

Annotated Bibliography of Nearshore Fish Habitat Maps for the Strait of Georgia

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ANNOTATED BIBLIOGRAPHY OF NEARSHORE FISH HABITAT MAPS
FOR THE STRAIT OF GEORGIA

by

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ABSTRACT

Lessard, J., C.D. Levings, M.S. North, and D.J.H. Nishimura. 1996. Annotated bibliography of nearshore fish habitat maps for the Strait of Georgia. *Can. Manuscr. Rep. Fish. Aquat. Sci.* 2350: 31 p.

Effective management of British Columbia's foreshore fish habitat requires access to mapped information, but many habitat maps have not been published or widely distributed. This report is a listing and description of maps made over the past two decades that relate to nearshore fish habitat in the Strait of Georgia, British Columbia. An accompanying diskette gives a listing of references indirectly related to fish habitat maps in the Strait of Georgia.

Keywords: Strait of Georgia, fish habitat, habitat map

RÉSUMÉ

Lessard, J., C.D. Levings, M.S. North, and D.J.H. Nishimura. 1996. Annotated bibliography of nearshore fish habitat maps for the Strait of Georgia. *Can. Manuscr. Rep. Fish. Aquat. Sci.* 2350: 31 p.

La gestion efficace de l'habitat du poisson des côtes de la Colombie Britannique exige l'accès à des données décrivant cet habitat. Plusieurs cartes de l'habitat du poisson n'ont pas été publiées ou sont distribuées sur une très courte échelle. Ce document liste et décrit les cartes produites au cours des deux dernières décennies qui se rapportent à l'habitat du poisson dans le Détroit de Georgie en Colombie Britannique. Une diskette accompagnant ce document donne une liste de références indirectement reliées à l'habitat du poisson dans le Détroit de Georgie.

Mots clés: Détroit de Georgie, habitat du poisson, carte de l'habitat

INTRODUCTION

Over the past two decades, numerous maps describing intertidal and shallow subtidal fish habitat in coastal British Columbia have been developed by a variety of agencies. The data presented on the maps are particularly valuable to those responsible for managing marine and estuarine fish habitat. Unfortunately, many maps are not easily accessible, as they have not been widely distributed. This report, written as a contribution to the Marine Foreshore Fish Habitat Assessment project sponsored by the D.F.O. Habitat Action Plan (Environmental Analysis Component), is an annotated bibliography of maps that deals with nearshore fish habitat in the Strait of Georgia. Data shown on some maps will be included in a Geographic Information System (GIS) (also being developed as part of the Marine Foreshore Fish Habitat Assessment project) that will improve access to fish habitat data for use in habitat management.

The objective of our report was to improve awareness of these map data. It was not our intention to rate, compare, or analyse information presented. We would like to point out that several different fish habitat classification mapping methods have been used in B.C. and adjacent waters and these are listed in Levings and Thom (1994). Some systems define habitat using only physical parameters such as exposure and substrate (e.g. Howes and Harper, 1984), while others include ecological parameters such as vegetation and community structure (e.g. Hunter et al., 1983). Most estuarine fish habitat classification systems use data on vegetation distribution, which have often been used as a surrogate for fish habitat (Langer et al., 1994). It is likely the variation in data acquisition techniques and classification methods mitigate against comparisons of fish habitat between areas using the presently available information.

SCOPE

The geographical focus of this bibliography is the Strait of Georgia. However, fish habitats in the Fraser River estuary and Burrard Inlet were not included as many data from these are presented in a comprehensive report by Ward et al. (1992) and maps developed by the Fraser River Estuary Management Program. The general locations of study sites included in the bibliography are shown in Figure 1. The following were the primary sources where maps were sought: Fisheries and Oceans staff (Messrs. Brad Mason, Frank Voysie, Jim Van Tine, Rick Harbo, Jim Morrison, Rob Russell, Carl Haegele, Dr. Doug Hay, and Ms. Bev Bravender); B.C. Ministry of Agriculture, Fisheries and Food (Mr. Baron Carswell); City of Campbell River (Mr. Ron Neufeld); District of Comox/Strathcona (Mr. Gord Hodge); Environment Canada (Mr. Dave Walker); Ducks Unlimited Canada (Ms. Kathleen Fry); Drs. Ron Foreman, Gary Bradfield, Rob De Wreede, and Michael Hawkes - Botany Department, University of British Columbia; Dr. Bill Austin, Khoyatan Marine Laboratory, Cowichan Bay; Dr. Alan Austin, Department of Biology, University of Victoria; Ms. Mary Morris, Coastal and Ocean Resources, Sidney, B.C. In addition the following libraries or reference listings were reviewed: Maps-BC, Victoria, B.C., University of B.C., Simon Fraser University, WAVES (contains bibliographic information about published and unpublished literature relating to fisheries and aquatic sciences, currently held in all Department of Fisheries and Oceans libraries), and Aquatic Science and Fisheries Abstracts.

