

Gordon Brent Ingram, Ph.D. side stream environmental design

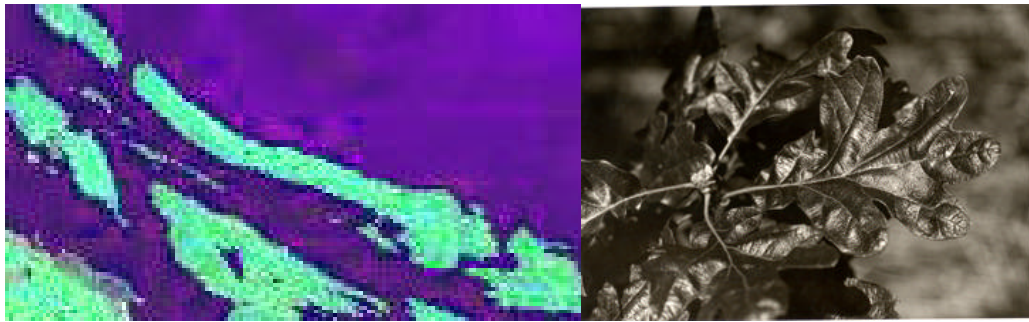
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3 September 2002

submitted to the
Galiano Conservancy Association &
Islands Trust¹

**The Garry oak ecosystems on the
southwest face of Mt. Sutil,
Galiano Island:
Field notes from 2 9 2002 &
some recommendations**



The southwest face of Mt. Sutil already has occurrences of some rare vascular plant species and some important and vulnerable aspects northern margins of Garry oak ecosystems (Ingram 2002b). A recent report of the Georgia Basin Ecosystem Conservation Partnership³ suggests that the area has some national and global significance for the secure conservation of a number of species and ecosystem types, particularly grassland and cliff elements, of Garry oak savannah and dry, coastal,

¹ This report is directed to Galiano Conservancy Association because they are the owners of the only formally protected parcel on Mt. Sutil and they kindly arranged access to their property, provided key information, and requested the information available on the ecosystems and biodiversity of that parcel. This report is also filed with Island Trust as a courtesy to the major public agency interested in both conservation and development decisions on the private lands of Galiano Island. This report is provided on a *pro bono* basis but does not infer any past, present or future client-consultant relationship nor possible conflict-of-interest.

² satellite image, courtesy of NASA, 30 July, 2000 and photo of Garry oak leaves, Mt. Maxwell, Salt Spring Island, May, 1980, photo by author.

³ Georgia Basin Ecosystem Conservation Initiative. 2001. Sutil Mountain, Galiano Island. BC Conservation Data Centre Site Report. In *Catalogue of Site Records: Georgia Basin Ecosystem Conservation Initiative*. Victoria: BC Conservation Data Centre (3 pp.).

Douglas fir 'parkland'⁴. The south face of Mt. Sutil includes District Lots 21, 22, 23, 24 and 25.

The purpose of the 2 September 2002 visit, and meeting with the Galiano Conservancy Association, was to discuss the parcel owned by the Conservancy, District Lot 23. I had already studied recent aerial photographs of the area from a number of different sources, prompting my interest in visiting the area, and was briefed in the Galiano Conservancy office. Previous to this field day, I had contacted the Galiano Conservancy expressing interest in conservation-oriented research on the area based on my review of the information on the larger, more intact areas of remaining Garry oak ecosystems that could be managed in relatively 'wild' states as 'dynamic mosaics' (Ingram 2002c). Any suggestions as to the situation on other parts of that ridge, that extend to Lots 21, 22, 24 and 25, are based on cursory views from a distance, secondary sources, and recent aerial photographs.

background

The BC Conservation Data Centre (CDC) lists two globally rare plants for the south face of Mt. Sutil:

- white meconella, *Meconella oregano*, which is on the Red List and
- slender-spike manna, *Glyceria leptostachia*, which is blue-listed.

