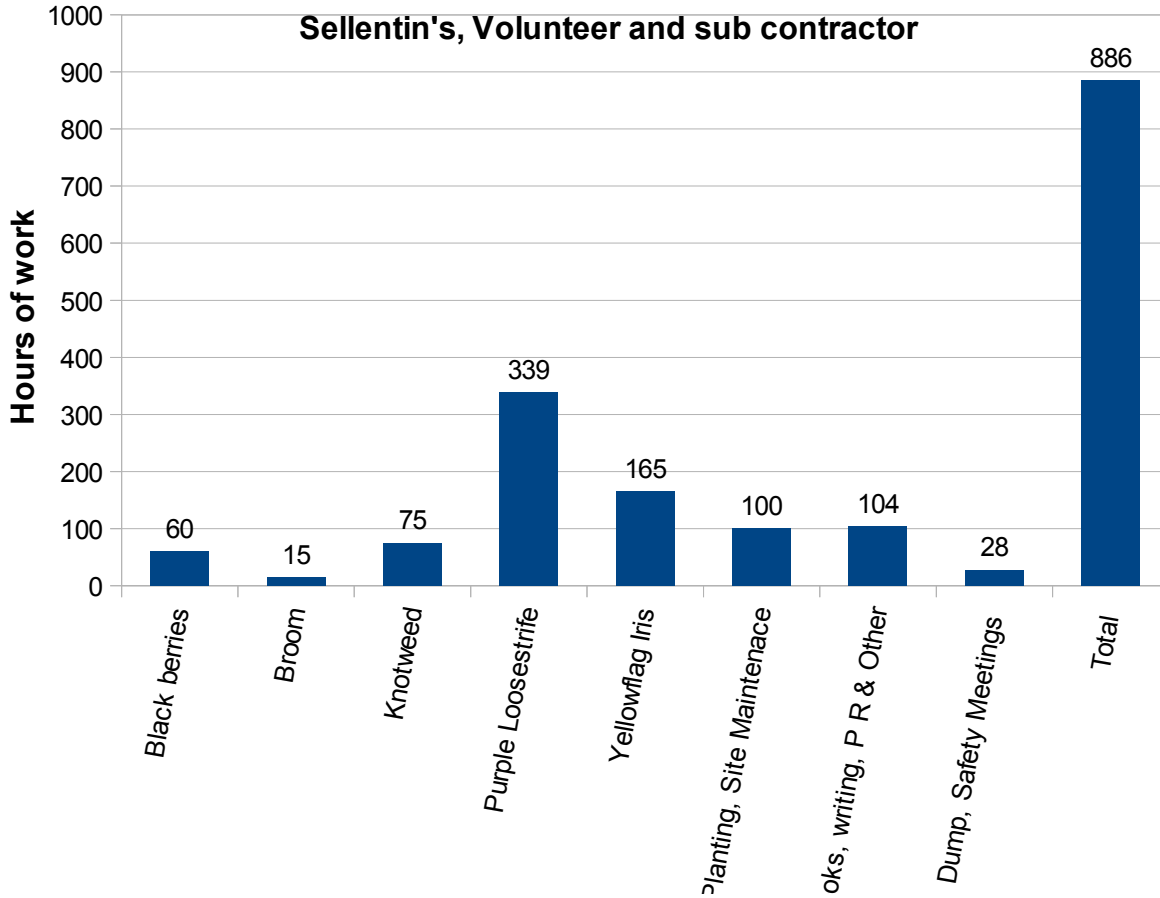


Figure 4

The project hours were tracked by task and geographic area. This year Sellentin's Habitat Restoration completed a total of 631 hours of field work for the project. This was about 200 hours less than in 2012 which reflects our reduced budget. However our volunteer labour from the CVNS more than doubled to 255 hours. The volunteers were involved with most aspects of the project with the exception of removing purple loosestrife and yellowflag iris. Because this work was located in Hollyhock Flats (Area 6) where there were safety concerns, it was left to our contractor Sellentin's Restoration Services to do this work.

