VEGETATION OF THE SOUTHWESTERN FRASER LOWLAND, 1858 - 1880

by

M.E.A. North, M.W. Dunn and J.M. Teversham

GRASS AND GRASSLIKE PLANTS

- sg sw s — **Salt marsh:** saltgrass(sg), saltwort(sw), sedge(s).
- br s ct — **Tidal marsh:** bulrush(br), sedge(s), cattails(ct).
- ct — **Freshwater marsh:** cattails(ct).
- g — **Prairie*:** grass(g).
- g W hh ca — **Prairie grass with shrubs:** grass(g), Willow(W), hardhack(hh), crabapple(ca).

SHRUBS

- ca — **Crabapple**(ca).
- W — **Willow**(W).
- W ca hh r — **Mixed shrubs:** Willow(W), crabapple(ca), hardhack(hh), rose(r).

SHRUB/MOSS

- lt cb P — **Labrador tea:** labrador tea(lt), cranberry(cb), salal, Pine(P).
- cb P — **Cranberry marsh*:** cranberry(cb), Pine(P).
- m P — **Moss with scrub pine:** sphagnum (m), scattered Pine (P), Hemlock, Spruce.

WOODLAND

- M — **Maple bottom*:** Broadleaf Maple(M), vine maple, ferns, [Cedar].
- A — **Alder bottom*:** Alder(A), Willow, ferns, [Cedar], [Hemlock], [Spruce].
- Cw — **Mixed woodland:** Cottonwood(Cw), Alder, Willow, crabapple.
- A B Ch — **Mixed deciduous regeneration forest:** Alder(A), Birch(B), Cherry(Ch), Willow, [Cottonwood], crabapple, ferns with Cedar, Hemlock, Douglas fir regeneration.

SCRUB FOREST

- W sk — **Willow scrub*:** Willow(W), Alder, [Cedar], skunk cabbage(sk).
- W A pv rc — **Scrub with herbs:** Willow(W), Alder(A), Hazel, [Plum], [Cherry], ferns, pea vine(pv), red clover(rc).
- P — **Pine scrub*:** Pine species(P).
- H C P — **Mixed scrub:** Hemlock(H), Cedar(C), Pine species(P), [Douglas fir], Alder, Cherry, Hazel, vine maple, ferns.

CONIFEROUS FOREST

- C P H — **Mixed coniferous forest on organics:** Cedar(C), Pine(P), Hemlock(H), Spruce, [labrador tea], [cranberry], moss.
- C A sk — **Cedar swamp*:** Cedar(C), Alder(A), Willow, hardhack, skunk cabbage(sk).
- C H — **Mixed wet:** Cedar(C), Hemlock(H), Spruce, Alder, [Cottonwood], Willow, Yew, [crabapple], ferns.
- S W — **Spruce:** Spruce(S), Willow(W), Alder, crabapple, vine maple, briars.
- S C — **Spruce:** Spruce(S), Cedar(C), [Hemlock], Broadleaf Maple, [Alder], [Cottonwood].
- C H D — **Mixed coniferous:** Cedar(C), Hemlock(H), Douglas fir(D), Alder, Willow, vine maple.
- C M — **Slope:** Cedar(C), Broadleaf Maple (M), Hemlock, [Douglas fir], Alder, vine maple, ferns.
- D F C — **Mixed coniferous:** Douglas fir(D), Grand fir(F), Cedar(C), [Hemlock], [Pine], [Spruce], Alder, Dogwood, vine maple, briars.
- D — **Douglas fir:** Douglas fir(D), [Cedar], salal, oregon grape, [hawthorn].

UNVEGETATED

- .... **Beach spits and river bars.**

Notes: 'H' refers to Western Hemlock, 'S' to Sitka Spruce and 'C' to Western Red Cedar.
Both the vegetation units within the larger vegetation groups and the groups themselves, are ordered from the wettest to the driest sites.
Capitalized symbols and species, e.g., Cedar(C), indicate trees of the canopy; those not capitalized, e.g., grass(g), are the understory species.
Where possible, the original surveyor's description of the vegetation is used and is indicated by an *.
Underlined species are dominant in that particular unit.
[Bracketed species] are a minor occurrence in that particular unit.

