

Pesky Plant Identification

Getting a Grasp on Grasses



ES 471: Advanced Principles and Practice in Ecological Restoration

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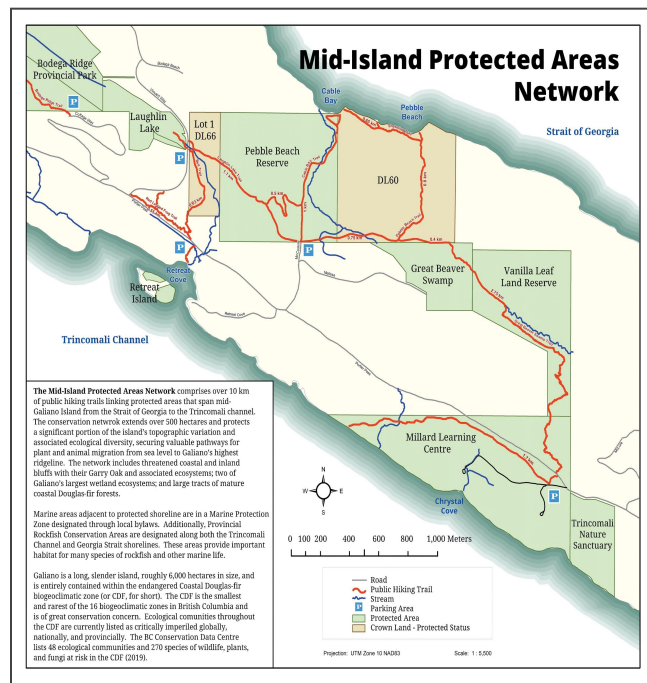
Introduction:

We are Environmental Studies students at the University of Victoria who live and study on the unceded lands of the Lekwungen speaking peoples. We would like to acknowledge the Songhee, Esquimalt and WSANEC nations ongoing relationships to these lands. We are grateful for having the opportunity to study on Galiano Island in partnership with the Galiano Conservancy Association. The Conservancy is located on the unceded lands of several Hul'qumi'num peoples including the Penelakut nation. We recognize that we stayed and worked on Galiano Island as guests and acknowledge the Hul'qumi'num peoples historical and ongoing relationship to the land (Duncan and Warren, 2020).

Galiano Island is situated on the Strait of Georgia between Vancouver Island and the lower mainland. Galiano is a narrow Island 27.5 kilometers long and 6 kilometers wide (Galiano Island, 2021). Galiano Island is home to an abundance of native plants and animals and many introduced species (Galiano Island, 2021).

Galiano Island has a chain of ecologically protected properties that work their way across the Island called the Mid Island Protected Areas Network (ES 471, Lecture).

The protected areas network consists of properties such as the Millard Learning Center, Pebble Beach Reserve, Cable Bay Conservation Area and Great Beaver Swamp.



The Millard Learning Center consists of a 76 acre plot of land that was purchased through funds raised by the Galiano community (ES 471, Lecture). The Center is a property where ecological stewardship, renewable energy and food security can be demonstrated and taught through learning programs. The Conservancy has made the land open to the public and provided space for recreational activities.

The project:

The focus of our project was Pesky Plant Identification. The introduced species on Galiano Island pose a threat to restoration projects conducted by the Conservancy as many introduced species out compete native plants. Galiano has a long history of plant introduction through agriculture and other human influences that have increased the demand for ecological restoration and the cataloging of species composition in these ecosystems. Introduced species pose a challenge for invasive species removal and correctly cataloging plant species in restored areas because they can be easily confused or unidentifiable.

To reduce the risk of confusing similar looking introduced and native species, our group was tasked with creating plant identification guides for Galiano Islands most pesky plants. Using images of observed plant species provided by the conservancy we researched the defining features of various plants found throughout the Island. The list of plants provided were considered top priority for the conservancy as they were difficult for staff and students to identify and monitor.

Methods:

The guides were created using a flowchart generating website that allowed for images, text, and connective lines. Each genus was separated to research the species within them and provide subsequent descriptions and images of defining physiological features.