## Weed Control

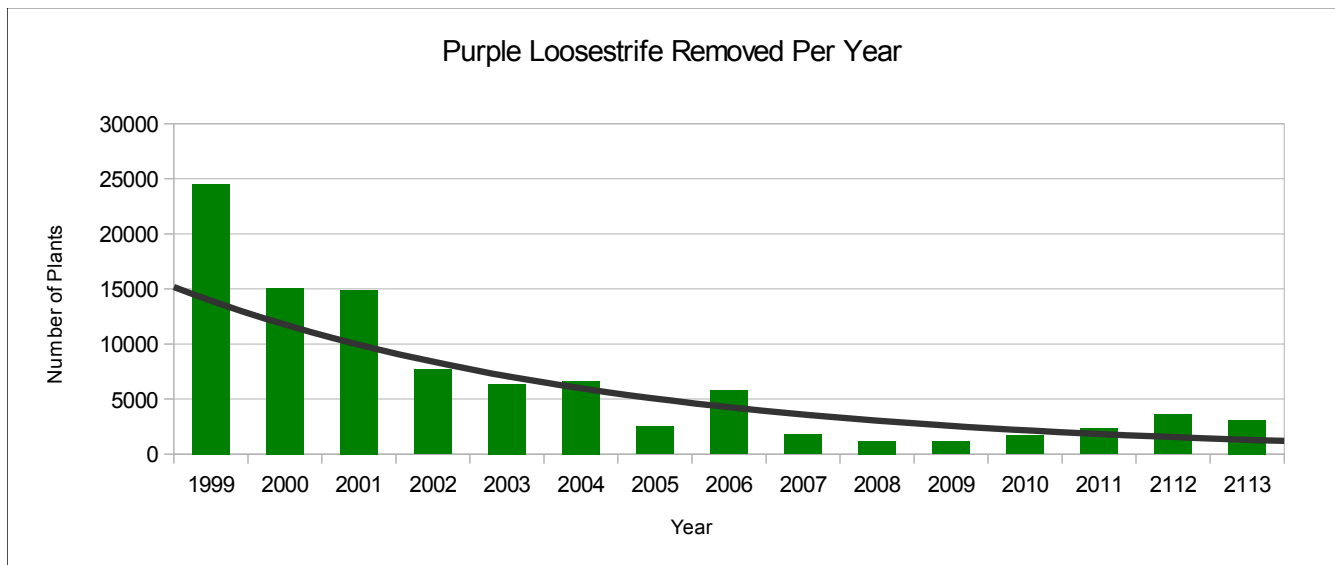
### Purple loosestrife - *Lythrum salicaria*

The number of purple loosestrife plants removed this year was 3098, which is a decrease from the 3566 plants removed last year. We hope that this puts us back on a downward trend after the slight increases we have observed in the three previous years. The biggest decrease is from Area 6 (Hollyhock Flats) which is our area of highest priority.

Year	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7	Area 8	Total
2012	44	11	48	32	35	3194	12	190	3566
2013	7	21	60	41	28	2710	2	229	3098

It was speculated in last year's report that many of the new plants were coming from areas where there had been disturbances. The last several winters have seen several severe high water storm events which may have contributed to an increase in the disturbed areas and thus an increase in purple loosestrife plants.

Because of the plant's ability to reproduce from small bits of root, all purple loosestrife was disposed of at the Comox Valley Waste Management Centre. This year a total of 285 kg of purple loosestrife was disposed of in this fashion as compared to the 510 kg in 2013. This reduced biomass means the plants are smaller and therefore younger than last years. This is a positive sign that progress is being made in controlling this plant.



Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Plants	24520	15075	14900	7698	6360	6628	2542	5774	1758	1204	1160	1663	2328	3566	3098

Figure 5: Trend line for purple loosestrife

## Yellow-flag Iris - *Iris pseudacorus*

The second highest amount of time for the project is spent removing Yellow-flag iris. This is a popular and attractive garden plant. Like Purple loosestrife, however, once released into wetlands it can cause real ecological damage by dominating the site to the detriment of native plants like the bull rush (*Typha spp.*) This is most evident locally in Lazo Marsh, where it constitutes the dominant species in much of the marsh.

We have been removing this plant, which forms large rhizomes, from the Courtenay River estuary for many years. This year a total of 335 kg of yellowflag iris were brought to the CV Waste Management Centre for disposal as compared to 790 kg in the previous year. Most of the large rhizomes have been removed from Area 6 and the remaining plants are much smaller and lighter according to Sellentin's crew.

