Restoration Project 2020
Courtenay River Airpark

ComoxValley Nature

Frank Hovenden

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Cover Photo: A bushtit building its unique hanging nest on a planted Garry oak in the Airpark. As our trees and shrubs mature they are becoming more important and offer better habitat for a wide range of wildlife. Photo by Gerry Fairbrother. Gerry is a daily walker in the Airpark. He is well known from his former career reporting and photographing for the Comox Valley Record.

Introduction

The Courtenay River Airpark is a municipal park on land owned by the City of Courtenay. While it was formerly the site of the sewage lagoon, it now hosts of what is arguably the most popular walking trail in Courtenay. It is on the unceded traditional territories of the K'omox people. It is also part of the Courtenay River estuary, a designated Important Bird and Biodiversity Area. I represent a group of volunteers workers from Comox Valley Nature who recognize its importance on many levels and are working to improve its biodiversity. This report will attempt to record our work this year as well as document the changes we have observed in 2020.

This is a year that few of us will forget due to the Covid-19 pandemic and how it has influenced all of the everyday activities that we took for granted. Our project which is highly dependant on volunteers has been affected. Large work parties were not possible due to social distancing protocols. However we have had many smaller work parties of two and three people. This worked out well in terms of documented work hours (Table 2) that our volunteers put into the project. We have far exceeded our previous year's numbers. Working outside in the open air is not only a low risk activity, but healthy for body and spirit, especially during these times.

Figure 1: Public pandemic notice in Airpark

We work closely with the City of Courtenay and continue to develop this relationship. Some of the workload done in City parks is by a crew of temporary workers during the summer

months. Due to the pandemic the City of Courtenay curtailed its summer employment program. This increased the workload of the full-time staff and necessitated curtailing some projects in the Airpark. We had hoped to see a tree-planting project competed this Fall. This included planting Sitka spruce *(Picea sitchensis)* along the Courtenay River. This has been postponed. The City has increased the Himalayan blackberry *(Rubus discolor)* removal in the Airpark. For some of the older and larger thickets, larger equipment like the 'Billy Goat' or a flail mower is needed for the initial cut. Once this is done our volunteers can maintain the area with hand tools. (Figure 3)

The introduced rabbits continue to be a concern and threaten our new plantings. Our shrub plantings are being protected with chicken-wire caging which is effective. Some, but not all of our camas patches are being fenced as well. We are closely monitoring the uncaged control patches to compare the damage being done by the rabbits. Anecdotally it appears that the rabbit herbivory on our plantings is more severe during the winter months and decreases with spring green-up. It stands to reason that with more food available the rabbits don't concentrate on our early growing bulbs such as camas later in the year.

Last year the issue of homelessness presented itself in the Airpark with several incidents of camping observed in the Airpark. This has not been observed this year. I don't know what to attribute this to, but the quick response of the City's bylaw enforcement officer last year undoubtedly helped. In light of the on-going issue of homelessness and the camping in other large urban parks in BC, I expect this issue may arise again in the future.

Invasive Plants and Animals

History

This project had its roots in invasive plant control centred in the Hollyhock Flats area of the estuary across the Courtenay River from the Airpark. At that time we were concerned with the proliferation of the invasive plant purple loosestrife (*Lythrum salicaria)*. The project has expanded to other areas of the Comox Valley where other invasive plants are a concern. It has also taken a more holistic approach to the problem of invasive species. This includes both public education and habitat management.

Our work in the Courtenay River Airpark is part of a larger Wetland Restoration Project administered by Comox Valley Nature. Besides the work done by volunteers, we hire Sellintin's Restoration Services for certain jobs where the safety of volunteers would be a concern. This is paid for by grants we solicit yearly.

Invasive Plants

There are many invasive plants occupying much of the Airpark. It is well beyond the capacity of a group of volunteers to rid the Park of all of these. However through persistence and time we have been able to control and limit the spread of many of these invasive plants. A good example of this would be Scotch broom *(Cytisus scoparius)* which now only rarely is seen in the Airpark although 25 years ago it dominated much of the site.