Historical Vegetation

In 1858, the Royal Engineers began surveying land in the Fraser Lowland prior to European settlement. They identified and mapped areas suitable for cultivation and settlement and carried out lot surveys at the site of the first capital city of British Columbia, New Westminster. This map portrays the distribution of plant communities in the southwestern Fraser Lowland, as recorded by these first land surveyors between 1858 and 1880. Their surveys indicated that some areas had already been disturbed (see "Significant Influences on Vegetation Prior to 1858" map below). For this reason many of the vegetation units must be viewed as successional plant communities.

The *lowland (floodplain) vegetation* consisted of grasses and shrubs which could tolerate the regular flooding. The deciduous and coniferous trees, however, were generally confined to the higher river banks, beach ridges and other areas which remained drier. The larger bogs had a water table at or near the surface throughout the year which inhibited decomposition and produced very acid conditions which could only be tolerated by a few species of plants (i.e. sphagnum, cranberry, blueberry, labrador tea and pine).

The land surveyors' notebooks provided little information on the bogs and marshes as they were considered unsuitable for settlers. Their information only went as far as the margins of the bogs, while the seaward limits of the marshes were not established.

The *upland vegetation* consisted predominantly of forests which displayed a pattern reflecting the drier and more rapidly drained nature of the upland. Variations in the pattern were a result of position on a slope, topography relative to the surrounding area, and aspect. Wetter forests tended to be in areas affected by seepage from upper slopes, whereas depressional areas with poor drainage tended to develop vegetation types similar to those on the floodplain. In the map area, the south and southwest facing slopes were the warmest and driest.

Today, only remnants of the original vegetation remain in a relatively natural state —most significantly the large bogs and marshes. The lowland vegetation as shown, has been almost entirely replaced by agricultural, residential, or commercial land uses while the upland vegetation was extensively logged and cleared even before the turn of the century.

Methodology

The historical vegetation patterns of the southwestern Fraser Lowland were determined from information in the original land surveyors' field notebooks. Three separate surveys were the major sources of information for this map.

1858-63 *The Surveys of the Mainland Colony of British Columbia* by the Royal Engineers included Lulu and Sea islands and areas flanking the river upstream of New Westminster.

1858-63 *The Royal Engineers' Town Surveys* laid out suburban size lots at New Westminster and on the south shore of the Fraser opposite Annacis Island.

1873-77 *The Provincial Surveys* mapped the areas east of the Coast Meridian (122°45′W) and the remaining unsurveyed area of the delta, south of the river.

The notes from these surveys specifically located the vegetation types at points along the lines being surveyed. As additional information, the surveyors generally described the terrain and soils along the same lines. At the completion of a line or a section survey there would frequently be a summary of the vegetation, terrain and soil class and on a few occasions the surveyors drew maps of the surveyed area to portray the information they had previously described.

In order to delineate the historical vegetation units, the surveyors' information was supplemented by more recent knowledge of: differences in soil characteristics; elevation above sea level; proximity to sea or river flood sources; slope; and aspect.

Base Map

The base map represents the configuration of the lower Fraser River as portrayed by the first land surveyors. The shoreline, river islands, sloughs, and streams were compiled from surveyors' original sketch maps. Where gaps occurred in their drainage information, the earliest (1930) air photographs were used as a supplement. The contour lines are a reduction of the 1:25 000 National Topographic System map series.

