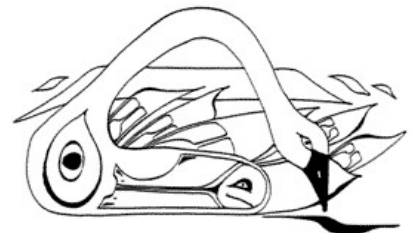


**Comox Valley Nature  
Restoration Project 2021  
Courtenay River Airpark**



**Frank Hovenden**

## Introduction

The Courtenay River Airpark is a municipal park on land owned by the City of Courtenay. It is on the unceded and traditional territories of the K'omox people. Comox Valley Nature has been working in this park for over 25 years, attempting to improve biodiversity by encouraging native species and removing introduced invasive species. In recent years we continue to develop a good working relationship with the City and its staff. Working together this autumn we planted over 65 native trees in the Airpark. This report gives a record of our work for this year and an outlook for the future.

Both the City and the K'omox First Nation are working with Project Watershed to restore the site of the former Fields Sawmill known as Kus Kus Sum. This is slightly upstream on the other bank of the Courtenay River. This is a large multi-year project. Serious restoration work started earlier this year after the former sawmill site was purchased from International Forest Products. We look forward to seeing this



*Figure 1: Heavy equipment working at Kus Kus Sum*

site restored and a little more of the Courtenay River estuary brought back to a more natural state.

Together with the Courtenay River Airpark this land will improve and restore habitat in the most bio-diverse part of the River, its estuary.

It seems every year brings new challenges to our little project in the Courtenay River Airpark. These only reflect what is happening on a global scale all around us. The unprecedented heat dome, which converged on BC at the end of June, reflects global warming as a result of climate change. While there was some plant mortality, for the most part our plantings survived with only minor damage. I think this reflects on the good choices we have made in the past of selecting drought-tolerant plants for this site. The control of invasive species has always been a major concern for this project. In recent years we have faced the challenge of dealing with an invasive mammal in the form of rabbits. (There are no

native rabbits on Vancouver Island) This is a relatively new invasion and we are still experiencing large population growth within the Airpark. The City of Courtenay has seen this first hand following the tree planting project in October. I think we were all a little stunned by the speed and voracity of these pests as they went after the newly planted trees. Lessons are still being learned on dealing with these pests and hopefully we can arrive at some sort of balance in the future.

The Covid -19 pandemic has affected our ability to get and use a volunteer work force. While our total numbers have not tapered off significantly ( table 3) they do reflect that fewer volunteers are doing more work. Fortunately working outside is a low risk activity, but we have had to curtail our traditional post-work coffee and social time.

The Airpark is still one of the most popular walking destinations in Courtenay and Covid-19 does not seem to have diminished this in any way. I think it is safe to say that people feel safer in the outdoors enjoying nature, which is as it should be.

## **Invasive Plants and Animals**

### **History**

This project was started in the early 1990s as an effort to control the invasive purple loosestrife plant in the Hollyhock marsh area of the Courtenay River Estuary, by Betty Lunam, a former president of what was then the Comox Strathcona Natural History Society. Over the years the project has expanded both geographically and in its overall concept. While controlling invasive species is still in our mandate we recognize the importance of reintroducing native species in returning to a more natural ecosystem.

Most of our work is now centered in the Courtenay River Airpark and the Little River Nature Park.

The Comox Valley, though arguably largely urban, still possess the unique geography that is habitat for overwintering waterfowl, migrating salmon, and the northernmost Garry oaks. It is our goal to see that we never lose this rich biodiversity and that the City of Courtenay can exist in harmony with the nature that surrounds us.