Due to the fact the Airpark is surrounded by lands hosting many invasive plants, new introductions are ongoing and

Figure 2: Scotch broom

therefore necessitates constant vigilance and yearly ongoing control efforts. Besides actively removing the invasive plants we are attempting to modify the habitat in order to have conditions that are unfavourable to many of these invasive species. Invasive plants tend to thrive on disturbed sites. The Airpark, being a human construct, is particularly attractive to a variety of invasive plants. Our planting efforts are an attempt to advance ecosystem development. Many of the Garry oaks (*Quercus garryana)* and shrubs planted are getting to the size where they can occupy sites, create shade and change the environment discouraging invasive plants.

Himalayan Blackberry and Tansy

Because of the large areas infested with these two species, we have had to take a disciplined approach to dealing with these two invasive species. We have prioritized our control efforts. Areas where our plantings are threatened by these invasive plants area have a high priority while areas where the infestation is contained from spreading either by pathways or water are a low priority.

We control the blackberry and tansy by continuously cutting them up to four times during the growing season. This slowly weakens the plant as it has to continuously send out new growth. This year we have been digging these weakened blackberry out by it roots. This is difficult work but it seems to be effective. A total of 63 volunteer hours were spent on blackberry control this year.

Figure 3: Blackberry removal by City Parks has given a view of the lagoon. Our volunteers are planting native shrubs on this site

The City has taken an interest in removing the blackberry and we are working together on certain sites within the Airpark. The City has the capacity to cut back "old growth" blackberry with their heavy cutting tools such as the "Billy Goat". Subsequently our volunteers can then maintain the area with hand tools or brushsaws.

Figure 4: large old Himalayan blackberry forms an impenetrable wall but is utilized as good protective habitat by rabbits

On the site by the large rocks (Figure 3) the blackberry was spreading and threatening our largest camas plot. This same blackberry patch was housing many rabbits, as well as blocking a good view of the lagoon. In October the City cut down the blackberry on this site. We have since planted native shrub species (Appendix I) and will keep it free from blackberry in the coming years.

Common tansy (*Tanacetum vulgar*e) is spreading in the Airpark. We have concentrated our control efforts at the southern end of the Airpark. Although it lacks thorns and dies back annually, its roots form a thick mat as it comes to dominate a site.

Rabbits

Rabbits have been in the Airpark for several years now. There are no native rabbit species found on Vancouver Island and the rabbits found here are introduced species which can be considered invasive. We believe that many were unwanted pets which were deliberately released in the Airpark. In the winter of 2018 their damage to our plantings by browsing

became evident. This is evidenced by the reduction in the number of camas blooms shown in Table 2. We took action by caging our small and young plantings with chicken wire.

Figure 5: Rabbit browse on camas

For our forbs initially we tried several methods to deter the browsing. One was spraying the plants with a commercial deterrent product called Bobex™. A second method was spreading the thorny canes of blackberry and Nootka rose in and around our planting beds. It was not felt that either of these was particularly effective. In the fall of 2019 we fenced most of our camas beds with a 2 ft. high chicken wire fence. This year we have expanded the fencing around the plots that were enlarged. This has proved effective. For obvious reasons we don't wish these fences to be permanent. A long-term solution means a reduction or elimination of the rabbit population. Towards this end we have a double strategy of educating the public with signage (Appendix III) and reducing sheltering habitat for the rabbits. As I mentioned in last year's report this was the recommendation from eminent restoration ecologist Dave Polster. The rabbits are using the blackberry thickets to shelter from predators. By reducing this habitat we think we can reduce the rabbit population. It is impossible to predict where the long-term population level will settle out

Figure 6 Chicken wire being installed around camas bed to deter rabbit browse

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at. There is current evidence of rabbit predation by both raptors and raccoon in the Airpark. As well rabbit populations on Vancouver Island are susceptible to a hemorrhagic disease caused by a virus. We are closely monitoring the rabbit population in the Airpark as we are only on the beginning of this invasion curve.

Restoration Plantings

Strategy and goals

It has been our intention to steer the upland areas of the Courtenay River Airpark into a meadow-type ecosystem, that at least mimics the historical prairie that once covered much of the Comox Valley pre-contact. Now called the Garry oak ecosytem, this is one of Vancouver Island's rarest and most endangered ecosystems.

