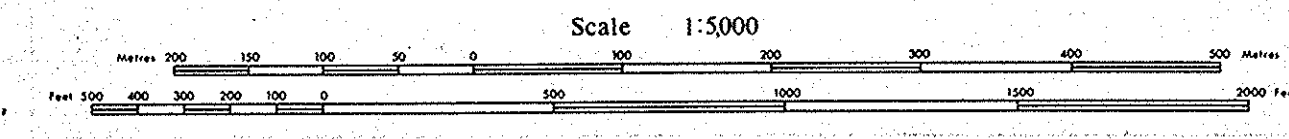
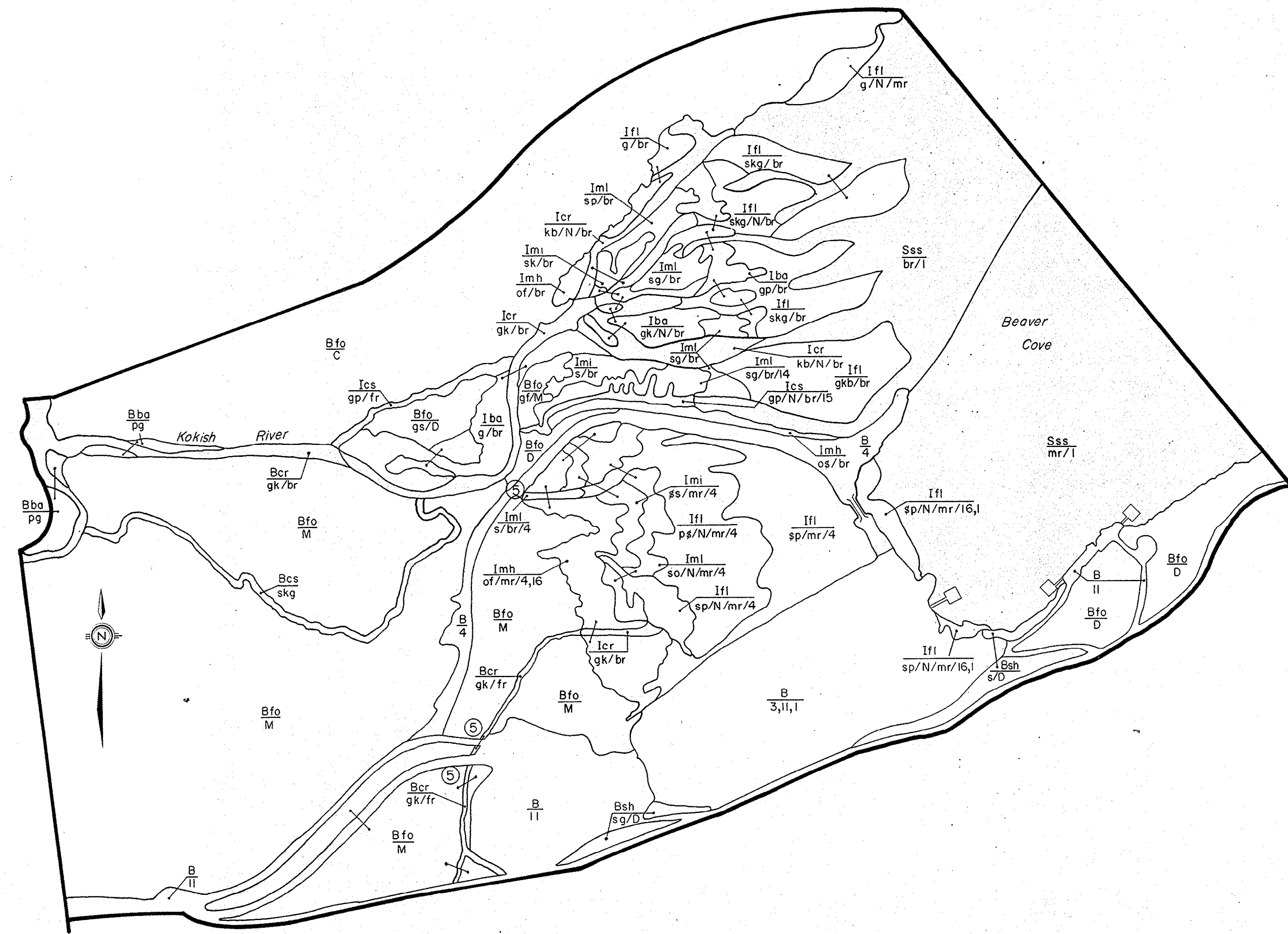
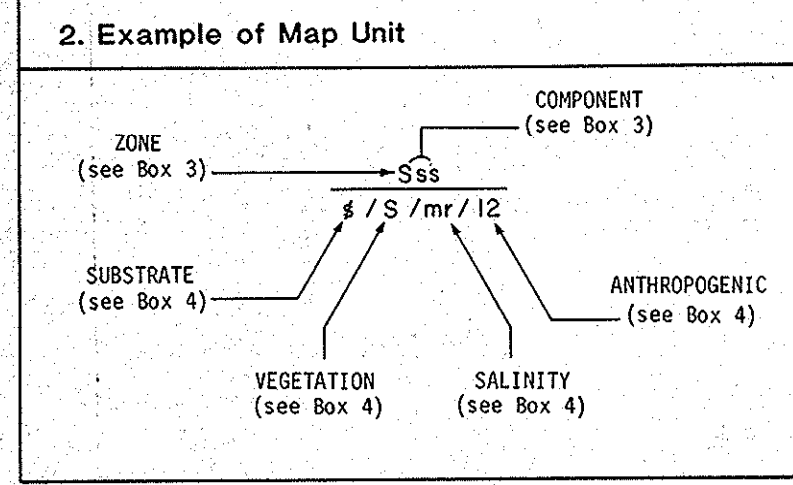