### **Rabbits**

Our work in the Airpark began by removing Scotch broom which at one time dominated most of the site. I think it is safe to say that Scotch broom is no longer a major concern in the Airpark and is very much controlled. However other invasive plants have taken its place. These include Himalayan

blackberry as well as tansy. We are actively trying to limit both these species currently. Invasive plants are something for which we have developed strategies and control techniques. However the introduced rabbits have thrown a curve ball at us and are giving us reason to pause and rethink. The rabbit is a recently introduced species here, and is still growing in population. I believe they were first noted in the Airpark in 2017.

There are no native rabbits on Vancouver Island. The eastern cottontail was introduced to the Sooke area in 1964. The rabbits found in the Airpark come in many colours, shapes, and sizes. The Eastern Cottontail (*Sylvilagus floridanus* Allan) is certainly common but I suspect many of the larger specimens are various domestic varieties of the European Rabbit (*Oryctolagus cuniculus* L.) which have been intentionally released into the Park.

The rabbit is a herbivore with a wide ranging diet from grasses to tree bark. It is very mobile and can travel large distances sometimes augmented by humans. Its ability to reproduce quickly is well known. Although some mortality due to predation has been observed, there are very few predators to put pressure on the rabbit population. Here on Vancouver Island there are no foxes, coyotes, or lynx which would be part of other ecosystems where the rabbit is found.

We first noticed damage only on the smallest, recently planted shrubs during the winter months in 2018. In subsequent years damage was noted on larger and more mature shrubs as well as trees. We started at that time protecting our native planting with wire caging. Around our camas plots we have installed chicken wire fencing. While these work, they do require maintenance and are not aesthetically pleasing in a park. We had hoped that these were only a temporary measure and that rabbit numbers would level off and decrease over time. Unfortunately that has not been the case and I think it is safe to say that population is still increasing and if anything the rabbits are getting more voracious

Figure 2: Garry oak gnawed down to its roots.



Figure 3: native crab apple debarked by rabbits

in their pursuit of food. The City of Courtenay's Parks Dept. experienced this first hand following the tree planting project which was done in cooperation with our group of volunteers from Comox Valley Nature. Many of the planted trees were immediately attacked by the rabbits. I have to admit that I was surprised by the speed and intensity of the herbivory. I was under the false assumption that in early autumn rabbits would still be feeding upon the grass and soft vegetation. In fact immediately following the planting many of the trees were browsed by rabbits. The small Garry oak were most severely damaged as shown in Fig 2. However the rabbits also browsed Douglas-fir (Fig. 4), a conifer, which surprised me. The City has replaced many of the trees which were most severely browsed. The current list of trees planted is found in Appendix I.

There are questions which are raised by the attack. Were these young trees from the nursery more attractive to the rabbits? Or perhaps the rabbit population has increased to a point where food is limited and scarce. I am planning to start monitoring the rabbit population in 2022. The Airpark is a small area with easy access. Beginning in the new year, I hope to start a weekly rabbit count to give a rough idea where the population is trending. As we have done for the past three years all new planting will be protected in cages and fencing will be placed around our camas plots.

I have broached the subject in previous reports that the City of Courtenay consider some sort of pest control for the rabbit population. It is a sensitive topic but this has been done in other municipalities on Vancouver Island, notably Victoria. The rabbit is a serious introduced pest and its high numbers are having an effect on the vegetation within and around the Airpark.

The removal of blackberry patches is helpful as it reduces the protective cover for the rabbits. We plan to carry on with this work and we urge the City to do the same.

Work is required on educating the public who continue to feed rabbits in the Park. The Comox Valley has many new arrivals from other parts of Canada who don't realize that rabbits are not native to Vancouver Island and are causing problems.



*Figure 4: Douglas fir damaged by rabbits*

## Himalayan Blackberry

In the Airpark large areas are infested and dominated by Himalayan blackberry. Control of this introduced invasive weed has been difficult. As this is a highly used park, completely surrounded by

*Figure 5: A weed wrench was used to remove the large blackberry roots.*



fish-bearing waters, the use of chemical herbicides has been taken off the table for consideration. The Himalayan blackberry is a difficult invasive plant to control. Like many successful invasive plants it has multiple methods to reproduce, such as layering, root shoots, and seeds. The seeds are contained in berries which are attractive to multiple creatures willing to spread them. The plant itself can grow to form thick impenetrable thickets with large thick roots. These can form a very attractive protective habitat for another invasive species, the rabbit. Controlling these areas using hand tools is a daunting task.