The Airpark site has many attributes that lends itself in this direction. It is relatively dry and free from conifer encroachment. From a social viewpoint the unobstructed views of Comox harbour and the Beaufort range are highly valued by the many park users. As the Airpark is situated beside an airstrip tall trees could pose a safety concern to aviation. Our vision of scattered Garry oak trees on a meadow is appropriate for this site on many levels besides the ecological. Views would be preserved and the open character of the meadow promotes security for park users.

Figure 7: Scattered Garry oaks are starting to stand out in the meadow

To attain this meadow ecosystem our strategy has been to firstly create a skeleton using

appropriate trees such as the Garry oak. We started planting the trees over twenty-five years ago, as these would take the longest to grow and attain size. Last year's report mapped over thirty-five healthy Garry oaks growing in Airpark. While the Garry oak does not attain a great height compared to a Douglas fir (Pseudotsuga menziesi), it can spread out with a large canopy and thus influence the site on which it is situated. It is hoped the larger Garry oaks can encourage native plants and discourage invasive plants. We have not planted any more Garry oaks recently as we feel that the site is sufficiently stocked with oak trees. I would like to emphasize that it is our intention to create a meadow with scattered trees, not an oak forest.

Figure 8: This was the first Garry oak planted in the Airpark in 1995 by Comox Valley Nature.

In the early years of this project we concentrated on establishing Garry oak trees. Later we were more focused on the shrubs and smaller trees that one would find in a typical Garry oak meadow. These helped to fill out the ecosystem skeleton formed by the Garry oaks. In recent years we have focused on the forbs that typically are found at the ground level in a Garry Oak meadow.

Camas

The iconic camas lily is often closely associated with the Garry oak. There are two species of camas found in the Comox valley, the common camas (*Camassia quamash)* and the great camas (*Camassia leichtlinii).* They are often found growing together. This plant has great

social and historical importance to many local First Nations. The bulbs were a rare source of carbohydrates to a diet which was rich in proteins and fats. They could be stored as a food and were widely traded.

The first European explorers to this area describe large fields of the blooming camas that could be mistaken for lakes from a distance. These fields were highly prized by the First Nations owners and were not wild, but tended and maintained. It is well documented that a technique we now call prescribed burning was used to maintain the camas meadows and prevent conifers from encroaching and shading out the meadows.

Figure 9: Small camas

New Camas Planting

Camas takes several years to mature into a flowering plant from seed. We have been planting the bulbs that I have grown from seed in my garden as well as rescued bulbs from development sites. This year we were lucky to stumble across a large local source of bulbs growing on a hobby farm in the Portuguese Creek drainage of the Comox Valley. These are possible remnants from the original prairie which covered much of the Valley pre-contact. We feel very lucky to access this local source of camas bulbs and are grateful

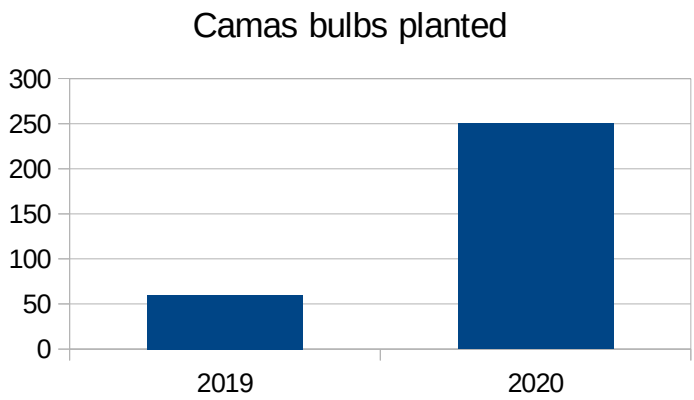


Table 1: Camas bulbs planted

for the permission to access them from the land owners. In addition to our 150 locally sourced bulbs we were gifted a further 100 great camas bulbs from a plant rescue source in Victoria. We have started to record the number of camas bulbs planted yearly (Table 1). This number can be compared to the number of blooming plants (Table 2)to assess the progress of the camas plantings.