KOKISH ESTUARINE HABITAT INVENTORY



LEGEND

1. Explanatory Notes
The comparative 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 aerial photographs, satellite 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 updates. Users are encouraged to consult the Technical Paper, Estuarine Habitat Mapping and Classification System Manual 1982, for descriptions of the classification system, mapping methods and terminology utilized in the classification system.



3. Habitat Type

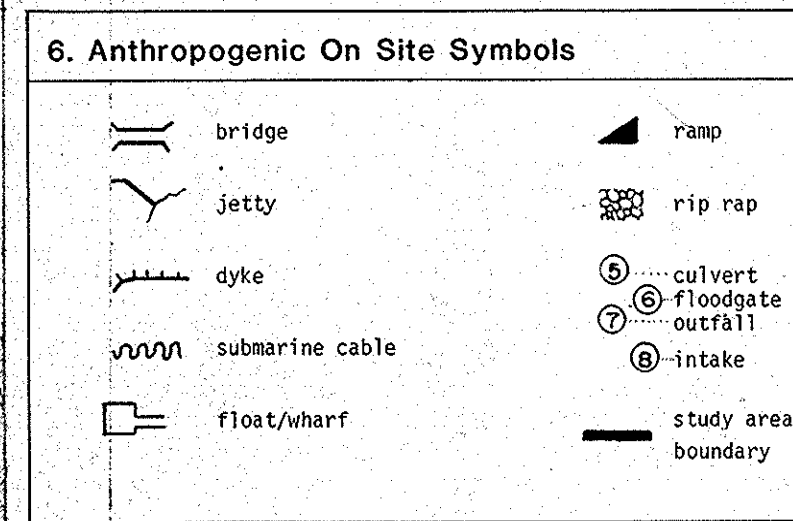
ZONE	SYMBOL	COMPONENT	SYMBOL
SUBTIDAL	S	reef	rb
		deep subtidal	sd
		shallow subtidal	ss
INTERSTITIAL	I	bar	ba
		bar/beach face	bb
		back channel	cb
		river channel	cr
		side channel	cs
		tide channel	ct
		marsh	mb
		high marsh	mh
		intermediate marsh	mi
		low marsh	ml
reef	re		
BACKSHORE	B	bar	ba
		log	lg
		back channel	cb
		river channel	cr
		tide channel	ct
		forest	fo
		meadow	me
		marsh	mb
		semi-permanent pond	sp
		permanent pond	pp
slake	sl		
stone ridge	sr		
swamp	sw		

