Bird Friendly Comox Demonstration Garden

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Acknowledgments

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Abstract

As part of Bird Friendly Comox's application for Bird Friendly City certification with Nature Canada, this native plant demonstration garden was designed to provide habitat for the insects that birds rely on. The 23 m^2 garden is located in downtown Comox at the north end of British Columbia's historic Garry Oak meadows in full sun, surrounded by asphalt, isolated from any remaining Garry oak meadows, and exposed to deer pressure. This challenging location was intentional because it represents conditions that are common throughout Comox; however it presented limitations when selecting suitable plants and seeds. A total of 23 species were selected, with 203 perennials planted as pots/plugs and 3576 seeds, primarily annuals. Perennials were planted in the fall of 2024 followed by overseeding with the annuals. In a survival survey conducted June 2025, the pots and plugs had 84% survival and continued to thrive into July 2025. However, the seeds had just 5% germination, many of which were lost to drought by mid July. I consider whether seeding is an appropriate option on this exposed sight with high risk of seed predation over winter by birds followed by germinant desiccation over the spring and summer. Ongoing stewardship will include trialing new species capable of tolerating drought, full sun and deer pressure while prioritizing insect habitat over traditional urban garden aesthetics. Some negative public feedback about the garden's more natural appearance may be expected and I look forward to working with the Town of Comox to use this as an education opportunity.

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1.0 Introduction

Long term studies reveal that throughout North America there has been a 29% decline in bird abundance, or the loss of 3 billion birds, since 1970 and that this dramatic decline is widespread across species in all biomes (Rosenberg et al., 2019). Causes include habitat loss from urbanization and agriculture and declines in insect diversity and abundance linked to pesticides and loss of insect habitat (Rosenberg et al., 2019). Worldwide, conversion of native plant communities to non-native plant assemblages is a major threat to biodiversity, contributing to the loss of herbivorous insects that are a critical component of juvenile bird diets. Within urban landscapes, non-native plants contribute to this loss of bird habitat and food (Narango et al., 2017) while free range cats and building strikes cause significant annual mortalities (Loss et al., 2015). In a study of the highest biodiversity and conservation threat regions in Canada, Kraus et al. (2020) identified eastern Vancouver Islands' mixed grasslands, also referred to as Garry

oak meadows (GOEs), as one of Canada's nine crises ecoregions, with greatest need of conservation action.

Climate change and population growth are both increasing demands on the Comox Valley's limited water supply. Due to climate change, BC Agriculture and Food (2020), projects a substantial decrease in winter snowpack and summer streamflows in the Comox Valley, with average summer precipitation declining by as much as 8% in the 2020s to 16% in the 2050s. Meanwhile the population of the Comox Valley has grown by 8.9% from 2016 to 2021 alone (Comox Valley Regional District, 2025), with an ongoing demand for more housing.

The Town of Comox (the Town) is at the northern tip of eastern Vancouver Island's crises ecoregion, where extensive water hungry lawns and manicured non-native landscapes provide very little habitat for birds and the insects that they depend on.

Founded in 1939, Nature Canada is a national charitable foundation that helps over 130,000 members and over 1,000 nature organizations protect parks and wildlife areas throughout Canada. Their Bird Friendly Cities certification program is designed to address the major threats to birds within urban areas, including cat predation, window collisions, light pollution, pesticides, plastics, vehicles, habitat loss and disturbance (Nature Canada, 2025). To achieve Bird Friendly Certification communities must show that they have taken action to reduce these threats plus address biodiversity protection, habitat management and climate resiliency. Qualifying actions include promoting native flora on public properties and new development permits (Nature Canada, 2023).

Bird Friendly Comox (BFC) is a group of concerned Comox Valley citizens who recognize that native plant gardens can help reverse the degradation of local ecosystems that contributes to declining bird abundance and diversity in cities (Marzluff & Rodewald, 2008). Their Bird Friendly Certification application includes creating this native plant demonstration garden designed to provide critical food and habitat for the herbivorous insects that birds depend on and meet the following criteria for certification:

2.6 Native Flora – Municipal Lands

3.3 Communicating Best Practices to Help Birds

3.4 Public Installations for Education

The Town of Comox Parks Department very generously prepared the bed and funded the purchase of seeds, plants and soil.

1.1 Vision

To make Comox a community that gardens for nature. To inspire and empower gardeners to connect with nature by creating their own resilient, abundant native plant meadows that support insects and the birds that depend on them.

1.2 Scope

A 23 m^2 Town of Comox owned garden bed located on Nordin Street, Comox, BC, installed in fall 2024 and to be established by fall 2026.