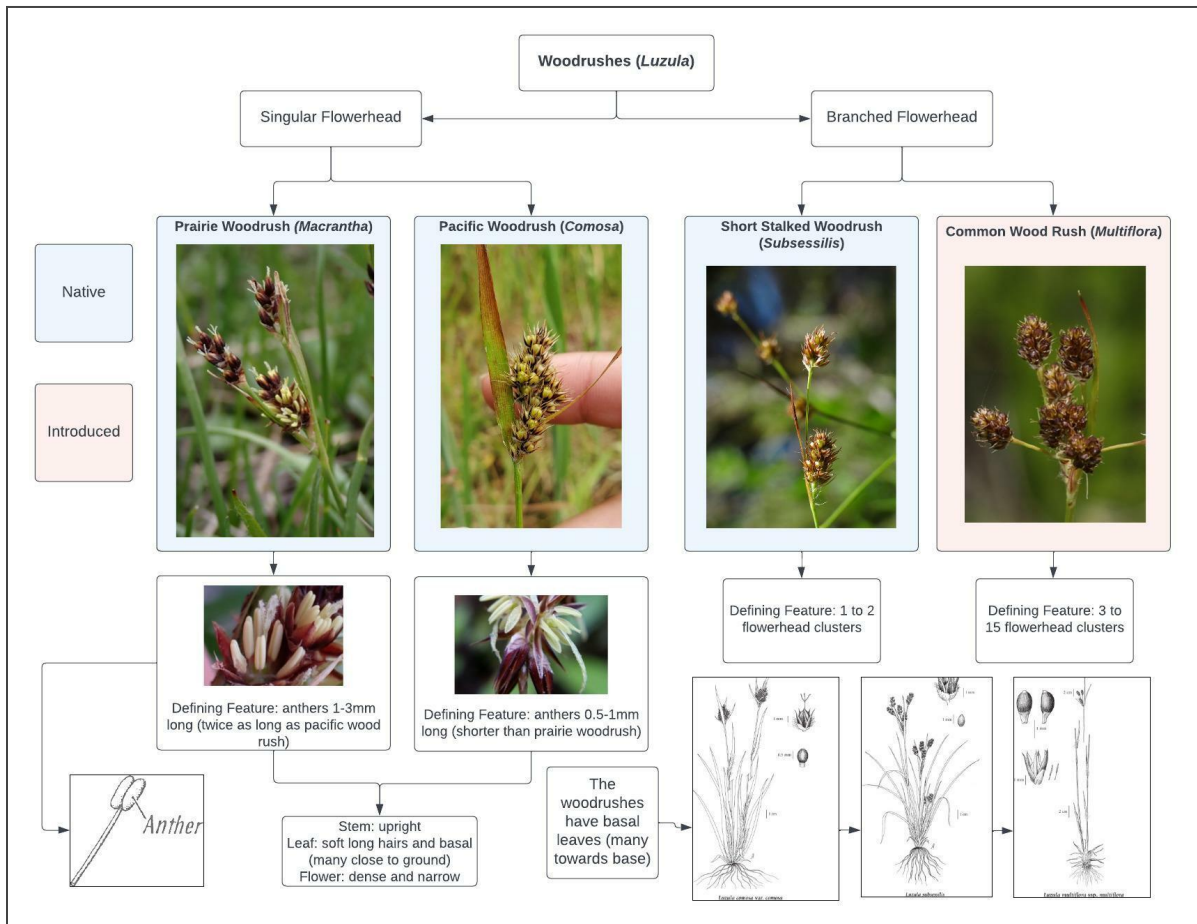
Research was conducted using digital and physical texts for reference and examining specimens in the field. Our primary resources included the books *Plants of the Pacific Northwest Coast* (Pojar and Mackinnon) and *Flora of the Pacific Northwest* (Cronquist and Hitchcock). Another primary resource were the plant descriptions from the *E-Flora BC: Electronic Atlas* on the Flora of British Columbia website. We also used analyses of photos and observations from *iNaturalist.ca* and our own observations made in the field. We used these resources to compare and contrast various similar looking species and from there we created the aforementioned flow charts.