This year we had the help of the City of Courtenay and its heavy equipment in removing a thicket of large Blackberry. This was a patch adjacent to camas plot 2 (Appendix I) Once the thicket was cut and pulverized by the City's equipment our volunteers were able to dig out large roots and the soft shoots as they emerged.

This was done several times over the growing season to insure that the site remained free of blackberry. In addition native shrubs were planted on the site.

Overall we have taken a disciplined approach to dealing with blackberry and have prioritized our control efforts. Areas where we have plantings that may be threatened by these invasive plants, have a high priority for control efforts while areas where the infestation is contained from spreading by pathways or water are a low priority. We control these plants by

*Figure 6: CVN volunteers removing blackberry roots and newly emerged shoots.*



continuously cutting them (up to four times during the growing season). We are slowly expanding the areas where we control these invasive plants. (See Appendix I.) The green shows where we have expanded our control area this year.

The City's crews have joined us and have been cutting and digging the blackberry in front of the lookout for the last two years, shown as orange on the map.. In October this area was planted with trees including shore pine, Pacific crabapple, and bitter cherry.

## Plant Care

### Tree Plantings

This year the City of Courtenay received a grant from BC Hydro and Tree Canada to plant more trees in the Municipality. Note that this work was originally scheduled for 2019 but was postponed due to Covid-19 pandemic. The City approached us as a local community non-profit to partner with them on this project. We had good interactions with Shane Tillapaugh the Urban Forestry and Natural Areas Supervisor for the City. The City agreed to plant only native species, as we have done since starting work in the Airpark. Karen Cummins accompanied Shane in selecting the actual planting sites for the trees.

A work party was held on October 21st with three City workers and 10 volunteers from Comox Valley Nature. The City had previously prepared the planting holes and had piled bark mulch nearby. The day was wet and windy but nonetheless all the trees were quickly planted.

As I noted previously in this report there was some damage to the newly planted trees by rabbit browsing which I reported to Shane T. (Parks Dept.) Caging was quickly installed around the newly planted trees. The more severely damaged trees (figure 2) were replaced. The final count of planted trees by species is shown in Appendix II. The City is planning on watering the newly planted trees next summer. All these trees have a protective layer of bark mulch around them.

As I mentioned previously in the report the feeding habits of rabbits are unpredictable. At the time of the tree planting there was lush grass growing following the autumn rains. It surprised me that the



*Figure 7: City worker Kim gave a planting demo before work got underway.*

rabbits would so quickly browse upon the young trees including conifers (Douglas-fir) when there was so much lush vegetation available.

## Camas Plantings

Camas is the iconic plant associated with Garry oak meadows. It was an important food plant for indigenous peoples of this land. The bulbs formed an important source of carbohydrates in their diet. They could also be stored and were commonly used as a trade good.

We have been planting camas in the Airpark for several years now. (See Appendix I) The invasive species have made this challenging. Camas emerges

in the late winter before grasses turn green. This makes it stand out as a particularly attractive target for the rabbits. We have tried to discourage this by laying blackberry canes on the camas patches. We have also experimented with Bobbex,<sup>TM</sup> a browsing deterrent spray. Neither of these were particularly effective so we have resorted to chicken wire fencing. This is cheap, easy to install and effective.