1.3 Goals and Objectives

To demonstrate native plant garden design and stewardship that optimizes insect habitat over traditional garden aesthetics using drought tolerant, deer resistant GOE plants by:

1. Establish a drought tolerant 100% native plant garden with high species richness and meeting the following objectives by fall 2026:
    - 20 plants/m using pots, plugs and seeds (ER502, 2024)
    - 75% forbs, 25 % bunchgrasses (Xerces, 2013, as cited in WMSWCD, 2016).
    - 75% perennials, 25% annuals (Xerces, 2013, as cited in WMSWCB, 2016).
    - Provides as continuous as possible floral resources on this summer dry site (Majewska & Altizer, 2020).
    - 10% open soil (GOERT, 2013c)

2. Demonstrate ongoing stewardship that maximizes ecological resilience, climate adaptation and insect habitat while challenging conventional expectations of tidiness.
3. Create an educational webpage to inspire and empower those with similar growing conditions to create a bird friendly garden in their home landscape by fall 2025.

1.4 Study Area

Comox is located on the Unceded Traditional Territory of the K'omoks First Nation. Pre-colonization up to the 1860s, the Pentlatch and K'omoks people were in a symbiotic relationship with the region's approximately 24 km^2 of Garry Oak meadows (GOERT, 2025). Indigenous stewardship practices included camas (*Camassia)* cultivation and periodically burning competitive woody understory shrubs and conifers that would otherwise exclude Garry oaks (*Quercus garryana)* and their biodiverse understory plant community (Maingon, 2012). In return, these open meadows provided a fire break around villages and valuable food resources such as carbohydrate rich Garry oak acorns and camas bulbs that were consumed and traded with neighbouring tribes (Maingon, 2012). Due to colonization, land preemption and the banning of traditional burning and stewardship practices less than 1% of this GOE remains (GOERT, 2013a).

Based on the biogeoclimatic zone classification system, the Town is within the transition between biogeoclimatic zone CDFmm and CWHxm1 (Green & Klinka, 1994) and within the climate suitability for GOEs (GOERT, 2011). Prior to colonization, the region's forests were mostly a mix of Douglas fir (*Pseudotsuga menziesii*), western hemlock (*Tsuga hererophylla*), western redcedar (*Thuja plicata*) and grand fir (*Abies grandis*).

Today, conifer forests, with their towering evergreen trees and dense, shady understory, are not suitable reference ecosystems for confined urban settings. Alternatively, open canopied GOE meadows have very high ecological value, supporting the highest plant diversity in coastal British Columbia (Pollinator Partnership Canada, 2017), and more than 20% of the rarest plants in BC are found in GOEs (GOERT, 2025). Full sun

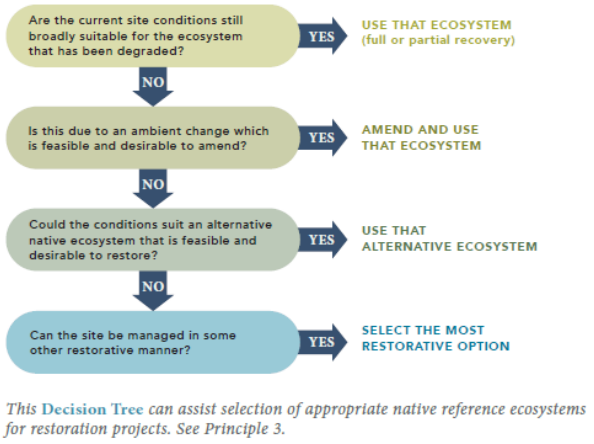
requiring, drought tolerant GOE plants are also a better fit amongst urban infrastructure of roads, buildings, and utilities.

Given the high ecological value of many GOE plants, the garden's urban setting, and anticipating increasing summer water restrictions due to climate change, drought tolerant GOE plants were considered the best fit for Bird Friendly Comox's native plant demonstration garden. It is understood that this garden's location is altered to the point that there is no historical analog and that this garden can never be restored to a historical GOE. Instead, this will be a novel ecosystem (Hobbs et al, 2014), a compromise that maximizes ecological benefits within urban infrastructure; an assemblage commercially available GOE plants suitable to the site conditions that can provide important habitat and food for insects and birds.

The selection of GOE as an *alternative reference ecosystem* or *most restorative option* complies with the Society for Ecosystem Restoration's International Principles and Standards for the Practice of Ecological Restoration reference ecosystem Decision Tree and is consistent with Principle 3, '*Informed by native reference ecosystems, while considering environmental change*' (Gann et al., 2019).

