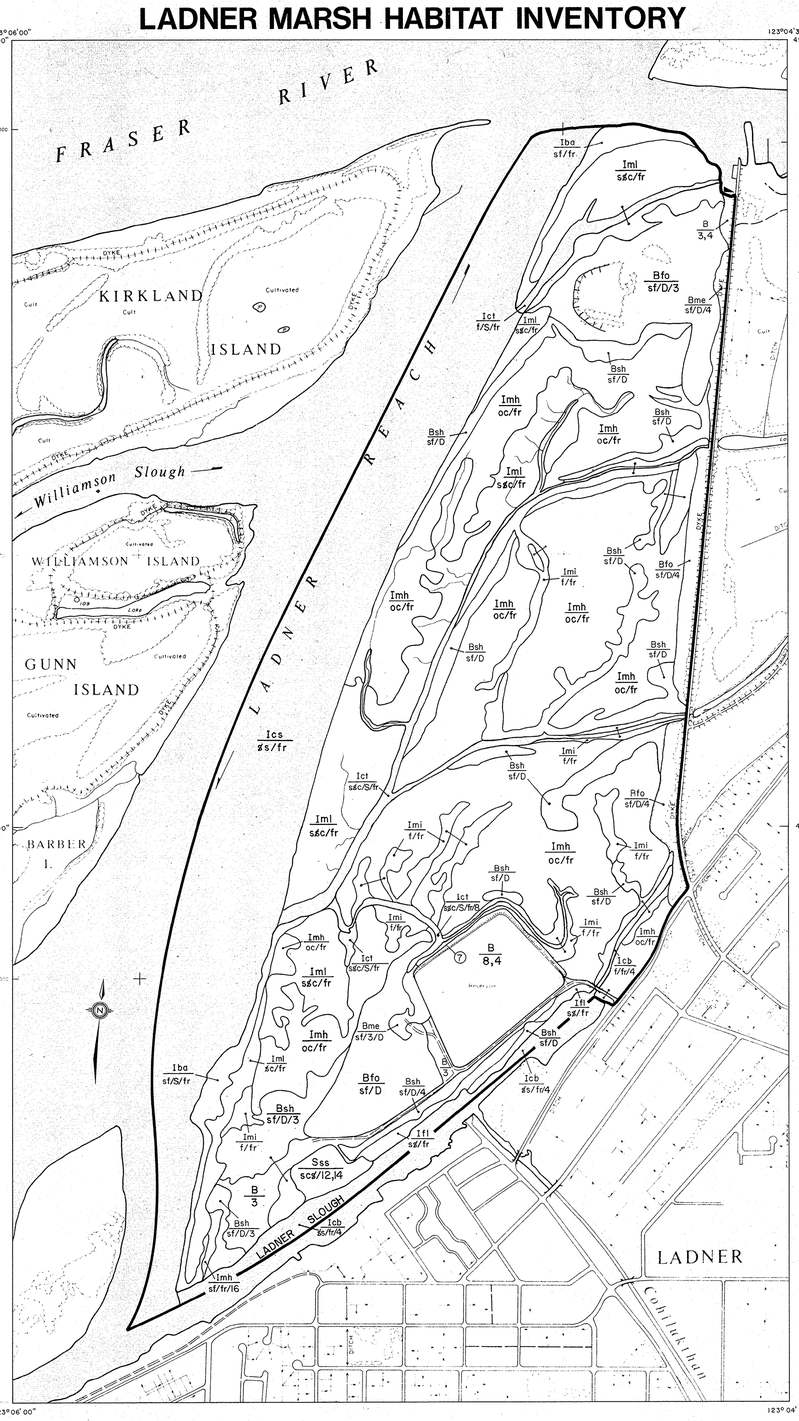
# LADNER MARSH HABITAT INVENTORY

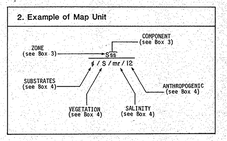



## LEGEND

### 1. Explanatory Notes

The estuarine habitat mapping and classification system is designed to delineate habitat types and describe them as a function of substrate, vegetation, salinity and anthropogenic modifiers. Information is derived from interpretation of recent, large scale colour air photos and ground truthing, and is supplemented by information derived from historical reports and air photos. Specific descriptions of habitat types are presented in Box 5 along with area summaries expressed in hectares and as percentages. Because of the dynamic nature of estuarine systems maps may require updating. Users should therefore refer to the date of mapping shown in Box 8. Users are encouraged to consult RFD Report #207 Ladner Marsh Inventory, Habitat Evaluation Classification System Manual 1982, for descriptions of inventory and mapping methods and terminology utilized in the classification system.