4. Habitat Modifier

TYPE	SYMBOL	TYPE	SYMBOL		
SUBSTRATES	C	clay	c		
		silt	s		
		fine sand	f		
		coarse sand	cs		
		small pebbles	p		
		large pebbles	lp		
		cobble	co		
		boulders	b		
		bedrock	r		
		organic	o		
VEGETATION	V	coniferous	c		
		deciduous	d		
		mixed	m		
		non-vascular	n		
		submerged vascular	s		
		ANTHROPOGENIC	A	log handling	l
				spill/leak	sp
				landfill	la
				quarry	q
				culvert	c
pollution	p				
outfall	o				
intake	i				
industrial	in				
marina	ma				
port facility	po				
substrate renewal	sr				
jetty, groin, weir	jt				
logged	lo				

5. Descriptions of Habitat Types

SYMBOL	DESCRIPTION	AREA (ha)	% TOTAL	SYMBOL	DESCRIPTION	AREA (ha)	% TOTAL
Sss	Subtidal delta front areas of Beaver Cove with water depths less than 10 metres. The NW wing of the coarsest Kokish River outflow to the north, resulting in the development of marine conditions on the eastern side of the estuary.	34.9	19.6	Ia1	Forming the lower limit of vascular vegetation on the estuary this habitat type is inundated at all moderate and high tides. Two distinct plant communities occur as a result of varying substrate textures and degree of water salinity. Low marsh which has developed on coarse to medium textured substrates adjacent to the river mouth and are inundated by brackish water in the summer months are dominated by Lyngbya's sedge and topped with grass stems and shoots of Pacific silverweed and rockweeds. Dredging activities have lowered elevations and created conditions suitable for the development of this community along the NE side of the causeway.	3.8	2.1
Iba	Superficial materials which have formed through fluvial and marine processes. Euryhaline intertidally dominated areas are inundated frequently by brackish water. Disturbance areas which are inundated occasionally by freshwater as a result of tidal opening possess minor amounts of grasses and low shrubs. These habitats are often littered with liquidated wood debris.	35.6	20.6	Icr	Intertidal components of the Kokish River main channel and intermittent streams which drain upland areas SE of the estuary. Active only during high rainfall periods these intermittent streams are the major source of freshwater entering the dyked portion of the estuary. Intertidally dominated is found attached to cobble-sandstone substrates.	3.4	1.9
Icr	Intertidal components of the Kokish River main channel and intermittent streams which drain upland areas SE of the estuary. Active only during high rainfall periods these intermittent streams are the major source of freshwater entering the dyked portion of the estuary. Intertidally dominated is found attached to cobble-sandstone substrates.	3.4	1.9	Ics	Side channels within the estuary which dry at low tides. These are characterized by finer substrates than adjacent types and are vegetated by Euryhaline intertidally. Side channels have been created through dredging activities associated with causeway construction. Portions of these channels dry leaving pools at low tide.	0.8	0.4
Ifi	Low gradient areas which form the delta front and are exposed only at low tide. Non-vascular vegetation is composed of rockweed (Fucus distichus), sea lettuce (Ulva fenestrata) and green algae (Vaucheria sp.). Plants which are common within the restricting causeway include Fucus and are subject to stronger marine influences due to deflection of the Kokish River by this structure.	19.0	10.7	Ibh	These floristically diverse areas occur on organically enriched substrates adjacent to forest vegetation. High marsh within the causeway are dominated by grasses, primarily tufted hair grass, meadow barley, and creeping bent grass. Pacific silverweed, Alaska plantain and Pacific rush are common. Intertidal marsh species such as sea plantain, invasive arrowgrass, Lyngbya's sedge and sea-willow are present as scattered individuals. Sand with wide grass exists in almost pure stands along the estuary forest fringes.	3.8	2.1
Ibh	These floristically diverse areas occur on organically enriched substrates adjacent to forest vegetation. High marsh within the causeway are dominated by grasses, primarily tufted hair grass, meadow barley, and creeping bent grass. Pacific silverweed, Alaska plantain and Pacific rush are common. Intertidal marsh species such as sea plantain, invasive arrowgrass, Lyngbya's sedge and sea-willow are present as scattered individuals. Sand with wide grass exists in almost pure stands along the estuary forest fringes.	3.8	2.1	Bba	Coarse textured river bars which are inundated during high flow conditions. Some limited vascular vegetation in the form of grasses and deciduous shrubs may be present.	106.5	59.8