Figure 1

Society for Ecosystem Restoration's International Principles and Standards for the Practice of Ecological Restoration reference ecosystem decision tree



Source: Gann et al., (2019)

1.5 Site Description

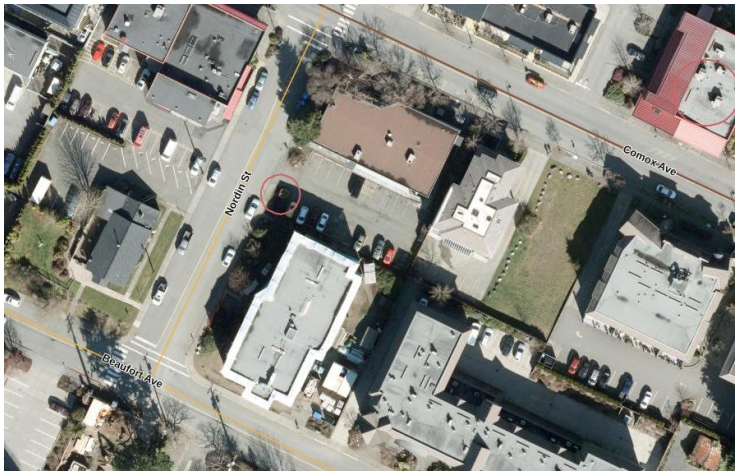
Location: Nordin Street, Comox BC. Lat:49.67140° N, Long:124.92721° W

Figure 2

The Town of Comox on eastern Vancouver Island, BC

Figure 3

Aerial Image of Demonstration Garden Location, downtown Comox



The garden is located downtown Comox, surrounded by concrete and asphalt on all sides with roads and parking on three sides. It is in full shade during the winter due to a four story building on the south side of the garden and full sun during the summer.

This site was chosen for its location along a busy walking route from the Town's main shopping area on Comox Avenue to Marina Park and the library. It is also small enough to be translatable to a home landscape and manageable for volunteers to maintain. Adjacent to a busy side walk and between a parking lot and a secondary street, it does not front a business or government building, presenting an opportunity to experiment and push conventional aesthetic boundaries with no risk of offending building owners or occupants.

2.0 Methods

2.1 Goal 1 – Establish a Native Plant Demonstration Garden

Summary: Create a drought tolerant native plant garden that demonstrates a functioning, relatively ecologically resilient ecosystem by optimizing plant species and genetic diversity, functional redundancy and plant - insect species connections (Oliver et al, 2015).

2.1.1 Design Guidelines

This urban setting, with its full summer sun, high deer pressure, undeveloped soils and interrupted hydrology presented plant species selection limitations. However, plant species richness needed to be maximized in order to support the broadest insect species richness. Because greater functional trait diversity also increases ecosystem function (Beck, 2013), the plant selection intentionally included grasses, nitrogen fixing forbs, non-nitrogen fixing forbs, geophytes, and one shrub.

The matrix design concept used was from the book, *Prairie Up, An Introduction to Natural Garden Design*, by Benjamin Vogt (Vogt, 2023). While the author lives and practices in Nebraska, US, his recommendation to use bunchgrasses as the base of the matrix to create an intentional look and unifying structure, and then add masses and

drifts of more colourful flowering forbs fits well with the ecology of eastern Vancouver Island's mixed grass, forb, shrub meadows and the goals of this project. Like many ecological garden designers, Vogt also recommends dense planting to exclude non-native species.

Another widespread practice within native plant or ecological gardening is the use of orderly boundaries and cues to care (Jiayang & Nassauer, 2020) in which the design communicates human intention and ongoing presence. A 30 cm wide wood chip border around the garden signals intention while creating a buffer between the plants and pedestrians on the adjacent sidewalks. Taller plants with the potential to flop were placed in the central area of the bed with smaller, more compact plants along the edges.

A rock feature was added to create visual interest and echo a very dry bluff ecosystem suitable for the sedums. The shrub, Mock orange (*Philadelphus lewisii)*, with its attractive spring blooms added insect forage, structural diversity, bird refuge and demonstrates potential nesting habitat.

2.1.2 Plant and Seed Species Selection Criteria

The plant and seed species selection criteria were:

1. Native to south eastern Vancouver Island
2. Full sun tolerant
3. Drought tolerant
4. Deer resistant
5. Availability from Vancouver Island nurseries specializing in native plants.
6. Habitat contribution and floral resources
7. Aesthetics

The following resources were used to create a species list that met the first four criteria:

- The University of British Columbia's E-Flora BC Electronic Atlas of the Flora of British Columbia (Klinkenberg, 2020);
- Satinflower Nurseries website plant search function (Satinflower Nurseries, 2025)

- Plants of Coastal British Columbia Including Washington, Oregon & Alaska (Pojar & MacKinnon, 1994).

Plants were further selected for habitat contribution and floral resources based on Pollinator Partnership Canada's *Guide for Gardeners, Farmers, and Land Managers in the Eastern Vancouver Island Ecoregion* (Pollinator Partnership Canada, 2017). The list was then narrowed to plants and seeds available from either Streamside Native Plants in Bowser, BC or Satinflower Nurseries in Metchosin, BC.