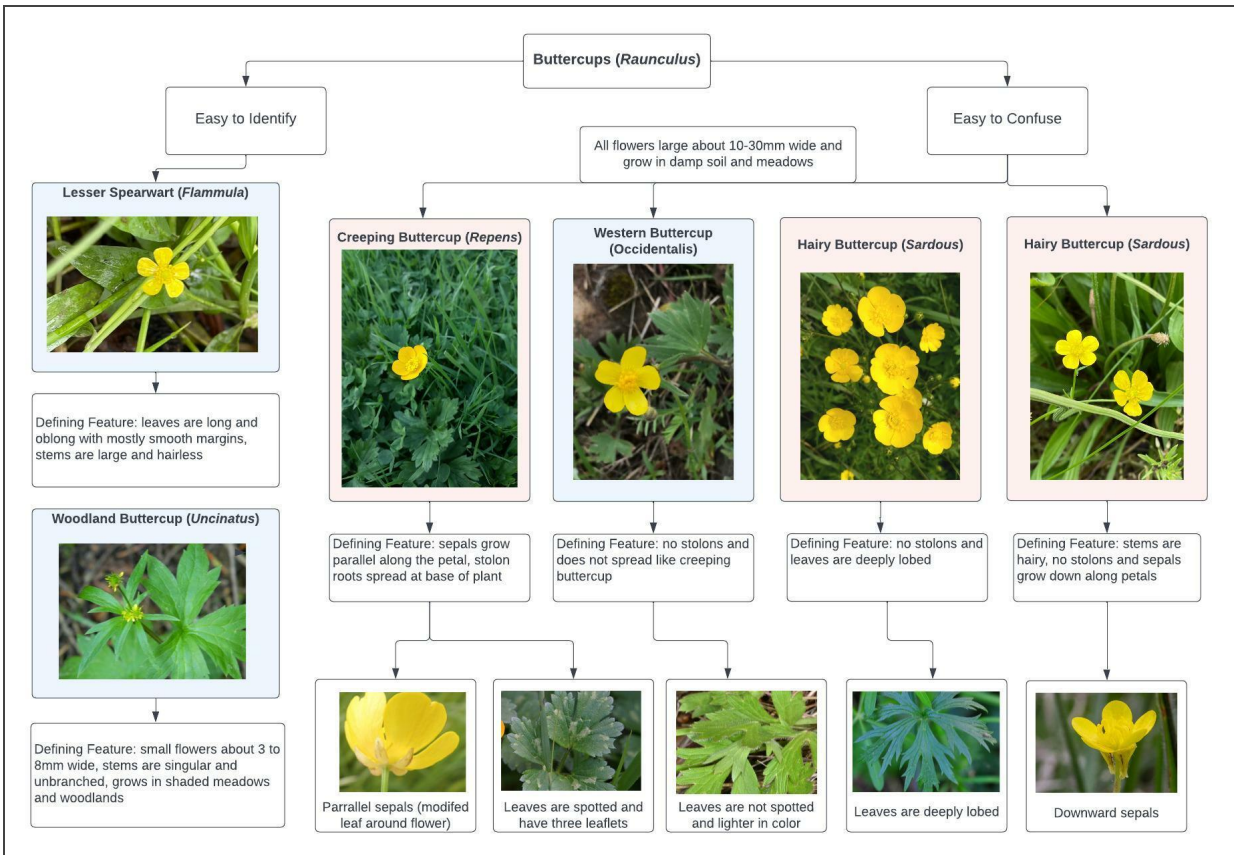