## Scotch Broom - *Cytisus scoparius*

The control of Scotch broom in the Courtenay River Airpark (Area 3) was done entirely by volunteers from the CVNS. We concentrate our efforts in the Courtenay River Airpark. This year we also removed Scotch Broom within the adjacent Airstrip property with their permission. A small patch of Broom was also discovered and cut at the tip of Hollyhock marsh.

The Broom Busters has emerged with the goal of removing broom from roadsides and public places. They has gathered a considerable amount of volunteer support and we support their efforts. We are in contact with Bev Agur from this group and coordinate our efforts in removing Scotch Broom.

## Knotweed - *Polygonaceae*

Many of the local knotweed infestations are found in the riparian zones of the Courtenay River. In the lower tidal areas the plants are often submerged on high tides or storm events. This prohibits the use of most herbicides for controlling these infestations.

Much of our work on controlling knotweed by continuous cutting is novel to our area. We are still learning what is required to control this invasive. Recent literature (Rouified Soraya, 2011) indicates that the response to clipping varies with the different species of knotweeds. However there is considerable hybridization between the species which complicates the issue.

Personal communication with experts such as Dave Polster (UVic) has indicated that knotweed could be controlled by continuously cutting the infestation.

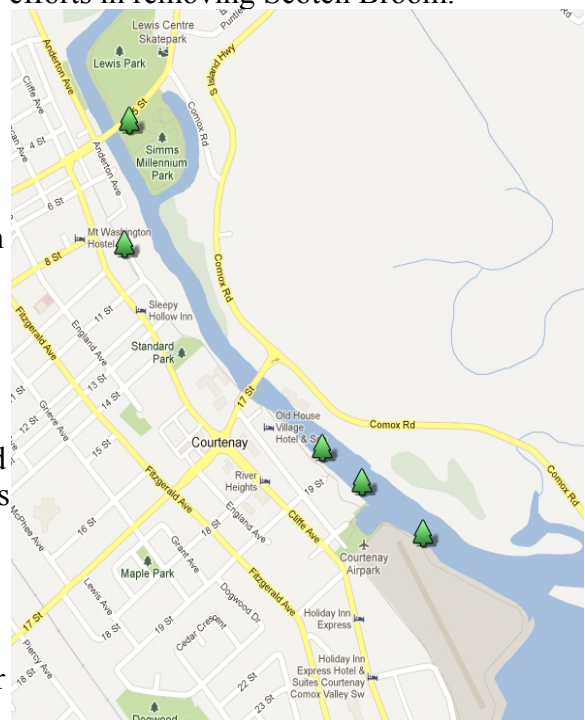


Figure 6: Knotweed control sites

Until 2012 knotweed was cut only in the Airpark Site on what we thought was a regular basis (4-5 times a year). This seemed to have very little effect on the size or vigour of the infestation.

In 2012 the numbers of clippings was increased and monitored as shown in Table 1. To test the effectiveness this we chose five knotweed sites with different amounts of shade and competition along the Courtenay River. Volunteers from within the Comox Valley Naturalists Society adopted a site which they were responsible for cutting on a regular basis. This augmented the work being done by Sellentin's Restoration in other parts of the estuary. The effectiveness of the continuous clipping was rated by judging the vigour of the returning growth. On some of the sites temporary signage was installed to keep the public informed of the problem and the action being taken to address it. (see Appendix 1). This year two more permanent signs were installed. The plant is easily cut with hand pruners and care was taken to cut all stems within each site. The cut material was left on site to desiccate and die in the summer sun.



*Figure 7: Dug up rhizomes*

Although most of the sites showed reduced vigour at the end of 2012, the infestations returned in 2013. This year, in addition to clipping the sprouts, the rhizomes were dug up and disposed of at the CVRD Waste Management Centre. As can be seen in Figure 6, these rhizomes are up to 5 cm in diameter and can store a considerable amount of energy for the plant.