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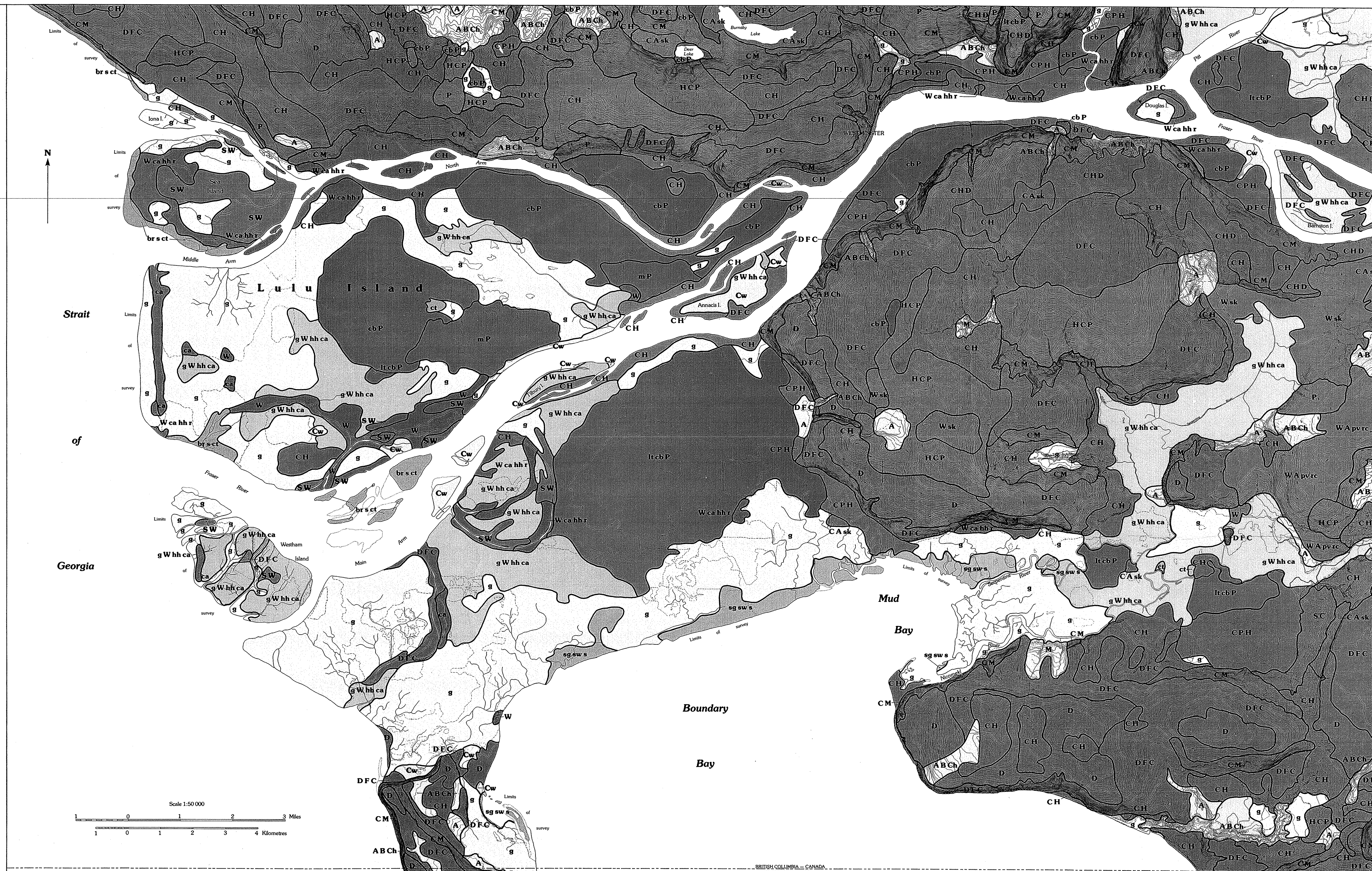
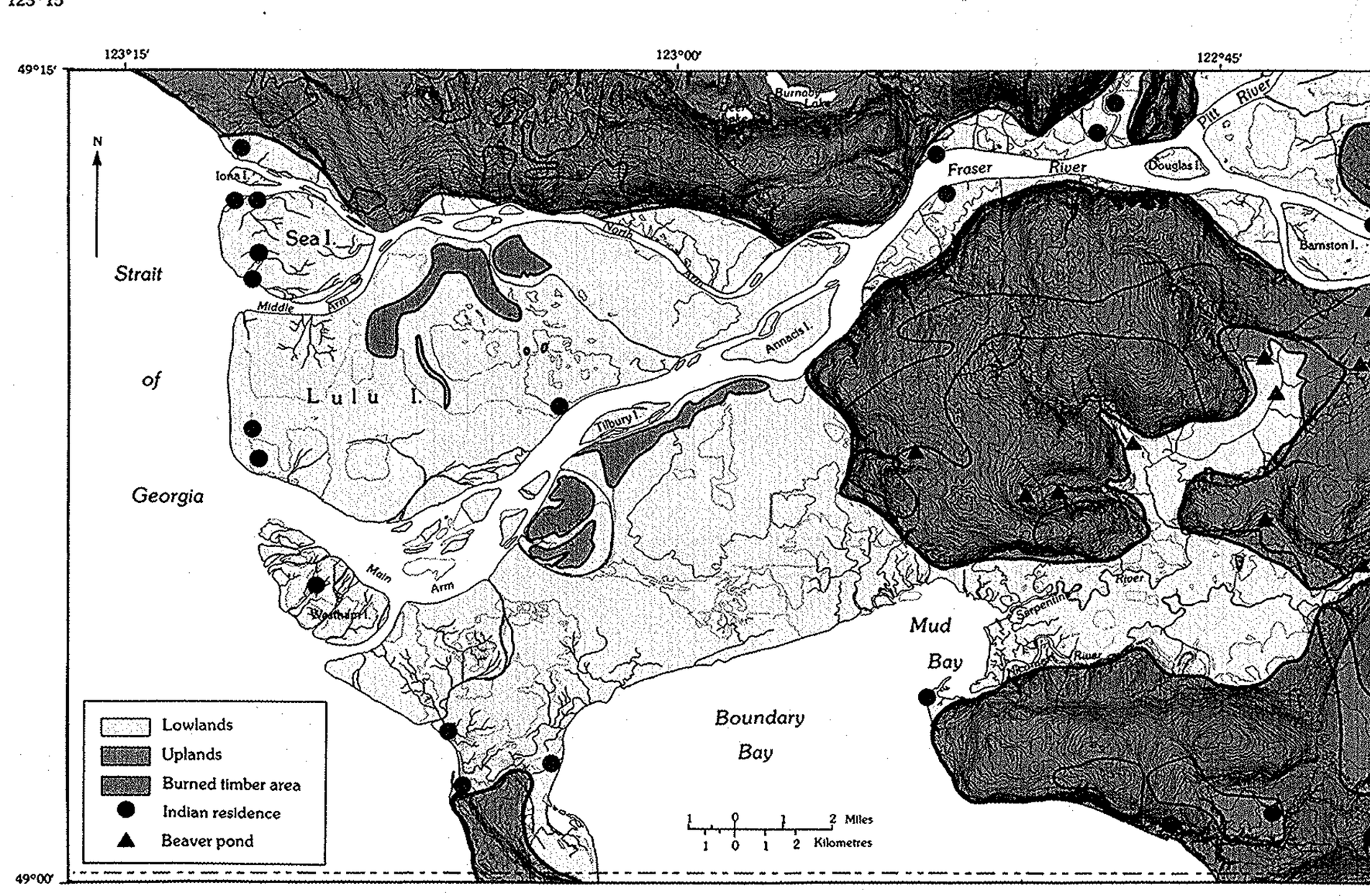
Edited by: M.A. Ward
Drafted by: L.A. Decker
Base map compiled by: M.W. Dunn and L.A. Decker