### 2. Example of Map Unit




### 3. Habitat Type

| ZONE | SYMBOL | COMPONENT | SYMBOL |
|---|---|---|---|
| SUBTIDAL | S | reef | re |
| | | deep subtidal | sd |
| | | shallow subtidal | ss |
| INTERTIDAL | I | bar | ba |
| | | berm/beach face | bf |
| | | back channel | cb |
| | | river channel | cr |
| | | side channel | cs |
| | | tide channel | ct |
| | | flat | fl |
| | | marsh | ma |
| | | high marsh | mh |
| | | intermediate marsh | mi |
| | | low marsh | ml |
| | | platform | pl |
| | | reef | re |
| BACKSHORE | B | bar | ba |
| | | bog | bo |
| | | back channel | cb |
| | | river channel | cr |
| | | side channel | cs |
| | | fen | fe |
| | | forest | fo |
| | | marsh | ma |
| | | meadow | me |
| | | permanent pond | pp |
| | | semi-permanent pond | ps |
| | | temporary pond | pt |
| | | shrub | sh |
| | | storm ridge | sr |
| | | swamp | sw |

### 4. Habitat Modifier

| TYPE | SYMBOL | TYPE | SYMBOL |
|---|---|---|---|
| SUBSTRATES | | SALINITY | |
| clay | c | brackish | br |
| silt | z | fresh | fr |
| fines | f | marine | mr |
| sand | s | | |
| small pebble | g | | |
| large pebble | g | | |
| cobble | k | | |
| boulders | b | | |
| bedrock | r | | |
| organic | o | | |
| shell | m | | |
| VEGETATION | | ANTHROPOGENIC | |
| coniferous | C | log handling | 1 |
| deciduous | D | agriculture | 2 |
| mixed | M | landfill | 3 |
| non-vascular | N | dyke, seawall, causeway | 4 |
| submerged vascular | S | channel | 5 |
| | | floodgate | 6 |
| | | outfall | 7 |
| | | pollution | 8 |
| | | intake | 9 |
| | | residential | 10 |
| | | industrial | 11 |
| | | park | 12 |
| | | port facility | 13 |
| | | substrate removal | 14 |
| | | jetty, groin, weir | 15 |
| | | log debris | 16 |
| | | logged | 17 |

### 5. Descriptions of Habitat Types

| Symbol | DESCRIPTION | AREA (ha) | % TOTAL |
|---|---|---|---|
| | SUBTIDAL ZONE | | |
| Sss | Created by dredging, this marina adjacent to Ladner Slough was completed in 1983. Access depths of approximately 3 metres will be maintained through dredging. Substrates are sands overlain by clayey silts. | 1.4<br>1.4 | 0.6<br>0.6 |
| | INTERTIDAL ZONE | | |
| Iba | Composed of fine substrates, these depositional areas are sometimes sparsely vegetated by ditch-grass in the upper areas. | 171.4<br>4.2 | 75.4<br>1.8 |
| Ich | This habitat type consists of Ladner Slough, a dyked channel located along the southern boundary of the study area. Fraser River inflow coupled with tidal influxes are the major water sources for the slough. Approximately 85 of the south arm flow passes the mouth of the slough. Periodic dredging is required to maintain the navigation channel. | 4.5 | 2.0 |
| Ics | Located along the western boundary of the study area, Ladner Reach, a side channel of the south arm of the Fraser River, receives approximately 70% of the south arm flow. The substrate is predominately silts overlying sands. Channel depths range from approximately 1 metre at the southern extreme to 16.5 metres to the north. Average depths are 2-4 metres. Salinity varies from fresh during the summer freshet conditions, to slightly brackish, approximately 5 ppt, during low flows. | 51.3 | 22.6 |
| Ict | Numerous steep-sided fine textured tide channels are included in this habitat type. Some of these channels, which drain intertidal marsh areas, dry at low tide. Channels are often bordered by Lyngbye's sedge or at higher elevations by willows. Ditch-grass or arrowhead are commonly found within the channels. | 6.6 | 2.9 |
| Ifl | This habitat type located adjacent to Ladner Slough is composed of sandy silt substrates. Numerous old fishing stake and hoboes occupy the western portion of the flats. Low salinities are evidenced by the benthos which are predominantly oligochaetes and chironomids. | 1.2 | 0.5 |
| Imh | The high marsh is the most extensive habitat type within the study area. It occurs on organic rich clay substrates. In better drained sites purple loosestrife, tall fescue and creeping bent grass are dominates commonly occurring in association with field mint and swamp horsetail. In areas of standing water dense almost monospecific patches of common cattail occur sometimes in association with arrowhead. Where cattails are less dense, tall fescue and purple loosestrife are common and willows are occasionally present. The cattail communities are marked by a high degree of surface litter. The general tidal range for this habitat type is 2.6 to 3.4 metres. | 66.8 | 29.4 |
| Iml | This habitat type is commonly found adjacent to tidal channels on fine substrates, and is characterized by Lyngbye's sedge, tall fescue and tufted hair grass with lesser amounts of Douglas' aster, creeping bent grass, purple loosestrife and Henderson's checker mallow. The elevational boundaries of this habitat type are roughly defined by the 2.4 and 2.7 metre tidal heights. | 9.1 | 4.0 |
| Imi | Occurring on silty clay substrates, this habitat type has the lowest species diversity of the intertidal marshes. At its upper extreme, a dense continuous distribution of the tall Lyngbye's sedge ecotype occurs with minor amounts of creeping bent grass, arrowhead, hemlock water-parsnip, American great bulrush, and Pacific cocnanthe. Intermediate elevations often have a mixture of American great bulrush and water-plantain with lesser amounts of Lyngbye's sedge, hemlock water-parsnip and arrowhead. Along the lowest elevations, American great bulrush is the dominant in association with creeping spike-rush and swamp horsetail. Minor amounts of water plantain also occur. Creeping spike-rush, a pioneer species, is found along the lowest edge of the marsh as a colonizer of adjacent bar areas. The low marsh habitat type generally occurs in the 1.5 to 2.6 metre tidal range. | 27.7 | 12.2 |
| | BACKSHORE ZONE | | |
| Bfo | Ditchbank species dominate this habitat type which is found in three locations: adjacent to the sewage lagoon around Harbour Park in the southwest; in the partially dyked park/campsite area to the northeast; and along the western dyke road boundary of the study area. Black cottonwood is the dominant tree species with red alder, willow, Nootka rose, Himalayan blackberry, Pacific ninebark and cascara commonly found in the understory. | 54.8<br>21.3 | 24.0<br>9.3 |
| Bme | This habitat type consists of grass dominated road margins and the Harbour Park picnic area. | 1.5 | 0.7 |
| Bsh | Comprised of willow thickets and occasionally mixed shrub (predominantly willow, with red-osier dogwood and hemlock). An understory of bent grass, fescue and tufted hair grass is common. This habitat type is found along steep channel banks and bordering forest areas often on old disturbed sites. | 20.3 | 8.9 |
| Bsh 3 | These units consist of a discontinued dredge spoil site, parking and roadways for Harbour Park and the marina, and to the northwest a boat launching area. | 4.1 | 1.8 |
| B 3,4 | This unit consists of the Ladner sewage lagoon which is scheduled to be phased out in 1983 when the final hook-up to the Annacis treatment plant should be completed. A gravity feed discharge at the north side of the lagoon drains into the adjacent tidal channel. Mean discharge is 850 $m^3$/day. Due to the average 20 day retention period, sewage treatment approximates secondary levels. The major pollutants are fecal coliforms with a median count of 1300 cpm/100 ml. Mean total suspended solids and BOD are 34 ppm and 30 ppm respectively. | 7.6 | 3.3 |
| | Total of entire area | 227.6 | 100 |