The CDC also indicates the following red-listed plant associations:

- QUERCUS GARRYANA / BROMUS CARINUTUS, Garry oak – California brome grass;
- QUERCUS GARRYANA / SYMPOHORICARPOS ALBUS / CAREX INOPS, Garry oak – snowberry – long-stoloned sedge; and
- a related but more open grassland with few if any oaks, FESTUCA ROEMERI – KOELERIA MACRANTHA, Idaho fescue and junegrass.

field notes

This was a short visit, limited to Lot 23, between 1200 and 1530 hours. The weather shifted from the first significant rains for 6 weeks, early that morning, to clearing conditions later in the afternoon. In order to respect private property, the route to the top of the ridge was circuitous.

- Consistent with the data filed with the CDC, Lot 23, had patches, albeit often small and scattered, of California brome grass, *Bromus carinutus*, the sedge, *Carex inops*, and the local variation on Idaho fescue, *Festuca roemeri*.

⁴ The term 'parkland' is a term declining in use and refers to widely spaced coniferous trees in grassland and does not suggest a park as in protected areas.

- There was no notable wildlife observed that afternoon except for a Pacific salamander, several Pacific tree frogs and a pileated woodpecker -- all observed some ways away from the Garry oak areas on the ridge. This lack of a species list was more the result of the time of day and the briefness of the visit. The amphibians were responding to the first rain, after the long dry spell, with the salamander slow and appearing to be recovering from water-deficit stress.
- There were a number of non-native, invasive plants species on the ridge, notably Scotch broom, *Cytisus scoparius*, and the grass, *Anthoxanthum odoratum*. None of the gorse, *Ulex europaeus*, reported by the CDC for Mt. Sutil was observed on Lot 23.
- What was most exceptional and peculiar, for this dry, late summer period was the large amount of nodding onion, *Allium cernuum*, with well over 1,000 stalks with seed. In comparison to more than 50 other Garry oak sites in the region (a number of which were visited in recent weeks), I have never before seen such high densities and such large clumps of nodding onion.
- There was also an exceptional number of stalks (with seeds) of the harvest brodiaea (sometimes called 'fools' onion'), *Brodiea hyacithina*.
- Because it was so late in the summer, there were few signs of other forbs, the herbaceous plants that almost disappear in the dry season. So it was impossible detect a range of vascular plants that are effectively dormant over the summer – including lilies such as *Camassia* spp. and miner's lettuce, *Montia* spp. However, there was plenty of sheep sorrel, *Rumex perfoliata*, going to seed, along with evidence of some other flowering bulbs that could not be identified.
- Another distinctive aspect of this site are the only modest signs of sheep grazing (with well-developed tufts of bunchgrass forms) and the relatively fine scale and high degree of grassland diversity – with shifting dominants over short distances.
- But a substantial port of the species diversity of this ridge may well be on 60 to 90% slopes and only a tiny part of the parcel was actually visited. I suspect that with this many rare species and ecosystems detected on the ridge, where there has been considerable degradation from the (ongoing) broom infestation and past sheep grazing, that there could be several more rare species on the cliffs below.
- The north end of the ridge has considerable signs of Garry oak savannah being overgrown by young Douglas fir tree. This shading out is effectively destroying a significant portion of the Garry oak ecosystems (with the resulting disappearance of associated species). Judging from the probably age of the trees, this process seems to have begun soon after fire suppression, over the last century. But this process appears to be accelerating in the last three decades.