SIGNIFICANT INFLUENCES ON VEGETATION PRIOR TO 1858

According to historical records and the original land surveys, some areas of natural vegetation had already been altered by 1858 due to farming, land clearing, beavers and fire.

The Lowlands

The surveyors' notebooks made several references to fences and farmhouses within the map area, thus indicating that farming was already being carried out prior to the survey.

Areas of burned timber were also identified by the surveyors, but only up to the edge of the bogs. These recorded burned areas probably did not represent the full extent of fire for the following reasons. It is known that the Indians who lived here for several thousand years harvested berries from the bogs and used fire to maintain open areas for the berry bushes by preventing encroachment of pine trees. Also, since the surveyors did not go into bogs, they did not describe them. However, the proximity of the recorded burned areas to the bogs is a good indication that the fires spread from them.

The Uplands

The burned areas of the uplands were fairly significant and could be attributed mostly to settlers' land clearing operations. Some too, may have been the result of wild fires set on the lowlands by the Indians. Generally the land surveyors did not indicate the age of a burn, but merely that there was burned timber.

Beavers had a significant effect on vegetation at a local scale. They flooded land, built canals, diverted streams, and cleared the adjacent land of trees, all of which influenced vegetation types. This, of course was dependent on the length of time the beavers inhabited the area. The surveyors only noted significant beaver activity in the eastern parts of the map area. There were a number of reasons for this. Beavers prefer fresh, running water, so the sloughs and channels of the floodplain would have been unsuitable because of tidal action and brackishness; there is also the possibility that beavers were already retreating from the area as more land became cleared and cultivated. In addition, the use of fires for land clearing may have disturbed beaver habitat through increasing run-off and sedimentation which contaminated their freshwater sources.

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SOILS AND PRECIPITATION

In the map area the soils can be divided into two general groups on the basis of geological origin. The lowland soils are derived from marine, river, stream and organic sediments deposited after the retreat of the glaciers. The upland soils are predominantly derived from glacial tills, gravelly and sandy raised beaches and glaciomarine deposits, laid down during the last glacial period.

The Lowland Soils

Organic — These very poorly drained deposits occur when the rate of organic material accumulation exceeds decomposition. The majority of the organics consist of areas of relatively undecomposed sphagnum moss. However, there are also areas consisting primarily of partially to well decomposed reeds, sedges and other woody plant material.

Gleysolic — These are moderately poorly drained soils and have a fluctuating water table. Gleysols vary in texture from silt loams to silty clay loams to silty clays with occasional occurrences of fine sands. Some gleysols have organic surface layers or may be saline at depth.

Regosolic — These are well to imperfectly drained soils that lack discernible soil horizons or have negligible profile development. They are often found on very recently deposited geologic materials such as beaches.

Recent Alluvium — This unit consists of tidal flats, bars and floodplain areas, which are generally flooded at least daily. They are usually very saline and very poorly drained. Textures range from silt loam to silty clay loam to fine loamy sand.

The Upland Soils

These soils are predominantly of the podzolic order although there are occurrences of poorly drained gleysolics and organics.

Podzolic — These are well to imperfectly drained mineral soils which have developed under the influence of forest vegetation, a humid climate and weathering. These soils range in texture from gravelly, loamy sand to silt loam.

Precipitation

Precipitation is a good indication of the climatic influences on vegetation of the map area. Generally the lower rainfall values in the southwest reflect the protection from direct Pacific storms by the Vancouver Island mountains and the Olympic Peninsula. The increase in rainfall as one moves inland is due to the uplift effect of the uplands and Coast Mountains. Increased rainfall has an effect on vegetation composition which changes from the southwest to the northeast; there is no distinct line, but more a transition from one vegetation zone to another. For instance, the Douglas fir-grand fir association in the drier southwest tends to grade towards a Douglas fir-western hemlock association in the northeast of the map area.