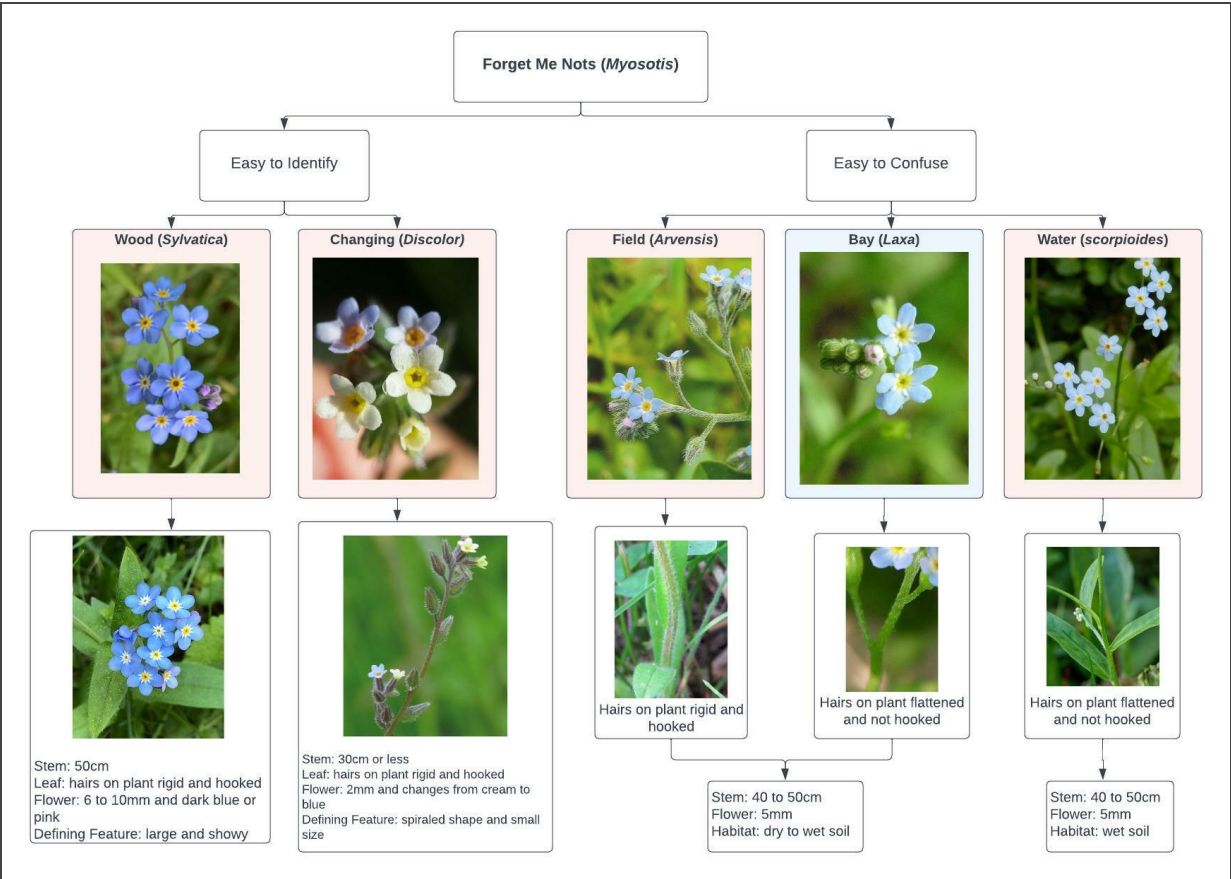
Results:

We were able to create several plant identification resources for forget-me-nots (*Myosotis*), buttercups (*Ranunculus*), woodrushes (*Luzula*) and various grasses (*Poaceae*/*Gramineae*). After completing the plant identification guides we brought them into the field to test whether or not we could correctly identify plants based on the information provided. The guides were then adjusted based on our ability to identify the plants and were then tested again on fellow classmates who had little prior knowledge on them. Conducting several tests and adjusting the information as needed was an important process for creating clear and concise field guides.

One of the challenges of creating plant identification guides was that there are no uniform templates for creating them. Each genus has its own defining features and some may have more

similar looking plants than others. Rather than focusing on creating a template we focused on creating a process for identifying plants that would compare similar looking species until only one could be identified. The process involved separating the more distinct species then focusing closely on the easy to confuse species. Below are the sample plant identification guides we created for different plant genera.

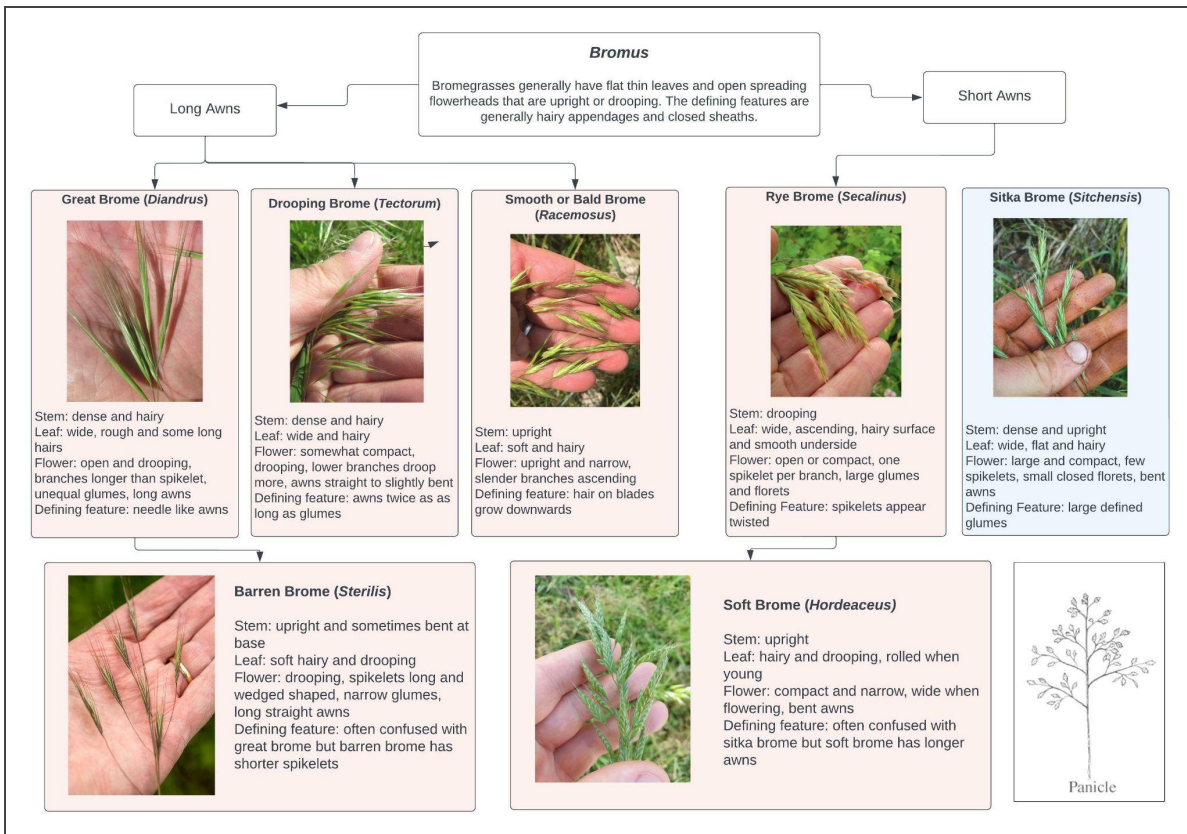
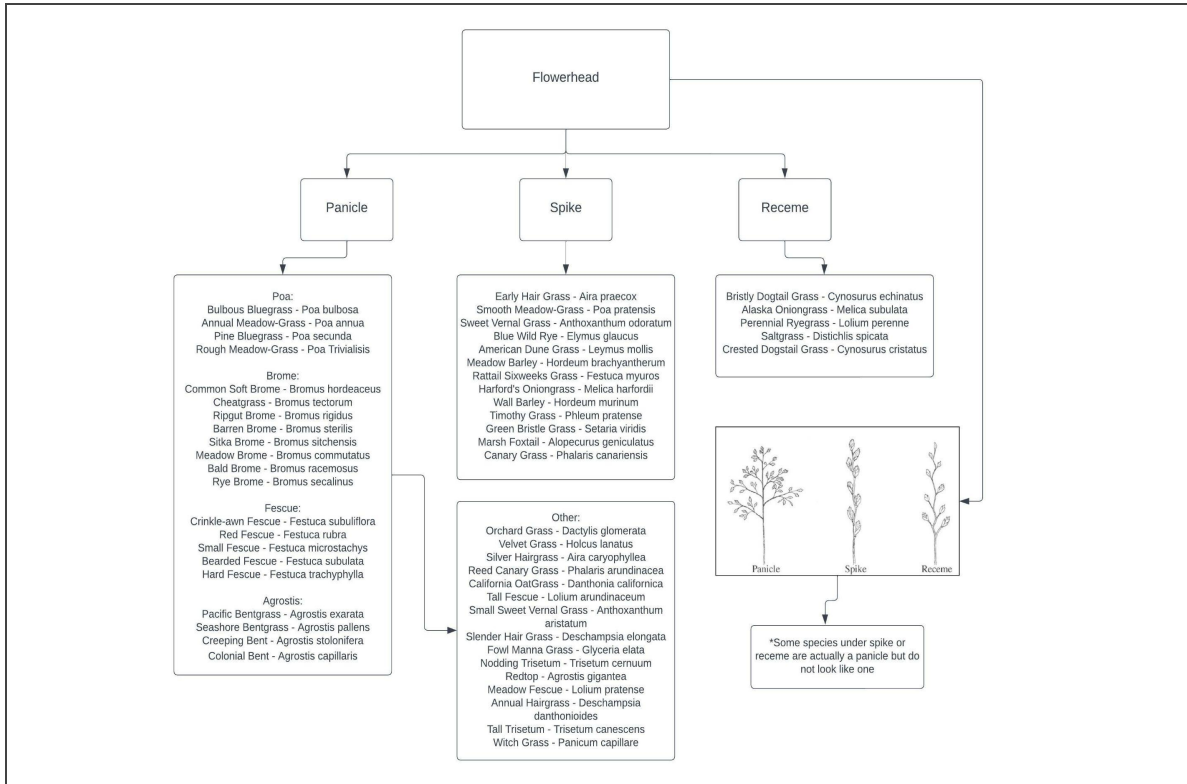