Camas does not compete well with our many non-native grasses. We therefore prepare our planting sites by first killing grasses and weeds found on them. We do this by a restoration technique called solarization. Black polyethylene plastic is placed over the future planting plot during the hot summer months. The high temperatures generated under the plastic is enough to kill the plants and the seeds underneath it. In late summer the plastic is removed and in the fall the bulbs are planted. This year the solarization technique was applied adjacent to 3 of our existing camas plots so as to enlarge them.

To protect the camas when it emerges in the late winter, chicken wire fencing, .5 m in height is used to surround the plot. This has proved to be sufficient to protect the camas plot from rabbit browse.

We have been planting a variety of other native plants with the camas. (Appendix II) These are the companion plants you would expect to find in a natural camas meadow. These include Hookers onion *(Allium acuminatum)*, nodding onion, (*Allium cernuum)* crown brodea *(Brodiaea coronaria)* and Oregon sunshine (*Eriophyllum lanatum).* Many of these

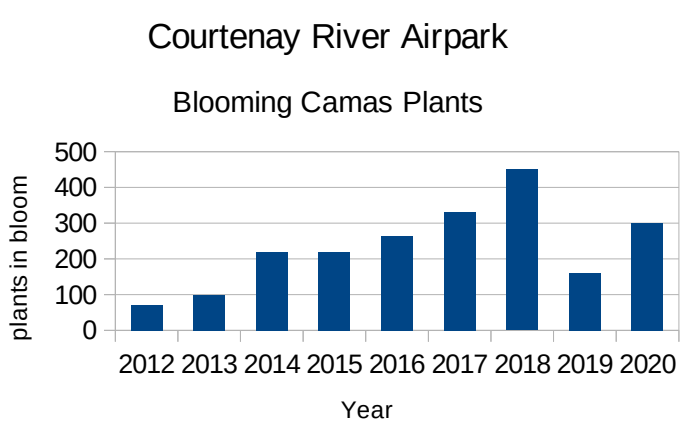


Table 2: Blooming camas plants

came from the garden of Murray and Gillian Little.

We have monitored the camas numbers by counting the blooming plants each year. This is a quick and dirty method to keep a handle on the numbers. Remember the camas may grow up to 5 years before it blooms and young plants are difficult to identify with certainty. There was a modest increase (Table 2) in the number of blooms counted this year. This followed a steep decline in 2019 due to rabbit browse and weather conditions. We are hopeful that with our new plantings and fence protection from rabbits we will see yearly increases in the camas population.

Other plantings

Several other species of herbaceous annuals and perennials were also introduced to suitable areas at the park. These species include native clovers (*Trifolium)*, lupines (*Lupinu*s) and other small annuals, as well as larger perennials such as biscuitroots *(Lomatium)*. The seeds were collected from nearby areas with healthy populations of wild plants on locations with similar drainage and exposure to sites at the park. They were primarily sown in areas which were similar to the areas where the seeds had been collected from. Minimal soil preparation was done, with seeds scattered over areas which already had significant patches of exposed soil to minimize competition. Some seeds were also scattered into our solarization plots, and into existing vernal pool sites. A list of the plant species collected can be found in Appendix II. A few species, namely Roemer's fescue *(Festuca roemeri*), barestem biscuitroot (*Lomotium*

Figure 10: This small native owl clover was found this year growing in the Park.

nudicaule), spring gold (*Lomotium utriculatum)*, and large-flowered collomia (*Collomia grandiflora)*, have also been germinated *ex situ* for planting later in the season. As of late November, several species have successfully germinated *ex situ* and in the park. These include skunkweed, miniature lupine (Lupinus polycarpus), large-flowered collomia, Roemer's fescue, barestem biscuitroot, spring gold, and possibly tomcat and small-headed clovers.

Wildlife

A river's estuary is usually the most bio-diverse part of any watershed. The Courtenay River is no exception and most of the visitors and walkers in the Airpark observe this daily. The larger or more vocal birds are always on display, whether it be a chattering Belted Kingfisher or the stately Great Blue Heron, there always seems to be a show going on, in and around the Airpark. Many serious birders use a tool called "eBird" to record and share their bird sightings with others. It comes as no surprise that the area in the Comox Valley with the most observed bird species (known as a Hotspot) is the Courtenay River Airpark.