Bba	Coarse textured river bars which are inundated during high flow conditions. Some limited vascular vegetation in the form of grasses and deciduous shrubs may be present.	106.5	59.8	Bcr	Backshore portions of the Kokish River and the intermittent stream which flow into the SE portion of the estuary. The Kokish River drains an area of 250 km ² and is the result of Ska Lake and the Bonanza Lake and river systems. The Tsimshian River enters the Kokish approximately 2 km from the estuary. Maximum flows occur in the winter months (October-February) while minimum flows occur in late August - early September. Sed materials are pebbles and cobbles.	1.9	1.1
Bbc	A remnant main river channel which now functions as a side channel. This habitat type is characterized by lower flows and finer textured bed materials than the adjacent main river channel and is lined by an overhanging canopy of deciduous trees.	0.9	0.5	Bbs	Coniferous, mixed and deciduous forests occur within the study area. Coniferous forests are dominated by western hemlock and coast Douglas fir, while mixed forests are composed of varying amounts of red alder, Sitka spruce and western hemlock. Deciduous forests are located on coarse textured soils and are dominated by red alder. Regenerating western hemlock and coast Douglas fir are common understory components.	76.4	42.9
Bbo	Coniferous, mixed and deciduous forests occur within the study area. Coniferous forests are dominated by western hemlock and coast Douglas fir, while mixed forests are composed of varying amounts of red alder, Sitka spruce and western hemlock. Deciduous forests are located on coarse textured soils and are dominated by red alder. Regenerating western hemlock and coast Douglas fir are common understory components.	76.4	42.9	Bbu	Red alder, willow dominated regions occurring on cleared areas or recently deposited alluvium.	1.9	1.1
Bbu	Red alder, willow dominated regions occurring on cleared areas or recently deposited alluvium.	1.9	1.1	Bbv	Cleared areas associated with the log handling operation (backline yards, fuel storage, parking lots, access roads etc.).	11.8	6.6
Bbv	Cleared areas associated with the log handling operation (backline yards, fuel storage, parking lots, access roads etc.).	11.8	6.6	Bbw	An area of landfill on the SE portion of the estuary utilized as a dry land log port by Canadian Forest Products. Logs are stacked at the NE end of this structure. Log storage grounds associated with this operation extend along the delta front.	9.5	5.3
Bbx	An area of landfill on the SE portion of the estuary utilized as a dry land log port by Canadian Forest Products. Logs are stacked at the NE end of this structure. Log storage grounds associated with this operation extend along the delta front.	9.5	5.3	Bby	An earthenfill causeway encircling the SE portion of the estuary. Construction of the causeway has resulted in decreased tidal circulation and freshwater input to the habitats enclosed by it. A culvert on the eastern side and a breach on the NE portion of the causeway allow restricted water access to the area.	2.3	1.9
Bby	An earthenfill causeway encircling the SE portion of the estuary. Construction of the causeway has resulted in decreased tidal circulation and freshwater input to the habitats enclosed by it. A culvert on the eastern side and a breach on the NE portion of the causeway allow restricted water access to the area.	2.3	1.9		Total area of entire study area	178	100



7. Sources of Further Information

Fraser, F.J., D.T. Lighty and G.D. Bellay, 1974. An Inventory of East Coast Vancouver Island Streams. Report to Chem. Salmon, Technical Report 74/74-21. Department of Environment, Fisheries and Marine Service, Pacific Region.

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8. Credits

Mapping supervised by R.A. Hunter
 Mapped by L.L. Jones
 Field work by L.L. Jones
 Date of field work July 1981
 Photography used B2C230171-184
 Not drafted by Cartography, Terrestrial Studies Branch, December, 1982
 Base map produced by Cartography, Terrestrial Studies Branch

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