In order to reduce costs and create a more natural aesthetic I created a custom seed mix of the annual species with the help of Satinflower Nurseries. All perennial forbs were planted as pots or plugs, with some also added to the seed mix. All of the grasses were planted from plugs to ensure uniform coverage and to provide an immediate foundation for the matrix. There were no grasses included in the seed mix so that in the first few years all grass germinants could be assumed non-native and be removed. Once any existing grass seed bank within the imported soil has germinated and been removed, and volunteers have learned to identify June grass (*Koeleria macrantha),* Roemer's fescue, (*Festuca roemeri)* and Prairie woodrush (*Luzula subsessilis*) seedlings, the native grasses will be allowed to fill in.

Bloom colour and plant form were a final but relevant consideration, with a preference for smaller, more compacts plants with flowers attractive to humans. One example is the choice of Mock orange (*Philadelphus lewisii)* over Oceanspray (*Holodiscus discolor)* as the one shrub. Both are excellent insect host plants, however Mock orange blossoms drop while Oceanspray blossoms are retained and turn brown by midsummer.

2.1.3 Soils and Site Preparation

To prepare the site, the existing plants, mulch layer, and the top few inches of soil were excavated in order to remove any seed bank. The soil beneath was found free of rocks with moderate organic matter content and good loam like texture.

Figure 4

October 9, 2024 with existing plants and their root balls removed.

To replace the excavated materials and raise the soil level to the sidewalk, the Town accessed material classified as ‘river silt’ from nearby supplier, Vancouver Island Enterprises. Sand was added to ensure adequate drainage and commercial compost was added to increase organic matter content for water retention.

Soil mix:

- River silt: 2.5 yards (63%)
- Compost: 1 yard (25%)
- Sand: 0.5 yards (12%)
- Total: 4 yards

2.1.4 Planting and Seeding

Figure 5

October 15, 2024. New soil added, grass matrix installed with forbs and bulbs arranged in groupings and sweeps.

Figure 6

November 3, 2024. Seed mix spread using sand carrier.

Figure 7

June 7, 2025. Seed germination sparse.

Figure 8

June 7, 2025. Plants from pots/plugs showing vigorous growth.

Figure 9

June 7, 2025. Rock Feature

After the garden was planted in November 2024, signage was strategically placed to prevent cars from driving across it. The garden was monitored for deer, human and dog damage over the following winter and aside from occasional footprints left by all three species, there appeared to be minimal damage during this vulnerable stage of the garden's establishment.

2.2 Goal 2 – Demonstrate Ongoing Stewardship

Summary: Demonstrate stewardship that maintains plant genetic diversity, insect habitat, resilience to climate change while improving ecosystem function over time (Oliver et al. 2015) while pushing the boundaries of socially acceptable garden aesthetics.

Stewardship will include letting the garden self design (Beck, 2013) by allowing it to adapt to the harsh urban conditions and to observe which plants are succeeding and which are failing, rather than maintaining a static state. Natural succession from grassland to shrubs to forest is not likely or desirable on this small site. Instead, the best option is to steward this novel ecosystem to achieve a balance of socially accepted aesthetics, resilience, and diverse insect habitat (Hilderbrand, 2005).

Lack of gene flow from healthy GOEs and the loss of First Nations cultural practices means that this garden will require ongoing stewardship and adaptive management in perpetuity. This includes removing non native plants, controlling overabundant native species, and diversifying the genetics of annuals and short lived perennials by periodically reseeding. Mulching, pruning, deadheading and removing dead vegetation destroys critical habitat and insects in the egg, larval or hibernating life stages (Majewska & Altizer, 2020), therefore dead plant material will be left onsite to decompose, promoting the development of soil biology and provide overwintering insect habitat. Over accumulation of organic matter will be prevented via periodic clipping and hand removal.

Thinning overabundant rhizomatous and self seeding species such as the bunchgrasses and yarrow *(Achillea millefolium)* will be required to maintain target ratios

(WMSWCD, 2016). The openings created when plants die or are removed, will create opportunities to import new genetics of existing species and trial new species.

2.3 Goal 3 – Create Educational Webpage

Summary: Maintain an educational webpage, linked by a QR code on the garden's signage, that raises awareness about the ecological benefits of GOE meadow plants in urban landscapes and makes the connection between native plants, insects and birds while reducing the knowledge barrier and cultural inhibition around native plant gardening.