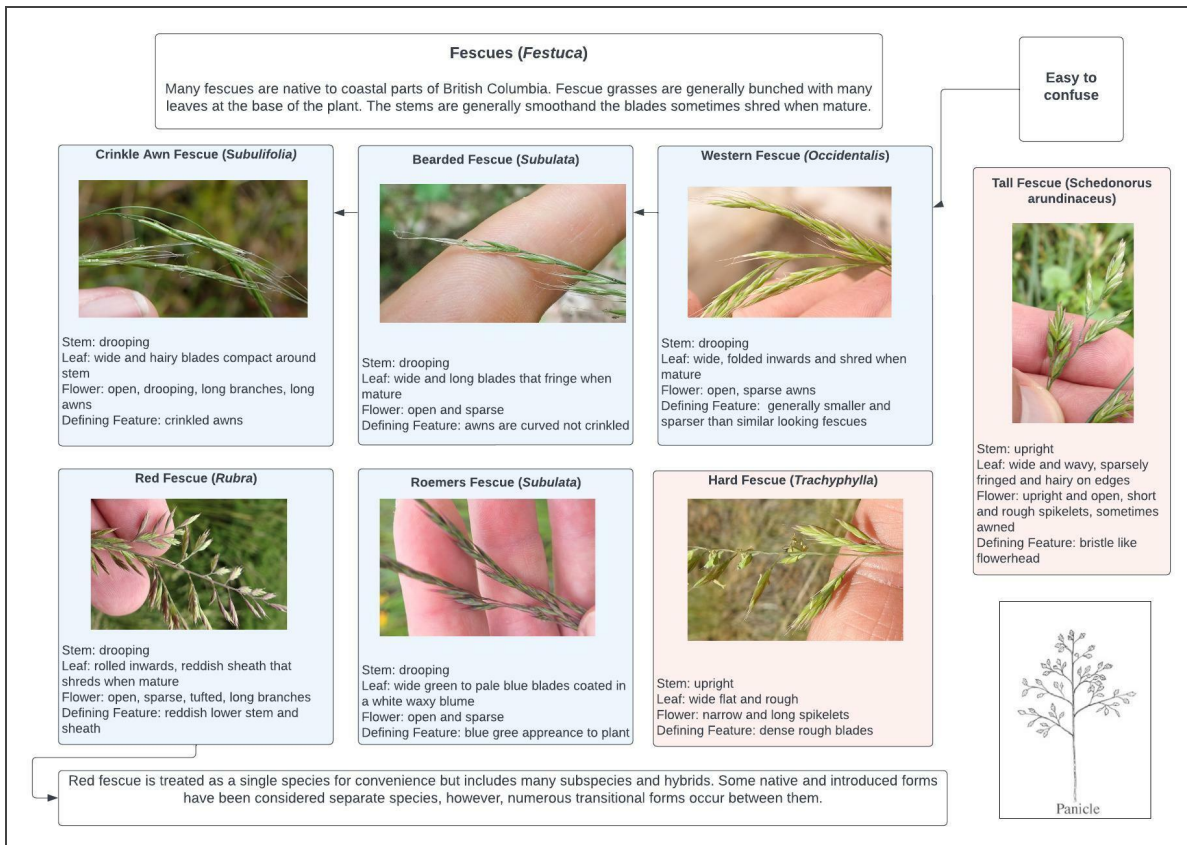
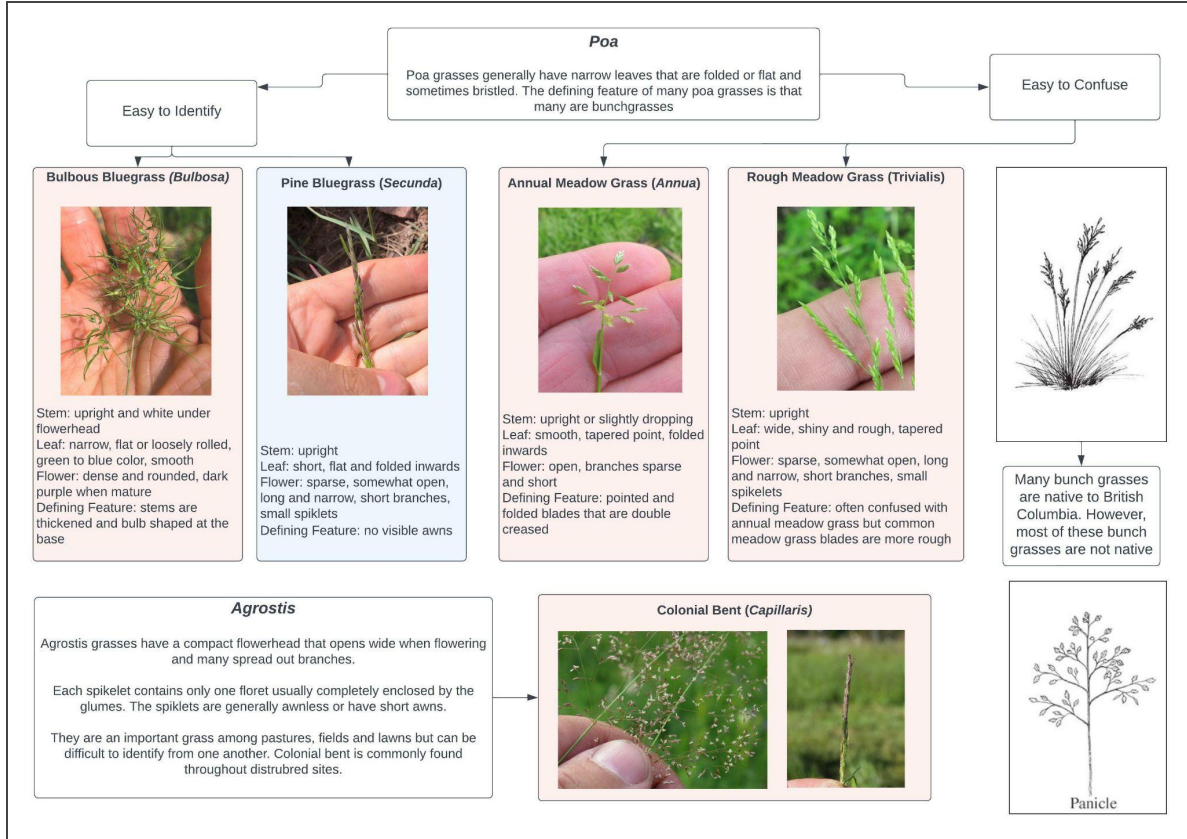