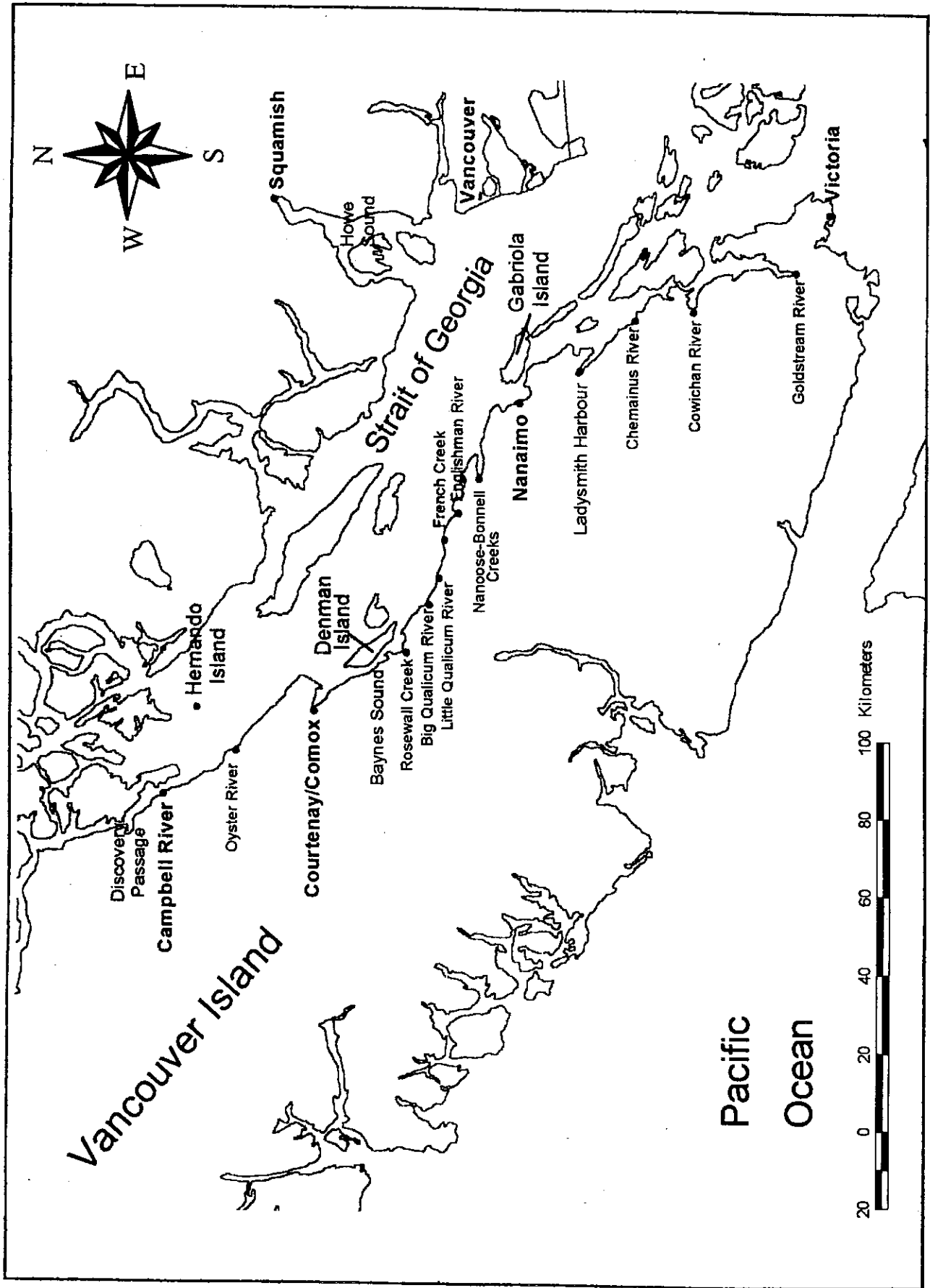


Figure 1. Location of sites in the Strait of Georgia where information on unpublished maps have been compiled in this report.