The long term goal is for the webpage content to include:

- An introduction that outlines the purpose of the project and the value of native plants to insects and the birds that depend on them
- The history of Garry oak meadows in the Comox Valley that includes the Indigenous history
- A list with photos of the drought tolerant, deer resistant native plants that have succeeded within this garden
- A list of helpful native plant and habitat gardening resources with an emphasis on free resources
- Regular updates detailing successes and challenges, including which plants are proving unsuitable and why, any plant or habitat additions, watering regimes and pest issues.

3.0 Results

3.1 Goal 1 – Establish a Native Plant Demonstration Garden

3.1.1 Plant Survival

All germinants and surviving plants were surveyed on June 7, 2025 (see Appendix B & C). Overall, plant survival in the first spring was successful at 84%. Oregon stonecrop (*Sedum oreganum)* and Broadleaf stonecrop (*Sedum spthulifolium)* were both extremely successful because, while only 5 of each plant were purchased, they broke

apart during planting and again during subsequent torrential rains, with many of the scattered leaves and stems successfully taking root. In order to prevent the success of these additional plants from skewing the overall survival data, the *effective* planted number was changed to match the survival number. The shooting star (*Primula hendersonii)* had the poorest survival at only 6% (one of 16 plants).

The one shrub, Mock orange*,* appears in good condition, showing some dieback on a few branches, typical of this species. As of this writing, June 8, 2025, there has been no sign of deer browse despite frequent deer traffic through the garden. All three Graceful cinquifoil (*Potentilla gracillus)* are being regularly browed by deer and although they continue to recover each time, this species is not a good candidate for this site.

The Prairie woodrush (*Luzula subsessilis)* grew and flowered in February then turned brown and lay flat in May as the seeds matured, indicating that the site may be a bit too sunny for this plant.

Seeds of Early flowering violet (*Viola adunca)* were not available, so instead three potted plants were included with the hope that they would self seed throughout the bed going forward. All three successfully bloomed and appear to be developing seeds. This approach appears to have been a success.

None of the Great camas (*Camassia leichtlinii)* bloomed this first spring, but with emerged leaves appearing healthy we can look forward to their display in future years. Overall, the Nodding onion (*Allium cernuum),* Rosie pussytoes *(Antennaria rosea),* Common harebell *(Campinula rotundifolia),* Woolly sunflower *(Eriophyllum lanatum),* Roemer's fescue*,* June grass*,* and both sedum species are looking very healthy for their first year and so far appear to have been good choices for this full sun garden.

3.1.2 Seed Germination

Seed germination, averaging only 5%, was very poor (see Appendix 2). The surprise failure was Blue-eyed Mary (*Collinsia parviflora*). This usually tough annual can be found in sandy, nutrient poor, exposed patches throughout the nearby Lazo area and thrives in my own garden. The failure of Spring gold and Sea blush (*Plectritis congesta)* was also disappointing with the 11 Sea blush germinants being very small and unlikely

to produce seed for next year. Both of the two relatively successful species, Farewell to spring (*Clarkia amoena)* and Small flowered lupin (*Lupinus polycarpus)* included many attractive, large, robust plants as of the June 7 survey date. Unfortunately, the Small flowered lupin was very heavily browsed by deer once it started to set seed.

3.1.3 Density

The total number of plants as of June 7, 2025 was 345, resulting in an average density of just 15 plants/m2 (345 plants/ 23 m2 area), 25% short of the 20 plants/ meter objective. This is due to the poor seed germination.

3.1.4 Annuals vs Perennials

As of June 7, 2025, the number of perennials to annuals is out by just 6%, with perennials at 61% instead of the target 75%. As tough perennials such as woolly sunflower, field chickweed, early blue violet, and eventually the grasses begin to self seed, the target ratios can be achieved by thinning over abundant annuals. See Appendix D for calculations.

3.1.5 Grasses vs Forbs

As of June 7, 2025, there were 19% grasses and 81% forbs. This is very close to the target of 25% grasses to 75% forbs. These numbers do not reveal that the grasses were large and robust while many of the forbs were very small annuals and perennials unlikely to survive through the summer or to re-seed. As of summer 2025 the site appears grass dominated. See Appendix D for calculations.

3.1.6 Open Soil

As of June, 2025, the open soil was about 70%, far more open than the fall 2026 target 10%. This is largely due to the seed germination failure and because the garden is still in its first year. With successful growth of the existing perennials plus successful germination of additional seed, the target should be achieved by spring 2027.

3.2 Goal 2 – Demonstrate Ongoing Stewardship

Unfortunately, 2025 has been unusually dry on eastern Vancouver Island, with only 20 to 40 percentile of normal precipitation for the months of April, May, and June

(Agriculture Canada, 2025). For Comox, there has been no measurable July rainfall as of this writing on July 17. To prevent desiccation of germinating seeds, supplemental watering started April 8. Watering continued every 4 – 7 days or as needed based on rainfall and temperatures. As a result, none of the potted/plug plants showed drought stress; however it is hard to know how many seeds germinated then died between waterings. Notably Sea blush seeds were more successful directly beneath or beside plants, suggesting there was beneficial shading and cooling effects.

