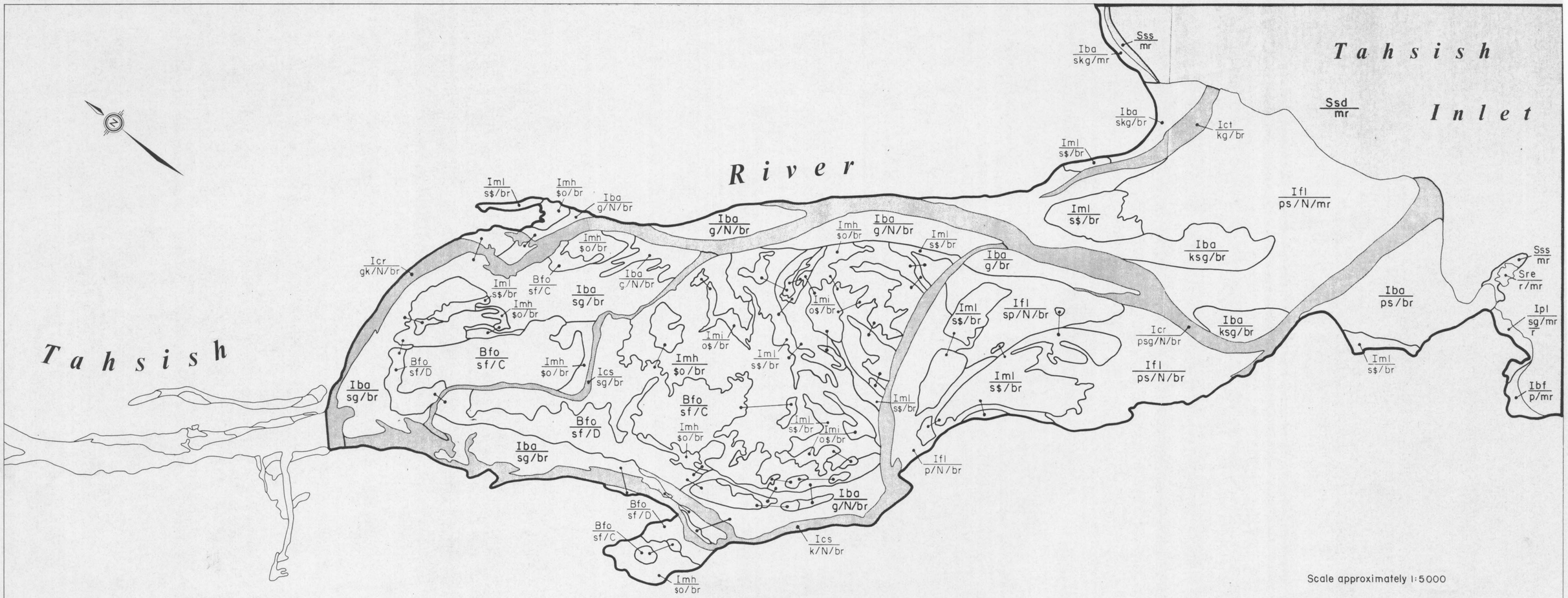
# TAHSISH ESTUARINE HABITAT INVENTORY

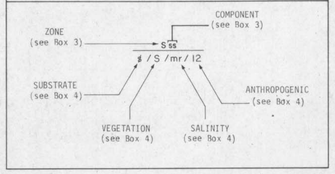



## LEGEND

### 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 influences. 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 APD Technical Paper, Estuarine Habitat Mapping and 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 | $ | fresh | fr |
| fines | f | marine | mr |
| sand | s | | |
| small pebble | p | | |
| 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 | culvert | 5 |
| | | floodgate | 6 |
| | | outfall | 7 |
| | | pollution | 8 |
| | | intake | 9 |
| | | residential | 10 |
| | | industrial | 11 |
| | | marina | 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 | 35.9 | 24.8 |
| Sre | This habitat type includes bedrock outcrops located within the subtidal zone. Supratidal portions are sparsely vegetated. | 6.1 | 4.2 |
| Ssd | Subtidal habitats with bottom depths greater than 10 metres. Less saline areas are found in the surface water layers. These areas support a variety of groundfish as well as providing habitat for salmonid staging. Bird use includes feeding and loafing by diving birds and loafing by dabbling ducks and gulls. Harbour seals utilize subtidal habitats for feeding. | 29.7 | 20.5 |
| Sss | Included in this habitat type are subtidal areas with depths less than 10 metres. Within this habitat type, brackish water overlies waters of higher salinity. Fish and wildlife use of this habitat type is similar to deep subtidal habitats except for higher utilization by diving ducks for feeding. | 0.4 | 0.3 |
| | INTERTIDAL ZONE | 93.4 | 64.4 |
| Iba | Formed along the bends of the river channels, these active, depositional areas are generally composed of large pebbles with some sand and cobbles. Sediment transport and deposition patterns are dominated by fluvial factors with some modifications by marine processes. Filamentous green algae (Enteromorpha intestinalis) and rockweed (Fucus sp.) occur on bars near the mouth of the estuary. Stable bars commonly have minor amounts of vascular vegetation. Within the upper portion of the estuary these areas may serve as spawning habitat for pink and chum salmon. Bars serve as loafing sites for wintering and migrating waterfowl and shorebirds. Bald eagles and American black bear utilize river bars extensively during the fall salmon runs. Other mammals utilizing these habitat include American mink, river otter and raccoon. Bars located near the ocean may be utilized as harbour seal haulouts. | 26.8 | 18.5 |