Camas does not compete well with lawn type grasses once thatch is formed. To address this we use black plastic to solarize the future planting patch, during the growing season (April to Oct.). This concentrates the heat on the ground killing all plants and seed in the soil under the plastic. It is removed in the autumn and the ground is allowed to take in moisture from the fall rains before the camas bulbs are planted. Camas takes at least four years for a bulb to get large enough to reach a flowering stage when starting from seed. So rather than plant seed, we have been using bulbs from a variety of sources. Some I grow in my



*Figure 8: Camas plot 1: Blooming camas with Garry oak in background.*

*Figure 9: Camas plot 6: Black plastic is used to solarize the soil in preparation to planting bulbs in the Fall.*



home garden from local seed sourced from the Hollyhock flats area of the estuary.

Some of our bulbs have been donated from Louise Goulet in Victoria where she has been rescuing native plant from development sites for many years.

Two years ago we found a remnant meadow in the Portuguese Creek watershed containing common camas.

After explaining our project, the owners welcomed us to harvest some

camas bulbs for our restoration work. The camas bulbs are dug up in August and stored in peat moss until planting time in the autumn once moisture returns to the soils. Two new camas plots were established this year, plot 6 and plot 7.(Appendix I)

Most of our camas plots have been fenced with chicken wire to exclude rabbits. We have purposely left two plots (#1 and #5) unfenced to serve as control areas for comparison. Last year we also tried random planting of bulbs in an area that had no site preparation and was unfenced. These bulbs were widely spaced as compared to our plot plantings. While there was some herbivory it was not as severe as expected.

We monitor our camas population by counting the plants blooming in any particular year.

There are weaknesses with this method as flowers occasionally do get picked by park

visitors. However we *Table 2*

do this because individual plants are difficult to separate and count when growing with grasses.

Our number of blooming camas is showing a steady increase since 2019. This can be attributed to the increased fencing and the resultant decrease in rabbit herbivory. It should be noted that 2019 we had

Camas bulbs planted

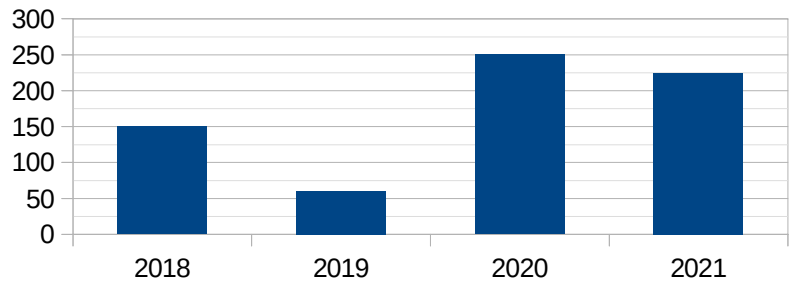
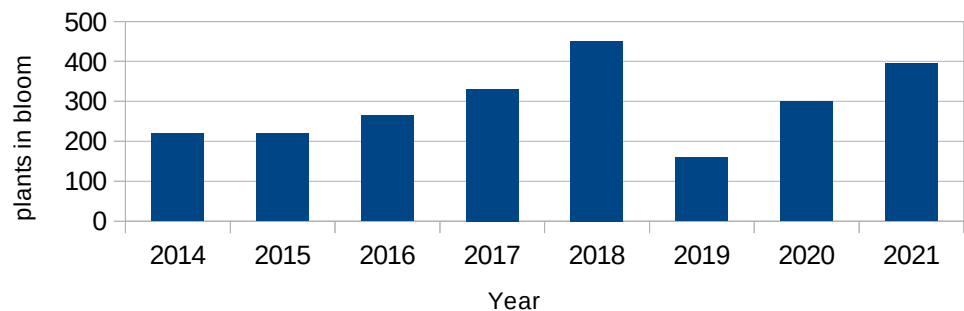


Table 1

Courtenay River Airpark

Blooming Camas Plants



unusually dry spring weather which may have impacted the blooms as well as the recently introduced rabbits.

### Special Plantings

In April a large (2m) Garry oak was planted at the north end of the lagoon. This tree was planted by Brian Storey in memory of his late wife Cathy who passed in Dec. 2020. Cathy was an active member of Comox Valley Nature who coordinated the Tree of the Year Award for some years. This Garry oak is a fitting memorial to a valuable volunteer.