The bibliographic information was organized using D.F.O. Pacific Region Statistical Districts and Subdistricts. The following format was used to annotate or describe maps that have not been distributed through journal articles, numbered report series, or other media normally used in scientific communication. For the purposes of this bibliography, we have called these "unpublished" maps and annotated each of them as follows:

- a) Date on map: month and year when the map was drawn
- b) Date of field checking: month and year when field work or ground truthing was conducted
- c) Scale: map scale
- d) Author(s): person(s) who produced the map
- e) Habitat classification system: vegetation or organisms used to establish polygons or areas of similar characteristics
- f) Method of mapping: technique or procedures used to produce map
- g) Base map: if known
- h) Air photos used and date:
 - B.C. Government photo abbreviations:
 - BC - black and white photo
 - BC(C) - colour photo at a time when black and white was still used
 - BCC - colour photo
- i) Extent of the study area: includes 1) the boundaries of the mapped area, 2) the National Topographic System (NTS) map on which the area appears, and 3) the UTM (zone 10) coordinates for the northwest and southeast corner of the study area.
- j) Description: a short description of the map, including a description of the georeference system if used
- k) Accompanying Text: availability of a report in addition to map legend
- l) Available at: organization or agency where the map may be obtained

At the end of the compilation for each subdistrict, we have presented a list of reports and papers that include fish habitat maps pertinent to that particular subdistrict. We have called these "published maps" for the purposes of this bibliography. In most cases, critical information dealing with how the map was prepared (see points a to l, above) is given in the particular report cited. Published maps that may be obtained at Maps-BC (B.C. Ministry of Environment, Lands and Parks, Surveys and Resource Mapping Branch, Victoria, B.C.) are listed in Appendix A. Other published reports and databases indirectly related to fish habitat maps in the Strait of Georgia are given in electronic form on a 3.5" floppy diskette accompanying this report. The readme.txt file on this diskette gives information on the latter compilation.

**New Westminster District 2
Squamish Subdistrict 28B**

Unpublished

According to a memo in Hunter et al. (1983) a habitat map for the Squamish area titled "Squamish River Estuary" (scale 1:10 000) was produced, but we were not able to locate it.

Published

Cox, B., D. Blower, B. Raymond, D. Trethewey, and J. Jordan. 1981. The Squamish Estuary Management Plan: Habitat Work Group Final Report. Available through B.C. Ministry of Environment, Lands, and Parks, Surrey, B.C. or Maps-BC, Victoria, B.C. 159 p.

Lim, P.G., and C.D. Levings. 1973. Distribution and biomass of intertidal vascular plants on the Squamish delta. Fish. Res. Board Can., Manuscr. Rep. Series 1219: 26 p.

Pomeroy, W.M. 1977. Benthic algal ecology and primary pathways of energy flow on the Squamish River delta, British Columbia. Ph.D. thesis, University of B.C., Vancouver, B.C. 175 p.

Pomeroy, W.M., and J.G. Stockner. 1976. Effects of environmental disturbance on the distribution and primary production of benthic algae on a British Columbia estuary. J. Fish. Res. Board Can. 33(6):1175-1187.

Nanaimo District 3
Qualicum Beach Subdistrict 14S

Unpublished

Location:	Englishman River Estuary	Little Qualicum Estuary
Date on map:	1982	1979
Date of field checking:	May-Sept 1975 May-Sept 1976	not available
Scale:	1:4 800	1:5 000
Author(s):	K.A. Kennedy	L. Jones
Habitat classification system:	Mueller-Dombois & Ellenberg (1974) and Daubenmire (1962) were used to describe emergent plant communities	major visible species
Method of mapping:	tonal and textural variations associated with plant communities on aerial photographs were determined, followed by field checking	air photo interpretation
Base map:	unknown	unknown
Air photos used and date:	Pacific Survey Corporation: 67203-67210 in March 1973	BCC 192: 001-012 in Sept 1978
Extent of the study area:	Englishman River estuary delimited by a dyke and a resort on the west side, and Shorewood Drive on the east side <ul style="list-style-type: none"> • NTS map: 92 F/8 • NW: 405500E, 5465000N; SE: 407000E, 5464000N 	Little Qualicum River estuary from the highway (south) and the mobile home park (east) to the mouth of the river <ul style="list-style-type: none"> • NTS map: 92 F/8 • NW: 391000E, 5469500N; SE: 392500E, 5468500N
Description:	19 emergent plant communities; some anthropogenic features such as roads, buildings, log booms, marinas, dykes	includes habitat/vegetation type and substrate
Accompanying Text:	Kennedy (1982)	none
Available at:	MacMillan Library, University of B.C., Vancouver, B.C. (Note: map is filed separately from the thesis but explanation of it is in the thesis text)	contact Ducks Unlimited Canada (WRPS Box 39530, White Rock, B.C. V4A 9P3) for more information