Weeding started in late March 2025, and, as of June 7, 2025, very few weed seeds germinated from the imported soil or compost. Most weeds have been grasses; therefore could be removed with confidence that they are not from the seed mix. Small forb germinants were left until they could be identified before weeding.

3.3 Goal 3 – Create Educational Webpage

I have never created website content or worked with a municipality to put educational information up onto their website so I was very naïve about the processes and constraints involved. As of this writing (July 2025), a brief introductory page and plant list are up at https://www.comox.ca/birdfriendlygarden.

4.0 Discussion

4.1 Goal 1 – Establish a Native Plant Demonstration Garden

Spring gold (*Lomatium utriculatum)* and Shooting star were the only notable plant failures. While Shooting star emerged in May, they quickly showed significant insect browse and the leaves of only one chlorotic plant remained visible by the survey date. Slug damage was most likely the cause according to local naturalists and experienced native plant gardeners. I will not be replanting this species unless the existing plants emerge and succeed in future years.

The three Spring gold (*Lomatium utriculatum*) plants that did not survive had poor root development when removed from their pots while the two survivors had very good root development. This suggests that losses were due to the starting condition of the plants

not the site or growing conditions. With its very early flowering time and compact habit, this species is worth replanting once robust starts are sourced.

The Fools onion (*Triteleia hyacinthina)* had 63% survival with 4 of the surviving plants in very poor condition. I did not find any obvious cause of this plant's failure and suspect that the site may not be suitable. If, after continued monitoring the remaining plants survive, this species may be a candidate for replanting.

The poor seed germination across species suggests that seed quality was not the cause of failure. During a presentation to the Comox Valley Naturalists (CVN), I asked this extremely knowledgeable group what they thought had caused the seed failure. Experienced horticulturalists and native plant gardeners with CVN suggested that they had been eaten by birds over the winter. However, I suspect that the site conditions were also a major contributing factor. In the same week that I seeded this project garden, I also seeded Sea blush and Farewell-to-spring (*Clarkia amoena*) from Satinflower Nurseries into a new native plant bed in my own garden. My garden has partial shade and well developed soils after 16 years of organic gardening. The results were an outstanding success with excellent germination resulting in many large healthy plants. In a study of comparing the success of planting versus seeding across different restoration sites and conditions, Palma et al. (2015), found that planting was significantly more successful than seeding. Drought, lack of shade, predation and poor substrate were among the leading causes of seed failure. Given the full sun conditions of this project, and the recent annual spring and summer drought patterns being experienced in the Comox Valley, planting may be a better option than seeding at this early stage in the garden's development despite the extra cost.

One of the project objectives is to provide as continuous as possible floral resources. However, in summer dry, full sun conditions, one important plant adaptation is to flower and set seed in the spring and early summer before going dormant for summer. As a result, most of the plants appropriate for this garden will be finished blooming early to mid summer and therefore cannot provide floral resources required to support insects through late summer and early fall (see Appendix E). Instead, they provide important

spring and early summer insect forage while shadier, moister sites provide later season resources across a diverse mosaic of conditions.

4.2 Goal 2 – Demonstrate Ongoing Stewardship

This garden is only in its first year, so aside from some watering and weeding, there are no maintenance results to discuss. Instead, here are some guidelines and suggestions for going forward:

1. Continue to minimize the removal of material in order to provide insect overwintering habitat, seeds and insects for birds, seed protection and surface organic matter buildup will be important. Eventually, manually removing some accumulated organic matter will be required to maintain 10% open soils and accommodate aesthetic standards.
2. Continually trial new species as space allows. The 2025 book, Native Plants of British Columbia's Coastal Dry Belt, by Hans Roemer and Mary Sanseverino, chapter, 7 Garry Oak Plant Communities is an excellent source for drought tolerant GOE plants to trial.
3. Prairie woodrush was selected due to its early flowering and small size, but turned brown and flattened in late April, creating an unattractive border. Transplanting them into the center where they will be less visually conspicuous is a compromise between meeting aesthetic objectives and preserving their habitat function. I suggest replace the Prairie woodrush with 20 California oatgrass (*Danthonia californica)*. This long lived, drought tolerant, perennial bunchgrass is food for butterflies, including BC's red listed Taylor's Checkerspot (*Euphydryas editha taylori*) (B.C. Conservation Data Centre, 2025) and can reduce invasion by non-native species (USDA, 2008). From experience in my own garden, the relatively low, gently rolling leaves of California oatgrass will fit well along borders, although the long culms will require trimming to prevent encroachment onto the sidewalk.
4. Reseed a section of the garden and cover with netting per recommendations by Karen Cummins to test if bird forage had been the cause of the fall 2024 seeding

failure. The seed mix should include species that did not germinate well in the previous seeding, but should be well suited to the site:

- Blue-eyed Mary (*Collinsia parviflora*)
- Sea blush (*Plectritis congesta*) (although 11 germinated, they were extremely small and unlikely to produce seed for the following year)

5. Once the garden is established and the target density is reached, include yarrow in the fall seeding mix. This flowering forb is drought tolerant and valuable forage many insects; however it is also rhizomatous and self seeding so it spreads aggressively if not managed.
6. Large woody debris provides valuable insect habitat (Xerces, 2025). Once the plants have filled in, consider adding several carefully placed Douglas fir *(Pseudotsuga menziesii)* or Garry oak logs.
7. The late summer, fall and winter appearance of the garden may trigger some negative responses from the public. Be aware that the appearance of this garden during the dry dormancy phases of late summer through the winter die back phase will appear weedy and derelict to those accustomed to standard heavily watered, fertilized and mulched ornamental gardens. To some, this is an indication of urban decline and neglect. Be prepared to respond with educational information and a willingness to compromise for the first couple of years and stay in close communication with the Town's knowledgeable and supportive Parks Department staff for any feedback and suggestions.

4.3 Goal 3 – Create Educational Webpage

There have been challenges developing the webpage content that I had anticipated. As of July 2025, there are no plant images up yet because the Town requires that images be sourced from Adobe instead of open sources such as iNaturalist. While some Adobe images may be suitable, I am currently looking for an approved source of photos of local eastern Vancouver Island plants.

A list of free resources can make native plant gardening accessible to more people; however there are constraints around posting information from other organizations on the Town's webpage. I hope to continue to work with the Town to resolve this issue.

Discussion of the First Nations relationship with Garry oak meadows on the Town's website requires working with their First Nations liaison, however I understand that this person is very busy and I have been unable to connect with them. Honoring the K'omoks First Nations relationship with the meadows that they stewarded for thousands of years is a priority that I will continue to work on.

Providing updates about the challenges and successes within the garden helps support others on their native plant gardening projects. By sharing, we not only provide helpful technical information (how to, how not to), but we reduce the sense of isolation and disappointment when inevitable failures happen. Going forward, I hope to work with the Town to find a way post annual garden updates.

5.0 Conclusion

We are currently experiencing a polycrisis that includes climate change, biodiversity loss and severe mental health deterioration. However, there are actions that we can take to counteract the eco-anxiety that many of us are experiencing (Agoston et al, 2022) including gardening for nature. By planting native plant gardens and practicing careful stewardship, we can create valuable habitat for insects, birds and bats within urban settings. In return, healthier, more diverse urban ecosystems give us the clean air, water and soil we rely on for our survival plus a connection to nature that is sorely missed in our technological world. Still in its first year, this small Bird Friendly Comox garden is an example of what can be done if we are willing to take chances and try something new. My hope is that it starts a conversation in Comox about what we can each do for nature right in our own gardens and that others will find the information and inspiration they need to create their own Bird Friendly garden.

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Appendix A - Step by Step Photos

The following photos show each step in the garden installation process, from October, 2024 to July, 2025.

October 2024 – Before

October 9, 2024 –The existing shrubs, their roots and a bark mulch layer were removed by the Town using a small skidsteer.

October 9, 2024 – Town employees helping with adding new soil, creating rock garden.

October 12, 2024 – Grass plugs planted to create foundation of matrix design

October 15, 2024 – Forbs and bulbs arranged in groupings and sweeps

October 23, 2024 – 1 yard commercial compost added for seed bed

October 27, 2024 – Curbs installed. Note that the asphalt extends under the curb into the bed by as much as 20 cm in some areas.

November 2, 2024 – backfill remaining soil mixture to curb

November 3, 2024 – spread seed mix with sand carrier

November 29, 2024 – wood chip border added

June 8, 2025

Appendix B - Plant Survival

The following survival survey was conducted June 7, 2025.

Latin Name	Common Name	Survival	Planted	% Survival
Allium cernuum	Nodding Onion	21	26	81
Antennaria rosea	Rosy Pussytoes	4	5	80
Camassia leichtlinii	Great Camas	27	30	90
Campinula rotundifolia	Common Harebell	6	6	100
Eriophyllum lanatum	Woolly Sunflower	11	11	100
Festuca roemeri	Roemer's Fescue	23	23	100
Koeleria macrantha	June Grass	21	23	91
Lomatium utriculatum	Spring Gold	2	5	40
Luzula subsessilis	Prairie Woodrush	22	23	96
Philadelphus lewisii	Mock Orange	1	1	100
Potentilla gracillus	Graceful Cinquifoil	3	3	100
Primula hendersonii	Shootingstar	1	16	6
*Sedum oreganum**	Oregon Stonecrop	14	14	100
*Sedum spthulifolium**	Broad-leaved Stonecrop	6	6	100
Triteleia hyacinthina	Fool's Onion	5	8	63
Viola adunca	Early Blue Violet	3	3	100
Total		170	203	84

*The original 5 sedums broke apart during planting and subsequent heavy rains. As of mid July 2025 most of these free plants were still thriving and growing.