*Figure 8: Knotweed 19th Street 2011, a small patch surrounded with native plants*



*Figure 9: 19th Street 2013, salmonberry and other natives have reclaimed the site*

	<b>Simms Park</b>	<b>Central Builders</b>	<b>19th Street</b>	<b>20th Street</b>	<b>Courtenay Airpark</b>
<b>Shade</b>	heavy	medium	light	medium	none
<b>Competition</b>	heavy	heavy	medium	heavy	none
<b>Substrate</b>	unknown fill	unknown fill	native soil	native soil and rip rap	rip rap
<b>Number of cuts 2012</b>	9	9	9	9	6
<b>Control Effectiveness 2012</b>	good	good	poor	medium	poor
<b>Number of cuts 2013</b>	15	3		8	14
<b>Control Effectiveness 2013</b>	good	good	good	good	medium

**Table 1:** Comparison of knotweed control sites.

In 2013 the number of cuts were increased at Simms Park and the Courtenay Airpark. On the other sites the regrowth was weak and sporadic and thus the cutting was decreased. Monitoring of the site during the course of this year would suggest that the infestation on all the sites is considerable weakened. It was felt that rehabilitation of some of the sites using native plants could begin in the autumn. The two sites chosen were Simms Park and the Courtenay River Airpark. Both these sites were dominated by knotweed and had no other vegetation remaining on the site.

The site in Courtenay River Airpark has been infested with knotweeds for many years. It controlled the site so that there was virtually no other vegetation growing on it. The site is in the bank of the Courtenay River and subjected to seasonal flooding. To rehabilitate this site, native wet-site species were planted. These were ninebark, salmonberry, red-osier dogwood and Scouler's willow. Many of the plants were supplied by the City of Courtenay.

Simms Park was the second site chosen for rehabilitation. This site has an over-story of red alder and black cottonwood however very little vegetation remains as ground cover. Because of the



*Figure 10: Airpark Knotweed site, in rip rap beside river, no native vegetation remains*

deep shade, sword fern and dull Oregon grape were planted on this site.

We are looking forward to next year on these sites. We anticipate that the knotweed returning will be considerably weakened and that these sites will return to a more natural state. There is a considerable amount of anecdotal information regarding the control of knotweed through continuous clipping. We are learning through experience at the various sites here in the Comox Valley. Our experience has shown that to be effective the infestation has to be clipped ever two weeks during the growing period. This should be augmented with the removal of rhizomes which can store a great deal of energy for the plant.

The outlook for knotweed control in the Comox Valley is poor. While we have shown that continuous cutting of the plant can be an effective control technique give certain conditions, this method is labour intensive and thus expensive. The problem here is that many of the infestations are large and certainly beyond the scope of this organization to control. It will fall upon local governments to tackle this problem. Knotweed is not only a threat to the natural environment but is also damaging to infrastructure. The plant is capable of penetrating paved surfaces and even house foundations. In figure 11, young plants can be seen emerging through the pavement next to a retaining wall.



*Figure 11: Knotweed emerging through Courtenay River Walkway*

The source of the knotweed infestations are easy to track. In the Comox Valley it is often directly related to our development and land use patterns. The pattern that is common is for the developer to buy a large parcel of land. This is often cleared using heavy equipment. This sets up a seed bed which is very attractive to early successional invasive species. This cleared lot is then subjected to the uncertainties of the real estate market and may sometimes remain undeveloped for many years. These vacant lots are serving as epicentres for invasive plants. There has to be some control exerted on forcing developers to control invasive plants on development parcels. This will spring from a recognition that local governments have an important role to play in ecosystem management. Cities and urban areas are ecosystems. Public Works has to be inclusive of this role and not merely maintaining infrastructure and insuring that the roadsides look attractive. This task is all the more important here in the Comox Valley where urban areas border fish-bearing creeks and rivers and an Important Bird Area.

Illegal dumping of landscape refuse on public property continues to be a problem and a source for the spread of invasive plants. In last years report I pointed out a site behind the Dairy Queen store. This site is continuing to be used to dump garden waste. A second more troubling site is at the foot of 20th street on the bank of the Courtenay River. We again request that the City of Courtenay install "No Dumping " signs at these locations.

Table 1 summarizes our findings with respect to continuous cutting. This can be an effective control where the patch is isolated from other patches by a distance great enough so that there are no rhizome connections. Control is more easily attained on sites that the knotweed does not totally dominate to the point of excluding all native species. Figure 8 and 9 show a site at the foot of 19th Street. Once the knotweed was weakened, the surrounding native plants were quick to rehabilitate the site. In contrast the knotweed site in the Airpark had attained a size where there were no remaining native plants. We have reintroduced native plants to this site, however they will require time to get established.