Figure 7: Sandhill Cranes on their Fall Migration setting down in the estuary

The City of Courtenay and its citizens have a responsibility for caring and protecting wildlife within its municipal boundaries

The best and easiest way to this is to protect high value habitat. The Airpark is such an area.

We feel development must accommodate wildlife values which are already present. As our city expands, it must be recognized that urban areas can provide habitat for wildlife. The ever-expanding human footprint must accommodate wildlife, as scattered parks and protected areas are not enough. Our cities must become wildlife friendly. One of our goals in the Airpark is to show that this is possible in the city of Courtenay.

The City has an ambitious tree planting program which was postponed this year because of the pandemic. I have worked with the City's arborist Shane Tillapaugh in the Airpark. We hope to work with him again in planting Sitka spruce beside the Courtenay River next year. The Sitka spruce is a conifer capable of living in the salt spray zone close to the water. This is long-term vision of growing large trees capable of providing bald eagle nesting habitat many years into the future.

This year our project erected two swallow boxes in the Airpark. Many swallows are regularly observed in the Airpark during the summer months. Aside from the barn swallows which nest

Figure 11: This large raccoon family is at home on the shore of the Airpark Lagoon

under the outlet bridge, there has been little swallow nesting activity observed. On the assumption that this was due to a lack of suitable nest sites, we installed two swallow boxes in April this year. Although swallows were seen in the vicinity we have to report that there was no nesting in them this year. We will continue to monitor the boxes.

Signage

Last year we replaced most (22) of our native plant signs in the Airpark. These give some basic information about each plant such as its range and traditional uses. We are happy to report that there has been no tagging or vandalism on any of the new signs.

This year we are replaced our large information sign at the first viewing stand at the north end of the lagoon. It has succumbed to the ravages of time and was in need of replacement. As she did with our first sign in 2011, Lisa Zervakis, the City's Communications and Marketing Specialist, lent her professional hand to help make our new sign.(Appendix IV).

As part of our public education program temporary signs were erected around our active work areas (Appendix III). Our volunteers receive a lot of positive feedback when working in the Airpark and we are always happy to explain what we are doing and why. We hope the temporary signage can fill the gap when volunteers are not on site.

Plant Care

2019 Plantings

We continue to observe the rabbit herbivory and learn from it. Last winter larger shrubs were browsed by rabbits that in previous years had been ignored. The rabbits also expanded their browse to include Ocean spray *(Holodiscus discolor)* which was untouched in the previous year. On the positive side our chicken wire fencing around the camas plots proved effective

and was not breached by rabbits.

We have deliberately left some camas plots as unfenced controls. We have observed that most of the rabbit browse happens in late winter and that it decreases with the warmer weather. We speculate that this is due to the overall increased greenery available with the warmer weather.

Older Plantings

Starting in the early spring we do a cleanup sweep around our plantings in the Airpark. This consists of observing our plants to note any pests, damage, and their general condition. We then weed around the base of the plants, fertilize and do a minor pruning when required. This gives us a good opportunity to examine the overall condition and vigour of our plantings and decide on future plant choices for the Airpark.

In the past we planted mainly small stock material. The idea guiding this was that this smaller material was cheap and it allowed us to over-plant areas to compensate for lower survival rates. In light of the rabbit situation we realize that the smaller plants are most susceptible to browse and need the protection of wire cones to survive.

Volunteer Stats

The hours put in by our volunteers have been recorded for the last eight years. These hours (Table 3) show time spent on the ground in the Airpark and does not include preparation or administration time. A diary is kept to record