*Figure 10: A Garry oak planted in memory of Cathy Storey*

### Other Plantings

As our project matures we are attempting to introduce many of the smaller plants found or associated with coastal prairies. (Appendix II) Our thinking has been that as the trees and shrubs mature, they will affect the micro climate and environment making conditions more suitable for these smaller plants to survive. In May we planted plugs of Roemers fescue. This is a native bunch grass which I started in my greenhouse. These were planted in the area recently cleared of blackberry next to camas plot 2 ( Appendix I). They survived both the summer drought without being watered, as well as rabbit browsing. It seems to be a good tough native grass well suited to the challenging conditions in the Airpark.



*Figure 11: Roemers Fescue plug*

In October we broadcast seeded suitable areas with a mixture of coastal prairie seeds. In my greenhouse I have started most of the seed mixture in plug trays to be ready for transplanting in the spring of 2022. Currently growing are tomcat clover, bicoloured lupine, sneezeweed and collinsia.

Other seeds being stratified include Menzies delphinium and deltoid balsamroot. Some of these may need to be repotted and further grown before being planted in the Airpark.

Along the shoreline of the Courtenay River estuary grows the blue listed Henderson's checker-mallow. It is adapted for estuarine sites and can handle brackish tidal flows. We planted this on the lower shore of the lagoon at the culvert breach site in 2015 and it did well. It is still surviving at that site however it is difficult to see and is not thriving. The north end of the lagoon (Figure 12) has become a deposition zone for driftwood and other tidal



*Figure 12: Drift wood accumulation at North end of Lagoon*



*Figure 12: Henderson's checker-mallow*

debris. The checker-mallow is often buried

under this debris. The plants have survived but take a long time each year to fight their way through the debris and into the sunlight.

This year we decided to plant more of this spectacular looking plant in areas where it would not face the challenge of being buried under driftwood every year. Several rhizomes were planted at the south end of the lagoon and other sites where there is no wood deposition. These have survived their first year and I expect them to do well on the new site. This plant grows from large rhizomes and is easily propagated in gardens.

## **Plant Maintenance**

We try to plant at the best times to get the plants established before the summer drought season hits. This generally means from mid-autumn, to mid-spring. We do not as a rule water our plants during the summer months. We don't have the equipment nor the personnel required for this task. As one would expect there is some mortality, and growth may be slower than otherwise possible. This can be compensated for by over planting. This year even with the record breaking heat dome we only lost one of our established shrubs.

In the Spring we do a general cleanup and weeding around our most visible shrubs and trees. Small amounts of fertilizer may be applied at this time.

Due to rabbits browsing, stucco wire cages are now placed as protection around smaller shrubs and trees. Around the camas plots we have used chicken wire framed with 1.3m pieces of 3/8" rebar. This has proven effective in excluding rabbits. We do have two unfenced camas plot which serve as controls.

## Signage

Comox Valley Nature has a sandwich board which we put out when having work parties. This alerts the public that work is taking place along the trails and lets them know who is doing the work. It often encourages dialogue between our volunteers and the public. The original sign was made by CVN member Art Folster and was beginning to wear with age. Karen Cummins our current Restoration Chair had the original sign redone as well as making a second smaller sign.



Figure 13: New Sandwich board

This sign gives us an opportunity for education about the invasive plants or sometimes the history of the Airpark and what we are doing. The huge influx of newcomers to the Comox Valley means many of the walkers in the Airpark have very little knowledge about the natural history of the estuary or the Comox Valley. Public education is certainly one of the goals of this project.

In 2019 we updated most of the native plant signs installed in the Airpark. Vandalism has been infrequent in the Airpark however seven of these small signs were tagged early this year. This was reported to me shortly after it happened so I was able clean them. Fresh tags are much easier to remove before they dry and harden. Prompt removal of tags also discourages further tagging.