- Only 3 recent oak seedlings were found in this parcel – all in areas of former grassland and oak savannah now dominated by Douglas fir (with little chance of survival).
 - This low level of regeneration is partially because this ridge has had, historically speaking, mainly Douglas fir parkland, grassland, savannahs of widely spaced oaks. In these ecosystems, oak populations, even when they are the dominant tree, are relatively small and lightly distributed.
 - On Lot 23, there is little sign of denser oak woodland communities. This state is consistent with other sites with the thinner soils and drying winds typical of south-facing slopes on the Gulf Islands. And this situation is also consistent with areas where there would have been higher temperatures on ridges (often sterilizing soil and seed banks) -- when there were fires in the nineteenth century and earlier.
 - Another distinctive feature of the oak ecosystems on Mt. Sutil is that oaks occur at the summit of the ridge, at 250 metres. On many similar mountain faces on the Gulf Island, the tops of ridges remain too cold for oaks to become established and have sufficiently long annual periods of photosynthesis for survival.
 - In contrast, there are some old, gnarled oaks on the top of Mt. Sutil, that, in the coming weeks, will produce an exceptional crop of acorns (perhaps from stress in response to the exceptionally low rainfall so far in 2002).
 - There are more and denser occurrences of oaks below the ridge. These sites are too steep to visit without climbing ropes.
- Ken Maillard stated that elk antlers, of an unknown date, were obtained near the top of the ridge. Roosevelt elk have been extirpated from the Gulf Islands for roughly a century with the closest herd now north of Duncan on Vancouver Island.
- Lot 23 is in the centre of a long and narrow habitat unit, or landscape mosaic, along the upper parts of the south-west face of Mt. Sutil. Such steep and dry, south-facing slopes, such as this, support some of the most intact areas of certain Garry oak communities that exist at the northern margins of these ecosystems (in the Gulf Islands). Of these south-facing mountain landscapes, the Garry oak and grassland area of Mt. Sutil would probably rank between number 10 and 20 in BC in terms of overall size and naturalness of conditions. The only other major fragmentation factor, other than from the Douglas fir invasions from fire suppression, is one recent house site on the parcel just south of Lot 23. From aerial images, it might appear that many of the ecological impacts of construction and occupation have been combined to the small 'footprint' around the structure.

discussion

Based on review of recent aerial photographs, the CDC report and the brief field visit, it is clear that the Garry oak ecosystems on Mt. Sutil, if rated comparatively by size,

intactness and species diversity, would probably be ranked within the top 10 to 30 landscape units warranting

1. intensive inventories⁵,
2. mapping and
3. additional protection

in the coming years. There is a slim chance that whatever additional species found on the cliffs might bring the significance of Mt. Sutil, to conservation of northern Garry oak ecosystems, to from 1 to 10. But even if no additional species of interest were found, the relatively intact conditions of the three plant associations mentioned above, combined with the relatively large size of the landscape use and the presence of one red and the one blue listed species, make the area of strategic interest for Garry oak ecosystem research, protection and restoration.

What is less clear than the significance of Mt. Sutil is the relative level of threat to these communities on Mt. Sutil in comparison to other Garry oak landscapes in BC. There have been or are formal or information development proposals for parcel nearby the one owned by the by Galiano Conservancy Association. But it may well be the other factors, below, that could cause more intensive inventory, stewardship and restoration activities, in the coming years, to be warranted. The following are the threats recognized by this landscape ecologist / environmental planner in the order of concern.

1. Because of fire suppression over the last century, the **invasion and shading of Douglas firs** is destroying much of the grassland and oak savannah. This can be seen both in Lot 23 and from Lot 23 to the parcel directly to the north. Over the last decade, scores of oaks that may be well have been over a century and some cases two centuries old, have been shaded out and have died or begun to die. The situation is accelerating with a larger number of well-established trees being at risk over the next decade. As well as shading, the new forest, of thick and young firs, has higher fuel levels thus posing greater risks for hotter wildfires that could kill and some local species associated with Garry oak ecosystems to disappear from this part of the island or throughout Galiano .
2. The **scotch broom infestation**, along the top of the ridge, involves two sets of threat. Because there is no easy access for further broom cutting, broom is now invading the otherwise fairly intact grassland communities. Secondly, the broom is a fire hazard because of the flammable oils in its leaves. If the broom in Lot 23 were ever to catch fire it could turn into a particularly hot, rapidly travelling ridge fire. The temperatures could burn so hot as to destroy much of the soil seed bank of native species thus favouring even more non-native species.

⁵ Whether such field work is permissible on certain parcels (or funded) is another matter.

3. There is a modest chance that an **invasive landscaping species**, planted near the current housing or other human activities in adjacent lots, could, one day, become established in Lot 23 consequently displacing some of the native plants there. In the modern period on the Gulf Islands, the processes of non-native species 'naturalizing' have involved 50 to 100 years. However, for some species, this process could be faster.
4. Prospects for additional **housing construction and human habitation** on lots 21, 23, 24 and 25 are unclear. Such developments would further 'fragment' or 'cut up' this long, narrow habitat unit of Garry oak and grassland.
5. Because of no public access, threats from recreation, such as trampling, remain nearly nil. The top of Mt. Sutil is one of the least accessible to recreation -- of all of the remaining large, intact areas of Garry oak and grassland ecosystems in BC. Given the growing problems from trampling as Garry oak ecosystems become more appreciated and the particular vulnerability of summer drought ecosystems, this favourable situation will increase Mt. Sutil's strategic importance.

recommendations for research

In the context of a relatively low number of threats, but some pressing ones, a number of research activities are desirable. The area of this research could extend from Lot 23 to Lots 21, 22, 24 and 25 when the owners and stakeholders had the interest. The following is a relatively standard cycle of research inventory, modelling, prescription, and monitoring activities that could be initiated over a five year period.