### 6. Anthropogenic On Site Symbols

bridge
ramp
jetty
rip rap
dyke
culvert
floodgate
outfall
intake
submarine cable
float/wharf
study area boundary

### 7. Sources of Further Information


Ages, A. 1979. The Salinity Intrusion in the Fraser River: Salinity, Temperature, and Current Observations, 1978, 1977. Pacific Marine Science Report 79-14. Institute of Ocean Sciences, Patricia Bay, Victoria, B.C.

Beak Consultants. 1981. Environmental Impact Statement of Proposed Improvements to the Fraser River Shipping Channel. Prepared for Public Works Canada, Vancouver, B.C.

Birtwell, I.K. (in prep.). Deas and Tilbury Slough Studies. Resource Services Branch, Dept. of Fisheries and Oceans, West Vancouver, B.C.

Bourque, S.C. and E.C.W. Adams. 1975. Environmental Impact Assessment. Small Craft Harbour Proposal at Ladner, B.C. Corp. of Delta, Delta, B.C. Unpubl. report.

Government of Canada and Province of British Columbia. 1978. Fraser River Estuary Study. Vols. 3-7.

Levy, D.A., T.G. Northcote and G.J. Birch. 1979. Juvenile Salmon Utilization of Tidal Channels in the Fraser River Estuary, British Columbia. Westwater Research Centre, U.B.C. Tech. Report No. 23.

McLaren, L.A. 1972. A Vegetation Study of the Islands and Associated Marshes in the South Arm of the Fraser River, B.C., from the Deas Island Tunnel to Westham Island Foreshore. Prepared for the Fish and Wildlife Branch, Victoria, B.C.

Planning and Resource Management Division. Coastal Water Bird Data Base. Surveys and Resource Mapping Branch, Ministry of Environment, Victoria, B.C.

Surveys and Resource Mapping Branch. 1972. Fraser River Delta 1:1200 maps. Special Project 72-24F. Ministry of Environment, Victoria, B..

Wayne, M.M., J.A. Morrison and B.D. Tutty. 1980. The Fraser River Inventory (F.R.I.): An Overview. Data Report #207 Department of Fisheries and Oceans, Vancouver, B.C.


### 8. Credits

Mapping supervised by R.A. Hunter
Mapped by M.M. Wayne
Field work by M.M. Wayne, A. Campbell, L.E. Jones
Date of field work: August 1982
Photography used, BC2261:168-170, BC5454:31-35, 98-102, 107-110, 176-178
Map drafted by Cartography, Surveys and Resource Mapping Branch, January, 1983.
Base map provided by Surveys and Resource Mapping Branch, Ministry of Environment, Victoria. 1979.

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