Figure 13: Tagging has been rare in the Airpark



Figure 15: A quick clean up seems to discourage additional tagging.

## Social Problems

The homeless situation in Courtenay is larger and more visible than ever based on my personal observations. However within the Airpark it seems to be less visible than in the past two years. I suspect it may be because the Park is so widely used by the citizens and general public. Some trampled areas and discarded clothing have been observed however we have not seen any tents or tarps setup in the Park this year.



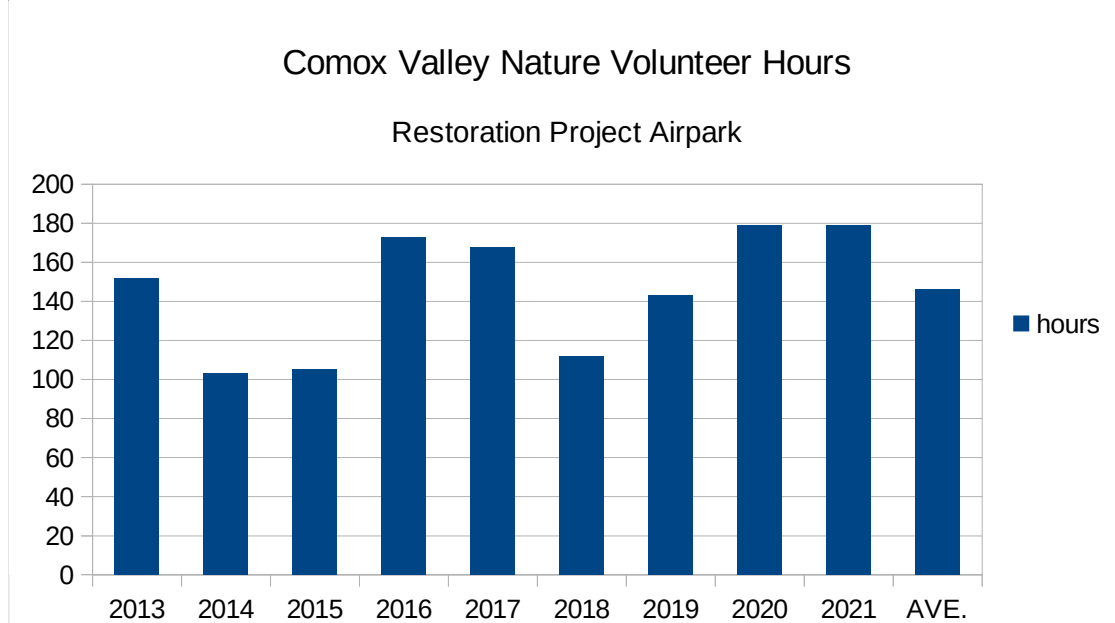
Figure 14: Discarded clothing and miscellaneous goods along pathway in Airpark

## Volunteer Statistics

These hours (Table 3) show time spent on the ground and do not include administration time. A diary is kept to record the participants, the site and the nature of the work done at every work party. The graph reflects only

Table : 3

the hours spent in the City of Courtenay. The majority of our work in the City of Courtenay has been in the Courtenay River Airpark, however effort has also been spent at the Rotary Trail adjacent to the old Railway Station.



Despite the challenges of Covid-19 pandemic, the volunteer hours are slightly above average. I think that this reflects the fact that people feel more secure in the outdoors, which is as it should be.

## Looking Forward (2022)

In British Columbia we are witnessing the effects of climate change first hand. I am sure the City of Courtenay realizes its vulnerabilities and the huge challenges it is facing with respect to its rivers. Our waterways (Puntledge, Tsolum and Courtenay) have all been highly modified in the last 150 years through dredging, diking and channelization. We are seeing the use of water tube dams every year to control the water from flooding parts of the city centre. This is not sustainable. I hope the City is working on a long term plan followed up by action.