- a. creation of a complete species lists of
 - vascular plants⁶,
 - nonvascular plant species,
 - birds, and
 - other vertebrates (amphibians, reptiles & mammals);
- b. mapping of the occurrences of species at risk at fine scales such as 1:1,000 or even 1:500;
- c. mapping of the occurrences of red listed ecosystems at fine scales such as 1:1,000 or even 1:500;

⁶ The experts I recommend for inventorying the plant species for these ecosystems are:

Wayne Erickson for the grasses and

Adolf Ceska and

Terry McIntosh for the other species.

- d. after the concept of 'critical habitat' in the federal species-at-risk act become law, further analysis of such situation around such species on Mt. Sutil;
- e. identification of some focal species and sites for on-going monitoring;
- f. historical and more recent time-series mapping and reconstruction of the landscape history, and dynamic landscape processes (Ingram 2002) over the last two centuries;
- g. development of a concept for use of Lot 23, and any parcel where an owner wished to participate, as a source for '*in situ* conservation of plant genetic resources' specifically for Galiano-based native plant nurseries (with the genotypes on the slope being particularly attractive if there is, in deed, rapid global warming);
- h. evaluation (through analysis of aerial photos) of the extent of recent invasion of Garry oak areas by young Douglas fir, because of fire suppression (that might eventually extend to Lots 21, 22, 24 and 25);
- i. evaluation of the broom infestation throughout Lots 21 to 25 and development of a landscape-wide strategy (Ingram 2002a, 2002c) for stakeholders wishing to participate;
- j. evaluation of other invasive plant species throughout Lots 21 to 25 and development of a landscape-wide strategy for control of further infestations and additional restoration where all stakeholders would have opportunities to participate;
- k. development of a strategy for re-introduction of controlled burning (suppressed in the last century) as part of proactive fire control (through management of fuel levels) for Lot 23 and other lots when it was of interest to lot owners and neighbours;
- l. as is necessary for most natural areas these days, analysis of the implications of climate change for management and restoration goals; and
- m. discussions for a long-term restoration concept for the south side of Mt. Sutil, that could extend to managing and even enhancing oak regeneration – that could involve the owners and stakeholders of Lots 21 to 25 where there was interest (with initial discussions initiated around Lot 23).

implications for conservation planning

The growing appreciation of the strategic importance of the Garry oak and grassland habitats and associated species on the south and south-west face of Mt. Sutil will have an increasing impact on whatever people do and do not do in Lot 23 – as well as on adjacent lots 21, 22, 24 and 25. However, the relative weight of the concerns for the conservation of the ecosystems and biodiversity of the Garry oak ecosystems of Mt. Sutil will depend on the following factors:

- a. the (shifting) interests and priorities of the landowners and stakeholders of Lots 21 to 25;
- b. the eventual provisions, if any, in the federal, species-at-risk legislation, now being revised in the Canadian Senate, for species at risk on private lands;
- c. the extent of the numbers, distributions and habitat requirements of the species-at-risk confirmed on Lot 23 (and Lots 21, 22, 24 and 25); and
- d. the extent of the strategies and programmes in place, in the coming years, to support diverse stakeholders in asserting, discussing and making decisions about vulnerable species and habitat.

acknowledgements

Thanks to Ken Maillard of the Galiano Conservancy Association for hosting the field work and for sharing his perspectives and extensive data on the area. Thanks to Lawrence Waterfall and Janusz for their kind hospitality and fresh perspectives on Galiano. Thanks to Lionel Leston for accompanying us and sharing his perspectives as a wildlife biologist. The recommendations made in this report do not represent the position of any organization -- nor of individuals other than myself.

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