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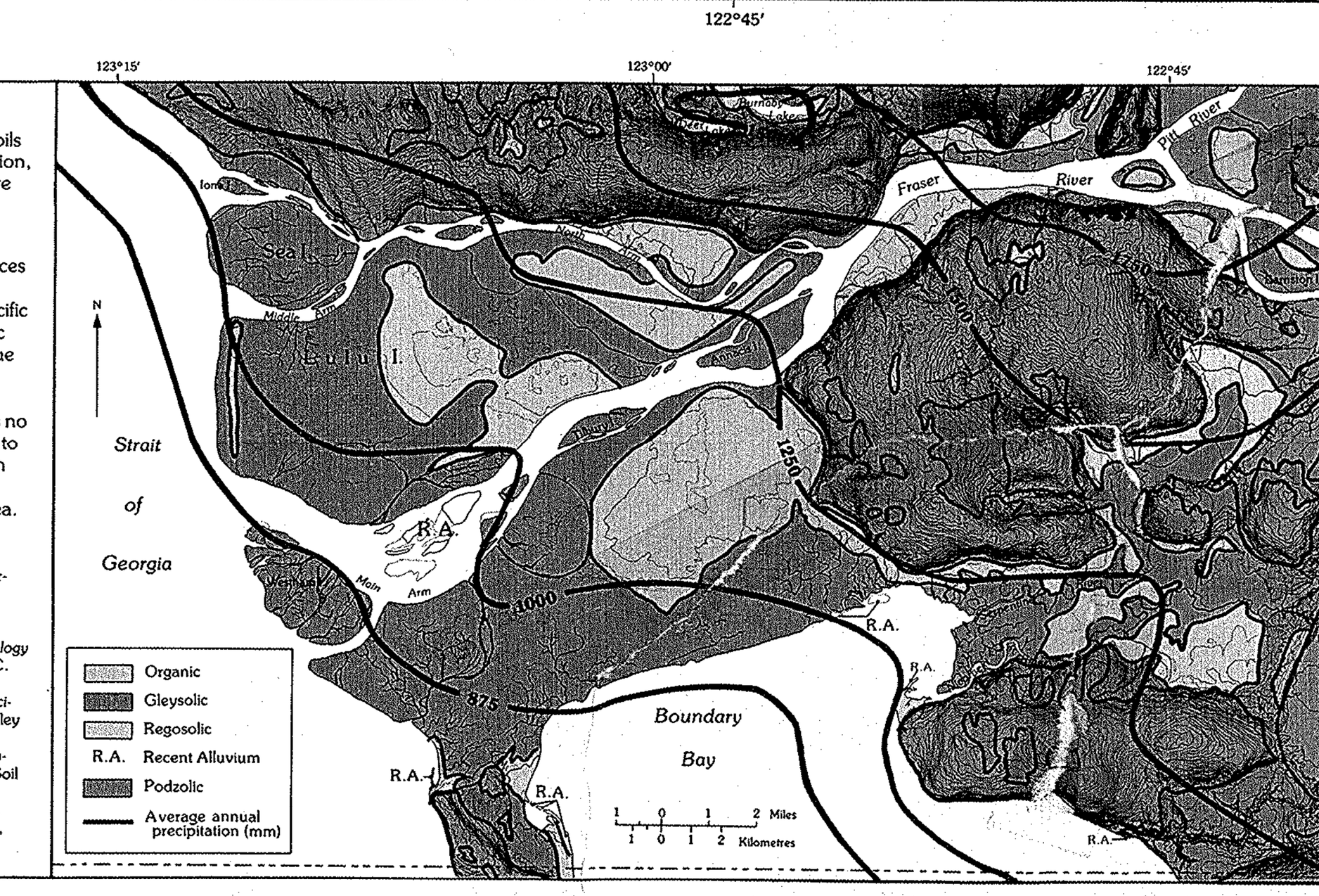

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Lands Directorate, Environment Canada,
904-1001 West Pender Street,
Vancouver, B.C. V6E 2M7.