In the Airpark we are seeing changes in recent years. The south end of the walkway is flooding more often and the deposition of driftwood blocks the trail until equipment can move it. This used to be a rare event usually coinciding with a king tide or strong storm surges. It is now very common throughout the winter months.

Sea level rises are predicted as climate change advances so this problem will only get worse with time. I urge the City to consider trail relocation of this short portion of the walkway. I hope the City can work together with the Courtenay Airpark Association to find a reasonable solution to this problem. Within the Airpark lagoon we are witnessing much larger depositions of driftwood at the north end of the lagoon. I am not sure of the long term implications of this will be. I do know that several years ago Project Watershed undertook some shoreline restoration planting in this area which are now covered by the driftwood.

Also within the lagoon are much larger numbers of non-migratory Canada geese. While these birds are not introduced, they have been manipulated by humans and no longer migrate. These large numbers are impacting shoreline vegetation in our estuary and indeed many other estuaries on Vancouver Island (Auger 2021)<sup>1</sup>.

Once the shoreline vegetation is removed, it is much more prone to erosion and the physical nature of the estuary changes. Some work has been done by the

K'omoks Guardian Watchmen within the lagoon but it is obvious that more work remains. Hopefully



*Figure 15: The holes appearing in the lagoon are evidence of Canada geese grubbing for roots.*

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<sup>1</sup> Auger O. 2021 Protecting and Restoring Estuaries from Geese. Watershed Sentinel

the City can encourage this group to build more eco-cultural habitat enclosures inside the lagoon to protect the remaining shoreline vegetation.

Despite much wishful thinking, the rabbits do not appear to be leaving the Airpark any time soon. The rabbit problem is still dynamic as is to be expected of a newly arrived invasive species. It will require more time and effort to see where it is heading in terms of the population. There are a few numbers that we monitor and keep track of in this report, such as volunteer hours and camas blooms. These numbers over time gives some sense of condition of the Airpark and our restoration efforts in it.

Starting next year I plan to try tracking rabbit numbers in the Airpark. This will be useful information for any future control or management efforts. I am still thinking about how to get an accurate population number for rabbits in the Airpark. If any readers have experience in collecting this sort of data please contact me. Your input would be appreciated.

We have seen some signs of predation in the Airpark. We also know that the rabbit population is susceptible to a hemorrhagic disease caused by a virus. An outbreak was reported on Vancouver Island in 2019. Anecdotally, reports suggest that this virus had a more lethal effect upon the rabbit population in the town of Comox than it did in the Airpark.

We would like to do more outreach to the public in the upcoming year. This would take the form of nature walks in the Airpark. These would give us an opportunity to educate park users about invasive species like the rabbit. We had hoped to do this starting 2 years ago but Covid-19 did not allow this. In terms of habitat the thick Himalayan blackberry/ Nootka rose thickets offer ideal protective cover for the rabbits. Opening or removing this habitat should decrease rabbit numbers. Both Comox Valley Nature and the City of Courtenay are actively trying to control Himalayan blackberry in the Airpark. We will continue with these efforts. Until some some level of control is attained we will continue to use fencing to protect vulnerable plantings from rabbit browse.

In terms of native plants we will continue to concentrate our efforts on introducing small native plants typically found in coastal prairie ecosystems. Besides purchasing seed from specialized nurseries, Jack Bindernagel has collected a lot of seed locally. We will continue to use black poly to solarize small plots killing the turf and invasive species in preparation for planting.

The many trees planted by the City will need some extra care on their first year in the ground and I expect our volunteers will be lending a hand to keep these trees healthy and give them the best chance for survival.

## Acknowledgements

The Restoration Project is not limited to the Courtenay River Airpark. In recent years our former Project coordinator, Murray Little, has taken a great interest in the Little River Nature Park. He has organized regular work parties to manage invasive species in that Regional District Park. Like the Courtenay River Airpark it is an area of great biodiversity which was highly impacted by past human activities. I am personally elated to see our work of citizen science and restoration spreading and hope it spawns many more projects like these throughout the Comox Valley.