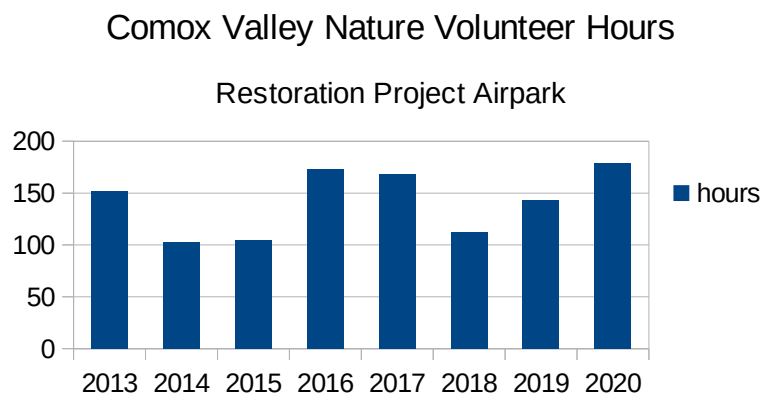


Table 3

the participants, the site and the nature of the work done at every work party. The graph reflects only the field hours spent in the City of Courtenay. Our volunteer hours this year show a significant increase despite the ongoing pandemic. We did not have any large work parties this year, however we did have many small work parties of two or three volunteers. Social distancing was easy with the small number of volunteers. With our work outside we followed the recommended safety protocols.

Looking Forward

The times have shown it is always difficult to make predictions and formulate work plans too far in advance. A year ago who could foresee a pandemic affecting our project? Three years ago who could predict an invasion of rabbits?

These events show the importance of flexibility within the general scope of our plan. We will continue to fight and remove invasive species within the Airpark. At this time we hope to expand our blackberry control areas (Appendix I). In particular we will maintain the area behind camas plot 2 which the City mowed in Oct. 2020.

We do hope to further expand our existing camas plots first with further site preparation though solarization, followed by planting more bulbs in the fall of 2021.

We hope to assist the City with their tree planting program which was postponed this year.

Lastly we would very much like to start some public outreach. This could take the form of public walks with a naturalist guide, or school work parties. This outreach is very much dependant upon the end of the Covid 19 pandemic and the lifting of protocols prohibiting gatherings.

Acknowledgements

There are many volunteers who are involved and work in this project and we are grateful to all of them for their labours.

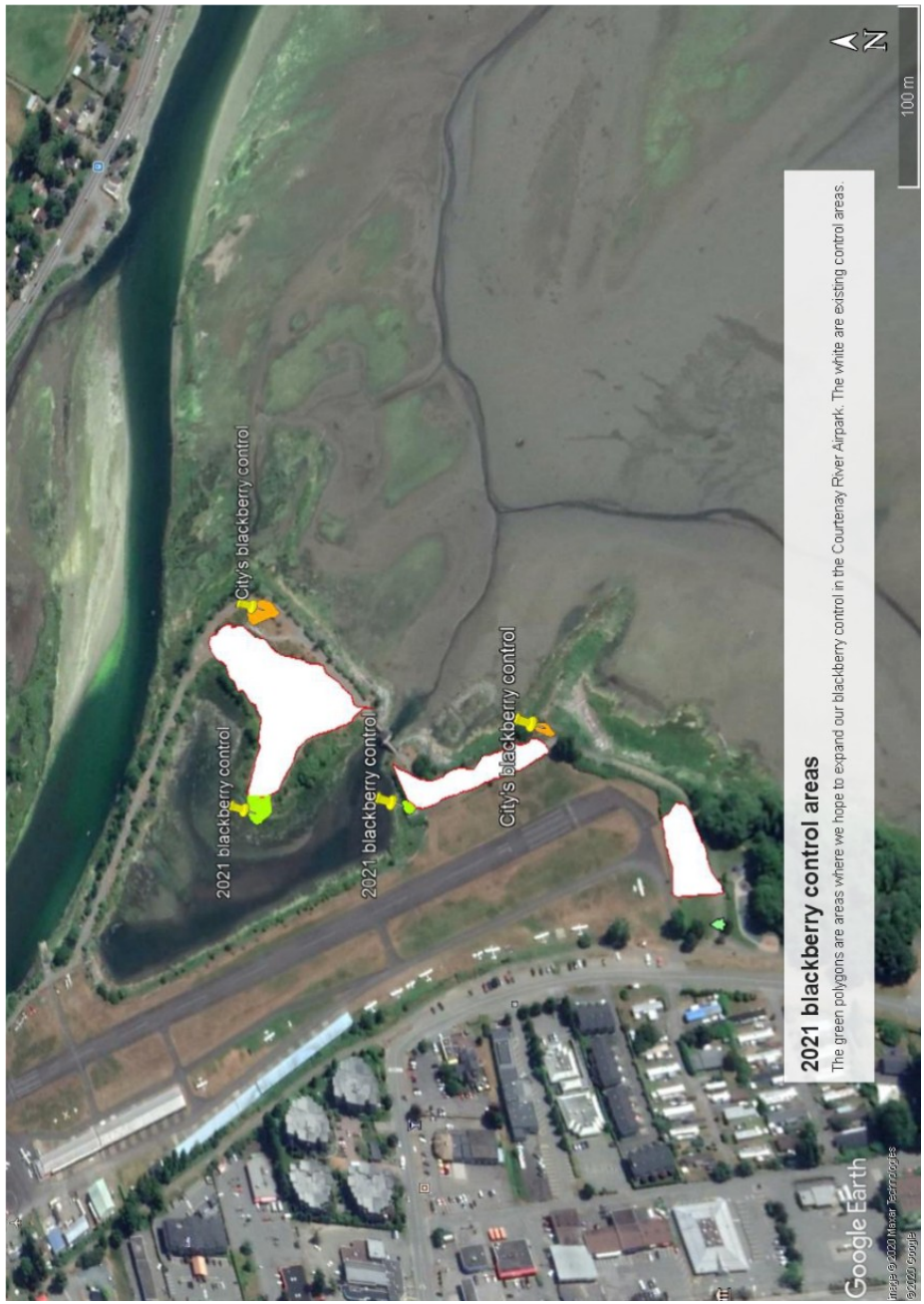
The Restoration Project has a new coordinator this year with Karen Cummins replacing Murray Little. She has done a great job and has spent a lot of time in the Courtenay Airpark doing field work with myself. Jack Bindernagel has brought his youthful spirit and botanical expertise to the project. Gerry Fairbrother has taken and donated some of his excellent photographs to enhance this report.