Because of the time and manpower required this is an expensive control which requires persistence. However as the equipment expense is low and the required expertise minimal this is ideally suited for volunteer groups. In the riparian areas adjacent to fish-bearing waters there is currently no alternative method.

## Prescribed Burn

The Garry oak meadow ecosystem was a great source of traditional food for the First Nations. Perhaps best known were the camas bulbs which provided a source of carbohydrate. In this part of its range, the Garry oak meadow is an early successional habitat which slowly gets converted to Douglas-fir forest if succession is allowed to proceed. First Nations peoples prevented this from happening by periodic burnings. This had the effect of killing young Douglas-fir and thereby maintaining the open meadows. Burning had other effects such as releasing nutrients and changing the soil structure.

Last years report described our attempt for a prescribed burn at the Courtenay River Airpark in October 2012. Unfortunately the weather did not cooperate and the burn was postponed. The burn took place on March 23rd this year. The burn plan was essentially the same as the previous years however we were allowed to forgo having a water pump on site with the permission of the Courtenay Fire Department from which a permit had been obtained.

Three plots measuring 8x8 m were ignited, under cloudy conditions with a slight breeze. Two workers from Sellentins Restoration Services along with 6 volunteers from the Naturalists were present to insure the fire stayed in control.

Because of the location of the site in a city park, extra effort was taken to inform the public what we were doing. The only neighbour to the site, Courtenay Airpark Association, were given a copy of the Burn Plan as were the City of Courtenay and the Courtenay Fire Department. Posters were erected around the Airpark and enough volunteers were on hand to secure the site during the burn.



Figure 12: Prescribed burn at Courtenay River Airpark.

The fire was not very intense as most of the combustibles were fine organics and dried grasses. Only a small amount of smoke was generated and no complaints were recorded from the general public.

Two days following the burn the plot areas were seeded with camas and Henderson's checkered mallow which had been collected the previous year from the Hollyhock Flats area of the Courtenay River Estuary. A small amount of nodding onion collected elsewhere was added to the seed mix.

Initially following the burn, the growth of grasses on the plot did seem lusher than the surrounding vegetation. Although the plots are still being monitored, there did not appear to be any drastic change in the species make up found there. The burn did not eliminate or adversely affect the Himalayan blackberry nor the tansy found in these plots.

## New Plantings

With a reduced budget this year it was felt that a large spring planting was not feasible. Not only the cost of the stock must be taken into account but also the watering required during our summer drought period must be accounted for. The small number of plants that were spring planted were donated plants raised by myself and a tray of grass plugs from a Garry oak restoration project donated by our contractor Ernie Sellentin.

In the past our plantings have been mainly in the Courtenay River Airpark where we are attempting to create a novel Garry oak ecosystem. The species selected reflect this and we have used the Garry Oak Gardener's Handbook (2007) in choosing plants to introduce to the site. While some of our plantings were in line with this goal, we also did some rehabilitation plantings. These were on sites where we have been combating knotweed infestations. These sites were all located in the riparian zone of the Courtenay River. The knotweed has been cut on these sites a total of 25 times over two growing seasons. In addition the rhizomes have been dug up and removed. We believe that the infestation is under control on these two sites located in Simms Park and the Courtenay River Airpark. It was felt that with the knotweed controlled, the time was right to reintroduce native vegetation to reclaim the sites. The planting was done in the autumn when the soil moisture levels had been restored following the summer drought period.

The Simms Park knotweed site is located under a canopy of red alder and black cottonwood. It was felt that this over-story would

*Figure 13: Volunteer planting in rip rap at Courtenay River Airpark*



*Figure 14: Volunteer planting at Simms Park Knotweed site*

make the control of the knotweed an easy task, as mentioned in last years report. This has not been the case and this site has been cleared of knotweed 12 times this year. However the returning knotweed growth is spotty and weak and we feel considerable progress has been made in eliminating it from this site. This site, adjacent to the lagoon, was originally planted with a variety of native vegetation at the time of the Park's creation in 2001. The knotweed competition had eliminated these over time and the site was bare once the knotweed had been removed. Due to its shady nature this site was planted with a mixture of sword fern, dull-leaved Oregon grape and salmonberry. As this site is highly visible to the public, a sign (Appendix II) has been erected explaining what is happening on the site.