| Ibf | This upper intertidal habitat type is characterized by pebble substrates. These marine dominated areas are generally unvegetated or sparsely vegetated by annual plants. Bird use is limited to feeding shorebirds and songbirds and loafing dabbling ducks, Canada geese and wintering seaducks. American mink, river otter and raccoon may make extensive use of these areas. | 0.3 | 0.2 |
| Icr | This habitat includes mainstem areas of the Tahsish River which are influenced by saltwater penetration and regular and seasonal fluctuations due to tidal and fluvial influences respectively. Bed materials vary from pebble/cobble within the upper portions of the delta to pebble/sand in the lower portion of the delta. Filamentous green algae occur along channel edges. This habitat type is important for salmonid migration, spawning and rearing. Wintering and migrating diving ducks and wintering trumpeter swans utilize river channel habitats for feeding and loafing. Mammalian use includes river otter, American mink and raccoon. | 8.8 | 6.1 |
| Ics | Two side channels are present within the study area. One has cobble bed materials and runs along the western boundary of the study area. Filamentous green algae occur along its channel edges. The other channel is wetted only during high tides or high river flows and has a finer textured bed of sand and large pebbles. These channels function as important migration spawning and rearing areas for salmonid species. Dabbling waterfowl utilize these areas to a limited extent for feeding migration and wintering. Mammalian use is similar to river channel habitats. | 5.1 | 3.5 |
| Ict | This habitat type consists of a large channel at the mouth of the estuary and numerous small channels and diverticulations which drain the intertidal marshes and flats. Most of these dry at low tide. Bed materials vary from cobble and pebbles in the larger channel to finer textured materials within the smaller channels. Low marsh plants, particularly Lyngbye's sedge border the channels. This habitat type is extremely important as a nursery area for juvenile salmonids. Dabbling ducks, trumpeter swans and wading birds utilize tidal channels for feeding during migratory and winter periods. These areas are also utilized by mink, river otter and raccoon. | 1.0 | 0.7 |