We work closely with staff from the City of Courtenay. From the Parks Department I want to thank Horticulture Supervisor Tyler Johns, Arboriculture Supervisor Shane Tillapaugh and the Parks Manager Mike Kearns. From the Marketing and Communications Department I want to thank Lisa Zervakis for all her help designing our new sign.

We have had many native plants and bulbs donated to the project this year. We are grateful for the contributions from Louise Goulet, Peter and Carole Hobbins and Murray and Gillian Little.

We have received grants from the following organizations for which we are truly grateful.

Appendix I


2021 blackberry control areas
The green polygons are areas where we hope to expand our blackberry control in the Courtenay River Airpark. The white are existing control areas.
City's blackberry control
2021 blackberry control
2021 blackberry control
City's blackberry control
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Google Earth

Appendix II
2020 Plant List
Camas plots

Common camas	*Camassia quamash*	150	bulbs
Great camas	*Camassia leichtlinii*	100	bulbs
Oregon sunshine	*Eriophyllum lanatum*	6 x1gal	
Crown brodiaea	*Brodiaea coronaria*	10	bulbs
Hookers onion	*Allium acuminatum*,	12	bulbs
Nodding onion,	*Allium cernuum*	10 x 1/2 gal	

Blackberry Restoration Area

Tall Oregon grape	*Mahonia aquafolium*	2 x 1 gal
Common Snowberry	*Symphoricarpos albus*	4 x 1/2 gal
Red elderberry	*Sambucus racemosa*	1 x 1 gal
Pacific ninebark	*Physocarpus capitatus*	1 x 1 gal
Pacific willow	*Salix lucida*	2 x 1 gal
Red-flowering currant	*Ribes sanguineum*	1 x 1 gal

Appendix II cont.
2020 Plant list
Other Areas

		seeds sown
Small-flowered lupine	*Lupinus polycarpus*	70
Tomcat clover	*Tifolium willendovii*	30
Small-headed clover	*Trifolium microcephala*	100
Barestem biscuitroot	*Lomatium nudicaule*	300
Spring gold	*Lomatium utriculatum*	80
Skunkweed	*Navarretia squarrosa*	200
Blue-eyed mary	*Collinsia parviflora*	100
Giant Blue-eyed mary	*Collinsia grandiflora*	50
Scouler's popcorn flower	*Plagiobothrys scouleri*	200
Redmaids	*Calandrinia menziesii*	90

Appendix III
Rabbit Sign

Why the Fencing?