Appendix C - Seed Germination

The following germination survey was conducted June 7, 2025

Species	Germinants	Total Seeds	% Germination
Allium cernuum	16	75	21
Cerastium arvense	6	885	1
Clarkia amoena	106	600	18
Collinsia parviflora	0	778	0
Eriophyllum lanatum	11	500	2
Lomatium utriculatum	0	128	0
Lupinus polycarpus	16	250	6
Plectritis congesta	11	360	3
Heuchera micrantha	9	75	12
Total	175	3576	5

Appendix D- Calculations of % Annuals & Perennials, %Grasses & Forbes

The following calculations were used to measure progress towards the species composition objectives.

Latin Name	Common Name	Total		
From pots/plugs				
Allium cernuum	Nodding Onion	21		
Antennaria rosea	Rosy Pussytoes	4		
Camassia leichtlinii	Great Camas	27		
Campinula rotundifolia	Common Harebell	6		
Eriophyllum lanatum	Woolly Sunflower	11		
Festuca roemeri	Roemer's Fescue	23		
Koeleria macrantha	June Grass	21		
Lomatium utriculatum	Spring Gold	2		
Luzula subsessilis	Prairie Woodrush	22		
Philadelphus lewisii	Mock Orange	1		
Potentilla gracillus	Graceful Cinquifoil	3		
Primula hendersonii	Shootingstar	1		
Sedum oreganum	Oregon Stonecrop	14		
Sedum spthulifolium	Broad-leaved Stonecrop	6		
Triteleia hyacinthina	Fool's Onion	5		
Viola adunca	Early Blue Violet	3		
Total Plants (all perennials)		170		
From seed		Perennial	Annual	Total
Allium cernuum	Nodding Onion	16		16
Clarkia amoena	Farewell-to-Spring		106	106
Cerastium arvense	Field Chickweed	6		6
Collinsia parviflora	Blue-eyed Mary		0	0

Eriophyllum lanatum	Woolly Sunflower	11		11
Lomatium utriculatum	Spring Gold	0		0
Lupinus polycarpus	Small-flowered lupin		16	16
Plectritis congesta	Sea Blush		11	11
Heuchera micrantha	Crevice Alum Root	9		9
Total Germinants		42	133	175

Annuals & Perennials

133/ 345 total plants x 100% = 39%

(170 plants/plugs + 42 germinants) /345 total plants x 100% = 61%

Grasses & Forbs

(23 Festuca roemeri + 21 Koeleria macrantha + 22 Prairie woodrush) / 345 total plants = 19%

Forbs/shrubs: 81%

Appendix E - Table Seasonal Floral Resources

The following table illustrates that the demonstration garden will provide only spring and early summer floral resources for insects.

Latin name	Common name	Spring	Summer	Fall
Allium cernuum	Nodding Onion	1	1	
Antennaria rosea	Rosy Pussytoes	1		
Brodiaea coronaira	Harvest Brodiaea	1	1	
Camassia leichtlinii	Great Camas	1		
Campinula rotundifolia	Common Harebell	1		
Cerastium arvense	Field Chickweed	1		
Clarkia amoena	Farewell-to-Spring	1	1	
Collinsia parviflora	Blue-eyed Mary	1		
Eriophyllum lanatum	Woolly Sunflower	1	1	
Festuca roemeri	Roemer's Fescue	1	1	
Heuchera micrantha	Crevice Alum Rood	1		
Koeleria macrantha	June Grass	1		
Lomatium utriculatum	Spring Gold	1		
Lupinus polycarpus	Small-flowered lupin	1		
Luzula subsessilis	Prairie Woodrush	1		
Philadelphus lewisii	Mock Orange	1		
Plectritis congesta	Sea Blush	1		
Potentilla gracillus	Graceful Cinquifoil	1	1	
Primula hendersonii	Shootingstar	1		
Sedum oreganum	Oregon Stonecrop	1		
Sedum spthulifolium	Broad-leaved Stonecrop		1	
Triteleia hyacinthina	Fool's Onion	1		
Viola adunca	Early Blue Violet	1		
Total Species		22	8	0

Source: Satinflower Nurseries 2025