| SYMBOL | DESCRIPTION | AREA (ha) | % TOTAL |
|---|---|---|---|
| | INTERTIDAL ZONE (continued) | | |
| Ifl | This habitat type is exposed only at low tides, and occurs adjacent to low marsh areas and intertidal bars. The flats are generally characterized by finer textures and lower gradients as compared to bars. Filamentous green algae, brown algae and to a lesser extent alkali grass are commonly present. Epibenthic diversity on the flats is low. This habitat type serves as a nursery area for juvenile salmonids and as a pre-spawning staging area. Other fish utilize flats for year-round foraging. Waterfowl use of intertidal flats includes feeding by migrating and wintering dabbling ducks, wintering trumpeter swans and migrating Canada geese. Shorebirds and waders also utilize flats for feeding. Migrating and wintering diving duck use may be extensive at high tide stages. Bald eagles and American black bear forage on flats for salmon carcasses during fall migration periods. Harbour seals may utilize specific areas as haulouts. | 23.7 | 16.3 |
| Imh | This habitat type is located between backshore forest areas and lower marsh areas. It is characterized by silty organic substrates and the presence of numerous large tidal pools. The dominant plant species within this floristically diverse habitat type are red fescue and meadow barley in lower areas and dune wild rye grass in slightly higher areas. Other species usually occurring in this habitat are yarrow, springbank clover, and Pacific silverweed. The total percent vegetative cover averages 90%. High marshes provide spring forage for American black bear and important year round forage for Roosevelt elk and Columbia black-tailed deer. Waterfowl use of high marshes is limited to grazing by dabbling ducks, Canada geese and trumpeter swans. Other wildlife which utilize this habitat type include songbirds, small mammals, reptiles and amphibians. These areas are of less direct importance to salmonid rearing than lower marshes, however they are a major producer of detritus and source of nutrients for the estuary and adjacent marine areas. | 12.8 | 8.8 |
| Imi | Occurring on organic silt substrates, this habitat type is less diverse than the adjacent high marsh. The dominant plant species are Arctic rush and sea-side arrow-grass. Pacific silverweed, Lyngbye's sedge and sea-milk wort are also commonly present. Total percent cover ranges from 40-90%, averaging 65%. Wildlife use of this habitat type is similar to that of the adjacent high marshes. As well as being a major producer of detritus and source of nutrients, these areas and the tidal channels within them serve as important rearing areas for salmonid species when flooded. | 4.1 | 2.8 |
| Iml | This habitat type is located adjacent to intertidal flats and bars and is drained by numerous tidal channels. The predominately silty sand substrates are colonized by two plant communities. A Lyngbye's sedge dominated community occurs along tidal channels at low elevations and a community dominated by tufted hair grass occupies slightly higher elevations away from the tidal channels. Vegetative cover averages 50%. These areas are important for salmonid rearing. Bird use includes feeding by wading birds, migrating dabblers and Canada geese and wintering trumpeter swans. Diving birds may feed in these areas at high tide stages. Utilization by small mammals, reptiles and amphibians is low. | 10.4 | 7.2 |
| Ipl | This habitat type occurs within the marine portion of the study area and is characterized by bedrock substrates overlain by sand and large pebbles. Such areas are formed by erosional wave action. Wildlife use of these habitats is similar to beach face habitats. | 0.4 | 0.3 |
| | BACKSHORE ZONE | 15.4 | 10.6 |
| Bfo | Both coniferous and deciduous forests are found within the study area. Coniferous areas are dominated by Sitka spruce often associated with western hemlock. Salmonberry, red huckleberry and stink currant are common understory components. Deciduous forests have developed on recently deposited alluvium and are dominated by red alder. Forest habitats are utilized extensively year round by Columbia black-tailed deer and Roosevelt elk for cover and foraging. American black bear also forage within this habitat type and use by small mammals is extensive. Bird use includes nesting by cavity dwellers, passerines and raptors. | 15.4 | 10.6 |
| | Total area of entire study area. | 145.0 | 100 |

### 6. Anthropogenic On Site Symbols

- bridge
- float/wharf
- jetty
- ramp
- dyke
- rip rap
- submarine cable
- study area boundary
- (5) culvert
- (7) outfall
- (6) floodgate
- (8) intake

### 7. Sources of Further Information


Assessment and Planning Division. Water Bird Data Base. Terrestrial Studies Branch, Ministry of Environment, Victoria, B.C.

Assessment and Planning Division. 1982. Resources of the Tahsish-Kwois (draft). Ministry of Environment, Victoria, B.C.

Hunter, R.A., L.E. Jones, and M.M. Wayne. 1982. Estuarine habitat mapping and classification system manual. APD Tech. Paper (in prep). B.C. Ministry of Environment, Victoria, B.C.

Marshall, D.E., M.J. Comfort, and E.W. Bretton. 1980. Catalogue of Salmon Stream and Spawning Escapements Statistical Area 26, (Kyuquot Sound) Canadian Data Report, Fisheries and Aquatic Sciences No. 183. p. 83-86.


### 8. Credits

Supervised by R.A. Hunter

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Photography used BCC116:118-129; BCC285:167-165, 180-183

Map drafted by Cartography, Terrestrial Studies Branch, March 1982

Base map prepared by Cartography, Terrestrial Studies Branch

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