Grasses:

One of the primary concerns for the Conservancy was identifying the various grasses found on Galiano Island. Native grasses are important to many ecosystems on the Island and can be found throughout wetlands, forests, meadows and grasslands (Yip, 2020). However, native grasses are often confused for similar looking introduced grasses and understanding the difference can help guide restoration efforts. Introduced grasses succeed well in disturbed soils and once established can out compete native plants until they become overwhelmingly dominant (Raincoast Conservation, 2022). Introduced grasses are also commonly used to revegetate and control erosion on industrially disturbed soil. However, native grasses are increasingly being valued for restoring disturbed soil while maintaining natural habitat and biodiversity (Yip, 2020).

Grasses are notoriously hard to identify and many grass identification guides use micro observations and technical terminology that are difficult to understand. The goal for creating our grass identification guides for the Conservancy was to use macro observations and simple terminology. We began by creating resources on many native grasses found on Galiano Island as they are arguably the most important. We then separated all other grasses into the three flowerhead shapes because the shapes are generally the easiest defining feature. Then the grasses were separated by genus because each genus generally has similar features. From there we could compare and contrast a small group of similar grasses to find the defining features between them.





Discussion: Moving Forward

Given the time constraint of our project, the plant ID resource has been designed as a starting point. The remaining plants to create resources for include: chickweeds, docs, medics, rushes, sedges, clovers, vetches and continued work on grasses. The project can also be expanded to include more plant and animal species. However, we recommend the grass section be prioritized as they are dominant in disturbed sites and strong community interest was shown

We also recommend including a 'threat' or 'severity' rating to the introduced plants which would be beneficial during restoration. Another possible recommendation would be including the Indigenous name for the native plants. Indigenous plant names are important to understand and generally describe the physical features of the plant and its use. Consultation with local First Nations and knowledge holders would be necessary for this recommendation.

Once complete or partially complete, the plant identification guides could be made into a finalized booklet or folding pocketbook. These resources could be used for the staff and students of the conservancy as well as Galiano community members due to popular demand. Upon presenting our work and findings to the community of Galiano Island on the last day of our course, we were surprised and delighted to have received so many inquiries about the availability of the sample guides. Though intended for the Conservancy, the resources created could be made available to the residents of Galiano Island.

To reduce waste and increase accessibility, these guides could also be converted into an app or digital format. This would reduce that amount of material that staff need to bring into the field and create a plant identification resource unique to Galiano Island. An app is an ambitious venture that could be created in the future since it is unlikely to be pursued within the limited

time of the project. Nonetheless, these guides can help the Conservancy's plant monitoring process and possibly the residents of Galiano Island.

Conclusion:

With the help of the various resources we mentioned including *Plants of the Pacific Northwest Coast* (Pojar and Mackinnon) and *Flora of the Pacific Northwest* (Cronquist and Hitchcock), we are confident that we have created a practical guide to identifying a variety of pesky plant species, with a focus on grasses. There are of course many genera of both grass and non-grass species that we did not have the chance to identify given our time constraints, and the project can continue to be worked on until there are guides for as many species as are deemed necessary. In further development of the Pesky Plant project, we hope that this report will serve as a comprehensible and replicable guide to creating more plant identification resources for the Galiano Conservancy Association and community members.

References:

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The guides were created using the platform Lucid. Below are the links to the document created using our account though documents can be shared between accounts.

Bromus:

https://lucid.app/lucidchart/49411ed4-7f6d-451d-b302-0d6f800bcab9/edit?invitationId=inv_49106313-6611-41d3-aaea-14b9f80d77c6#

Buttercups:

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Fescue:

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Forget Me Not:

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Poa:

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Wood Rushes:

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