The second knotweed site that was planted is located in Courtenay River Airpark on the banks of the Courtenay River. This knotweed on this site has proven more problematic as it is rooted in the large rip-rap in the river bank and the rhizomes are difficult to remove. This site is in full sun and is subject to flooding on high tides. It is adjacent to the River Walkway which is highly used by the general public. A sign explaining our project, and a pamphlet dispenser has been attached to the Airpark fence across from this site. On this site, plants adapted to the riparian zone were chosen. These were salmon berry, ninebark, red-osier dogwood and Scouler's willow. Digging is very difficult due to the large rip-rap. On the positive side, this location will not require watering due to the tidal effect on the Courtenay River.

The plants added this year are listed in Appendix I. Most of fall plantings were purchased from Streamside Native Plants in Bowser BC, and donated in kind by the City of Courtenay.

A second site in the Courtenay River Airpark without knotweed, was also planted in October. This site was along the runway fence at the south end of the runway. Our contractor had scattered pieces of driftwood (Large Organic Debris) around the planting site in the spring. The purpose of the Large Organic Debris is two-fold. It identifies and thus protects the new plantings. It also acts to shade the ground and thus preserve moisture around the new plantings. This is important as the ground in the Airpark is largely composed of trucked-in fill and is lacking in natural organic matter.

The new plantings are mulched with a soil amendment (Seasoil) and a sprinkling of bone meal in the planting hole. This is a dry site, and the plantings of red-flowering currant, tall Oregon-grape and honeysuckle are appropriate. Some Himalayan blackberry was removed prior to planting.



*Figure 15: Fall planting site showing driftwood used as large organic debris*

## Old Plantings

This year two work parties did clean-up and maintenance around the native plantings in the Courtenay River Airpark. This consisted of weeding and adding a general purpose fertilizer around the plants.

Some minor pruning was done to the Garry oak trees to encourage good form.

As noted in the 2011 report, a small amount of seeded camas was observed flowering for the first time since being planted in 2007. This increased to over 70 plants in 2012 and this year over 100 camas in bloom were observed.

## Public Outreach

### Signage

Many of the areas we work are frequented by members of the public. I also encourage interaction between our crews and the public who often want to know what we are doing. This is particularly true for Simms Park and the Courtenay River Airpark where knotweed infestations border the public walkway. Two new semi-permanent signs (Appendix III) were installed this year. Temporary signage was erected at four knotweed sites where we worked this year and at some of the native plantings (Appendix II). Due to the changing weed locations and vandalism we have found this to be a cost effective method of informing the public. In the last two years there has been very little vandalism in the form of tagging done to our signage.

*Figure 16: A weatherproof brochure holder installed across from a knotweed patch*



### Brochures

This year the Comox Valley Regional District has published a Brochure titled "Toxic Invasive Plants", while the Coastal Invasive Species Committee published "Get to Know Invasive Species". These are both excellent publications which we have been happy to distribute to the public. A plastic weatherproof brochure holder was purchased and attached to the Airpark fence adjacent to a knotweed infestation that we are currently working on. We have distributed close to 1000 brochures this year. The CVRD supplied the brochures at no charge to us.

### Community Events

Comox Valley Nature had a display at Earth Day this year which was celebrated at the CVRD Composting Centre. As part of the Comox Valley Nature booth, the Wetland Restoration Project displayed invasive plants and distributed brochures on invasive plants and safe alternatives for local gardeners to use.

The Coastal Invasive Species Committee held its AGM in Nanaimo. I attended this and had a display table with invasive plants and information about this project. Our contractor Ernie Sellentin was also in attendance and gave a demonstration of herbicide injection on Knotweed



*Figure 17: Earth Day display*

This year Comox Valley Nature celebrated Rivers Day with a cleanup of the shores of the Airpark. Over a dozen members of the public joined us in this endeavour. CV Nature undertakes this event independently without a corporate sponsor.

### Cooperation with other Environmental Groups

The CVNS has existed for close to 50 years and takes pride in our close cooperation with other groups with common interests and shared goals.