Our project is a part of and supported by Comox Valley Nature which has a wide membership of nature lovers whether it be birding, botany or nature photography. I wish to thank the executive for their support and the members who do the real work outside in the Park. A special thanks to those who donated native plants and seed. These include Murray Little, Bob Hauser, Peter and Carol Hobbins, and Jack Bindernagel. The Restoration Project is coordinated by Karen Cummins and it has been my pleasure to work with her.

There are many people walking on a regular basis in the Airpark. One of these is the former photographer and reporter for the CV Record Gerry Fairbrother. He has kindly donated many of the photos used in this report.

The City staff I want to thank include Parks Manager, Mike Kearns, Horticulture Supervisor Tyler Johns, Urban Forest and Natural Areas Supervisor Shane Tillapaugh and all their crews.

We have received grants from the following organizations.



# Appendix I

## Camas patches and Blackberry Control Areas



## Appendix II 2021 Plant List

common camas	<i>Camassia quamash</i>	225 bulbs
great camas	<i>Camassia leichtlinii</i>	25 bulbs
nodding onion	<i>Allium cernuum</i>	8 x 1 gal
Hookers onion	<i>Allium acuminatum</i>	20 bulbs
Oregon sunshine	<i>Eriophyllum lanatum</i>	2 x1gal
checkered Mallow	<i>Sidalcea hendersonii</i>	8 rhizomes
Collomia	<i>Collomia grandiflora,</i>	6 (nursery pack)
Roemers fescue	<i>Festuca roemeri</i>	10 x 4”pots
harvest brodiaea	<i>Brodiaea coronaria</i>	10 bulbs
red osier dogwood	<i>Cornus stolonifera</i>	1x1gal
Pacific ninebark	<i>Physocarpus capitatus</i>	1x1gal
hardhack	<i>Spirea douglasii</i>	1x1gal
red elderberry	<i>Sambucus racemosa</i>	1x2 gal
gooseberry	<i>Ribes lacustre</i>	1x1gal
Oregon grape	<i>Mahonia aquifolium</i>	2x 1gal

**Appendix II (cont.)  
City of Courtenay Tree Planting Project**

Garry oak	<i>Quercus garryana</i>	13
Douglas fir	<i>Pseudotsuga menziesii</i>	8
Pacific crab apple	<i>Malus fusca</i>	5
Shore pine	<i>Pinus contorta var contorta</i>	13
Sitka spruce	<i>Picea sitchensis</i>	7
Bigleaf maple	<i>Acer macrophyllum</i>	2
Douglas maple	<i>Acer glabrum</i>	2
Sitka willow	<i>Salix sitchensis</i>	5
Red alder	<i>Alnus rubra</i>	2
Bitter cherry	<i>Prunus emarginata</i>	2
Black hawthorn	<i>Crataegus douglasii</i>	2

## Appendix III

### Wetland Restoration Project Tool List

<b>Tools</b>	<b>Quantity</b>
Weed wrenches (Puller Bears)	3 (1 large, 2 small)
Loppers	2 (1 large, 1 small)
Ratcheting loppers	1
Hand loppers	1
Tiger torch with small propane tank	1
Sandwich board (Naturalists at Work)-(2021)	1
Plant information signs	10 (3 new)
Husqvarna brush cutter (525RK)-(2019)	1
Harness, blade, and accessories for brush cutter	1
Tree planting spade	1
Hand pruning saw	1
Basic First Aid kit	1
Weeding mattocks	3
Machete	1
Extendable hand pruner	1
 <b>Supplies</b>	
Mixed gas	1 gal
Sea soil	1/2 bag
Bulb food	1/2 2kg. box
Chicken wire	25 ft.
Stucco wire	20 ft.