This area was planted with native plants. These include camas, Hooker's onion and Oregon sunshine.

It was being heavily browsed by introduced rabbits. The fencing you see through out the Park is an attempt to curb these voracious pests.

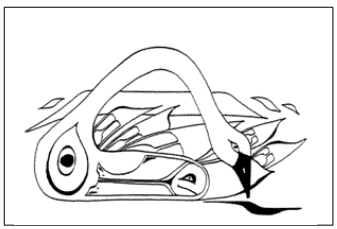
This is part of the continuing work done by Comox Valley Nature, and the City of Courtenay to restore and maintain the Courtenay River Airpark.

WHAT YOU CAN DO

There are no native rabbits on Vancouver Island. Rabbits are an introduced species here. They have few predators on the Island. There are no foxes or coyotes to help maintain the balance in a healthy ecosystem. They can quickly over populate an area and cause damage to the vegetation.

Never release a pet rabbit to the wild. This is illegal under the Cruelty to Animal Act and causes damage to the environment.

Do not feed or encourage the rabbits in the Park.



Comox Valley Naturalists Society
www.comoxvalleynaturalist.bc.ca

A History of Transformation

Geography

An estuary where a river empties into the ocean is the most biologically productive part of a watershed.

The Courtenay River and its estuary have been modified over the years by diking, dredging, and hardening of its shorelines. This has allowed agriculture, settlement, and navigation into the heart of Courtenay. The cost of this has been paid by our natural ecosystems which have been highly impacted and greatly reduced in size. The remaining estuary is extremely important to our salmon, over-wintering waterfowl and a multitudes of other creatures.

This park is on the site of Courtenay's old sewage lagoon, abandoned in 1982. Initial restoration efforts opened it to the ocean. In 2016 Project Watershed opened it to the river by installing a large culvert which allowed through flow and greatly improved the water quality within the lagoon.

History

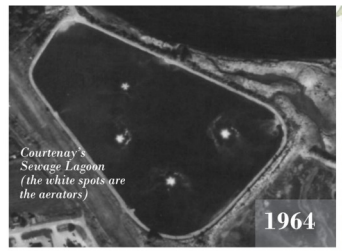
In pre-settlement times much of the land in the Comox Valley was what was called prairie. We now refer to these areas as Garry oak meadows. These areas had only scattered trees and were therefore easily converted to agriculture and development. Virtually nothing remains of these unique ecosystems which once covered large areas on southern Vancouver Island.

These grassland areas were characterized by unique plants such as Garry Oak and camas lilies. The camas bulbs were a major food source for First Nation peoples. They could be stored and were widely traded.

Vision

Recreating a Garry oak meadow is virtually impossible today. Our climate has changed, the soils are different and treatment regimes such as regular burning are impossible to enact today. However we are trying to recreate a somewhat similar ecosystem in this small park. This is known as a "novel" ecosystem.

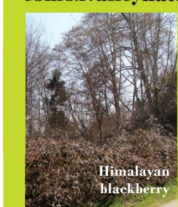
Our goal for the upland sections in the Park has been to create a meadow similar to the historic prairies which covered much of the Comox Valley at the time of European contact. We hope this park to be an asset to both our citizens and the native species of flora and fauna which depend on its habitat.



Restoration

Comox Valley Nature has been active in the Courtenay River Airpark for over 25 years. During that time we have removed invasive plants such as Scotch broom, knotweed and Himalayan blackberry. We have replaced these weeds with native species such as Garry oak, Pacific crabapple and camas.

For more information on this project visit our website:
comoxvalleynaturalist.bc.ca



Photos by Krista Kaptein and ?

The following organizations are partners in this restoration:

Comox Valley Regional District

Comox Valley Naturalists Society

BC Nature

Appendix IV
New Sign