The Broom Busters group is a relatively new organization dedicated to the removal of Scotch broom. We met with Bev Agur of that group and discussed our plans for the season. Besides removing Scotch Broom from the Courtenay River Estuary and the Courtenay River Airpark, we also took on a patch north of the Courtenay Train Station, adjacent to the trail being built by the Rotary Club.

The Estuary Working Group of Project Watershed has consulted with us on their proposal to breach the dike and allow water to flow through the Courtenay Lagoon. We have written a support letter for this project to BC Hydro.

We hosted a public walk in October along the Courtenay River Walkway. This was done in conjunction with both Project Watershed and the Millard Piercy Watershed Stewards. As we walked along the Walkway, myself and representatives from these volunteer groups explained the work we were currently doing as well as planning to do in this area.

Project Wild contacted me in June of this year. Project Wild is an interdisciplinary environmental education program for formal and non-formal educators of young people. We showed the facilitators Luisa Richardson and Jennifer Sutherst some of our field work in the Comox Valley. This resulted in a request to give a presentation at a local school. In November I gave a presentation on Garry Oaks and the work we have done in the Courtenay Airpark to a grade 5 class at Robb Road School. It was very well received and we look forward to speaking to more students in the near future.

## 5 Financial Summary

The 2013 budget is presented in Table 2. The project was smaller than in 2012. Notably the contribution from the Comox Valley Regional District was reduced and there was no grant from BC Nature as in previous years. There was a generous donation to the project from a member of Comox Valley Nature. Surpluses from the project are placed in a Wetland Restoration Project fund and used in future years on this project. This is separate from the general revenues of the CVNS. This gives us a degree of flexibility to operate the project while waiting for grant monies to arrive early in the season.

*Figure 18: Volunteers at the Rivers Day shoreline cleanup*



It should be noted that the Regional District waives the dump charges at the Comox Valley Waste Management Centre for the plant material that we dispose of there. This year most of the plants used in the autumn planting were donated by the City of Courtenay.

Table 2. 2013 CVNS Wetland Restoration Project Budget							
Labour					Hours		Total
Sellentins Restoration					886		11860
CVNS Report					50		1000
Subcontracts					48		970
<b>Labour Total</b>					<b>984</b>		<b>13830</b>
<b>Equipment and Materials</b>							
Vehicles, transportation, fuel							1230
Plants							130
Insurance							1033
office supplies, postage, signage, pamphlets							325
Printing							100
<b>Equipment and Materials Total</b>							<b>2818</b>
<b>Project Total</b>							<b>16648</b>
<b>Project Contributors</b>							amount
Comox Valley Regional District							13000
City of Courtenay							2500
Ducks Unlimited Canada							2000
Donations							500
Comox Valley Naturalists Society Wetland Fund							1329
<b>Total Project Funds</b>							<b>19329</b>
Surplus (2013 Wetland Fund)							<b>\$2,681.00</b>

## 6 Conclusions and Future Plans

There appears to be an increased awareness of invasive species both in the community and at the local government level. The City of Courtenay recently hosted a meeting of local government workers and non-profits including Comox Valley Nature. This was recognized to be in an exploratory phase however this was an important start and there was a spirit of cooperation expressed which is seldom seen between local governments here in the Comox Valley. We look forward to seeing this process proceed. The Wetland Restoration Project has a role to play in lobbying for more efforts by local governments in controlling the problem of invasives, and more importantly recognizing their role in overall ecosystem management within the urban ecosystem.

The Regional District did attempt to update and modify their Weed Control Act. While this has not been totally successful, it has nevertheless brought more attention to the problem of invasives. Working with the Coastal Invasive Species Committee, the CVRD has produced a pamphlet on toxic invasive plants which we have been happy to distribute.

Locally the "Broom Busters" have generated a lot of volunteer effort and local media attention. We tip our hat to this relatively new organization and wish them continued success.

The Wetland Restoration Project is now over 20 years old and its longevity is tied to its connection with Comox Valley Nature. Our parent organization is close to 50 years old and is membership based, therefore representing concerned citizens who live in this community. Paramount in the fight against invasive species is persistence. We plan to carry on in 2014 although our focus can shift and is flexible to reflect our funding.

This past year we had a successful prescribed burn in the Courtenay Airpark. This generated a great interest within the CVNS and many volunteers came forward, many of whom had valuable experience in the field of fire management. We intend to monitor the three plots which we burned for several years to see if the fire had a desirable effect. We do not plan any further burning at this time.

Although the amount of work required in fighting invasives is endless our manpower in terms of volunteers is limited. We will work strategically and encourage government agencies to step to the plate and play a greater role in this task.

This year we carried on with a continuous cutting project on knotweed in a variety of sites. The weakened condition of the knotweed infestation is showing in the slow regrowth of the plant. Several

*Figure 19: Development lot infested with Scotch Broom, Himalayan blackberry and knotweed*



members of the CVNS volunteered for this project and were very dedicated. I think we have proven that this can be a viable alternative to herbicide treatment on sites with a high ecological sensitivity. Next year we will continue to control knotweed in our existing sites. As we expect this to require less effort, we will tackle new sites further South along the Courtenay Riverway in the vicinity of the bird viewing stand.

In terms of purple loosestrife control, there has been a slight decrease in numbers this year reversing the trend over the previous three years. This is a hopeful sign which we hope to see continue next year.

## 7 Literature Cited

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## Appendix I

### Plant List

#### Courtenay River AirPark and Simms Park 2013

Plant	Spring Planting		Pot Size
		Number	
Red-flowering Currant	<i>Ribes sanguineum</i>	4	1 gal
Oregon Sunshine	<i>Eriophyllum lanatum</i>	12	4 in.
Shooting Stars	<i>Dodecatheon pulchellum</i>	12	4 in.
Great Camas	<i>Camassia leichtlinii</i>	1000	seed

#### Autumn Planting

Orange Honeysuckle	<i>Lonicera ciliosa</i>	5	2 gal.
Pacific Ninebark	<i>Physocarpus capitalus</i>	5	2 gal.
Salmonberry	<i>Rubus spectabilis</i>	10	1 gal.
Red-flowering Currant	<i>Ribes sanguineum</i>	3	1 gal.
Western Red Cedar	<i>Thuja plicata</i>	12	Container stock
Sword Fern	<i>Polystichum munitum</i>	6	2 gal.
Dull Oregon-grape	<i>Mahonia nervosa</i>	10	1 gal.
Tall Oregon-grape	<i>Mahonia aquifolium</i>	4	1 gal.
Scouler's Willow	<i>Salix scouleriana</i>	5	2 gal.
Red-osier Dogwood	<i>Cornus stolonifera</i>	2	1 gal

## Appendix II

**Native PLANT****Camas (*camassia spp.*)**

The Camas is one of our most beautiful native plants that is associated with the Garry Oak meadows. Historically vast fields of this plant grew in the Pacific Northwest. Early European explorers described fields so blue with camas flowers that they resembled lakes. While not endangered the camas is threatened due to human encroachment over much of its range.



The bulb of this plant was highly prized by many First Nations. It contains a complex carbohydrate which is broken down by steaming to produce a nutritious food source. We have been planting camas throughout the Courtenay River Airpark for many years. It takes 4 or 5 years for a camas plant to produce a flower.

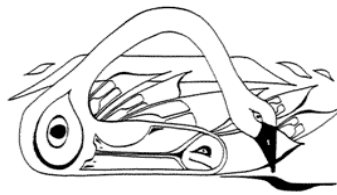
**WHAT YOU CAN DO**

Please enjoy the flowers in this park but do not pick them. Allow them to go to seed and spread throughout the park.

Stay on established trails so as not to disturb the many native plants in this park.

Consider planting native plants in your own garden.

### Appendix III



## Comox Valley Naturalists Society

This site contains the invasive knotweed (*Polygonum spp.*) plant. It has wide spreading rhizomes which store energy and make it difficult to control. Due to its proximity to the fish-bearing Courtenay River conventional herbicides cannot be used here. It is being controlled through continuous cutting and removing the rhizomes manually.

This patch has been cut over 25 times in the last 2 years in an attempt to weaken it and reduce its energy reserves. Native plants have been reintroduced to the site. These will offer competition to the knotweed and help restore the site.



The Wetland Restoration Project is an initiative of Comox Valley Nature (Comox Valley Naturalists Society). The project has been ongoing for close to 20 years removing invasive plants and restoring habitat in the tidal waters of the Courtenay River

For 2013 our sponsors include the following organizations for whose support we are grateful.