Qualicum Beach Subdistrict continued

Location:	Little Qualicum River Estuary	Big Qualicum River Estuary
Date on map:	1982	1982
Date of field checking:	May-Sept 1975 May-Sept 1976	May-Sept 1975 May-Sept 1976
Scale:	1:4 800	1:4 800
Author(s):	K.A. Kennedy	K.A. Kennedy
Habitat classification system:	Mueller-Dombois & Ellenberg (1974) and Daubenmire (1962) were used to describe emergent plant communities	Mueller-Dombois & Ellenberg (1974) and Daubenmire (1962) were used to describe emergent plant communities
Method of mapping:	tonal and textural variations associated with plant communities on aerial photographs were determined, followed by field checking	tonal and textural variations associated with plant communities on aerial photographs were determined, followed by field checking
Base map:	unknown	unknown
Air photos used and date:	Pacific Survey Corporation: 67211-67219 in March 1973	Pacific Survey Corporation: 67220-67227 in March 1973
Extent of the study area:	Little Qualicum River estuary delimited by the Island Highway and a mobile home park <ul style="list-style-type: none"> • NTS map: 92 F/8 • NW: 391000E, 5469500N; SE: 392500E, 5468500N 	from the Island Highway bridge to approximately 250 m upstream <ul style="list-style-type: none"> • NTS map: 92 F/7 • NW: 382500E, 5473000N; SE: 384000E, 5472000N
Description:	14 emergent plant communities; some anthropogenic features such as roads, buildings, log booms, marinas, dykes	2 emergent plant communities; some anthropogenic features such as roads, buildings, log booms, marinas, dykes
Accompanying Text:	Kennedy (1982)	Kennedy (1982)
Available at:	MacMillan Library, University of B.C., Vancouver, B.C. (Note: map is filed separately from the thesis but explanation of it is in the thesis text)	MacMillan Library, University of B.C., Vancouver, B.C. (Note: map is filed separately from the thesis but explanation of it is in the thesis text)

Qualicum Beach Subdistrict continued

Published

- Cameron, A.T. 1916. The commercial value of the kelp-beds of the Canadian Pacific coast- a preliminary report and survey of the beds. Fisheries and Marine Service, Sessional Papers, LI(27): 37-40.
- Campbell Prentice, A., and W.S. Boyd. 1988. Intertidal and adjacent upland habitat in estuaries located on the east coast of Vancouver Island - a pilot assessment of their historical changes. Canadian Wildlife Service, Pacific and Yukon Region, Technical Report Series 38: 75 p.
- Dawe, N.K., and E.R. White. 1982. Some aspects of the vegetation ecology of the Little Qualicum River estuary, British Columbia. Can. J. Bot. 60: 1447-1460.
- Haegle, C.W. 1978. Shoreline vegetation on herring spawning grounds between Deep Bay and Dorcas Point, Strait of Georgia, British Columbia. Fisheries and Marine Service Manuscript Report 1485: 49 p.
- Holmes, P.E., M.L. Tarves, R. Tomio, and W. Jansen. 1985. Fish and fish habitat impact study of seven British Columbia coastal marinas. 1984. Can. Manuscr. Rep. Fish. Aquat. Sci. 1809: 121 p. (French Creek estuary)

Nanaimo District 3
Comox Subdistrict 14N

Unpublished

Location:	Baynes Sound - Foreshore Vegetation	Southeast Coast of Denman Island - Algal Vegetation
Date on map:	1977	August 1972
Date of field checking:	not available	Survey transects May 16, 17, 18, 19 Aug 8, 9, 1972
Scale:	1:40 000	1:10 000
Author(s):	J. Morrison	A. Austin and R. Adams
Habitat classification system:	dominant vegetation type	major algal visible species
Method of mapping:	field observations drawn directly on chart	interpretation of colour, black and white, and colour infrared air photos aided by survey transects
Base map:	Canadian Hydrographic Service chart 3532 (1977)	Canadian Hydrographic Department (controlled mosaic at a scale of 1:10 000)
Air photos used and date:	not applicable	information not available
Extent of the study area:	east coast of Vancouver Island from Deep Bay to Cape Lazo; also includes Seal Islets, Sandy Island and Komas Bluff on Denman Island <ul style="list-style-type: none"> • NTS map: 92 F/10 • NW: 357000E, 5505000N; SE: 363000E, 5500000N 	Lambert Channel from just north of Boyle Point to Fillongley Park <ul style="list-style-type: none"> • NTS maps: 92 F/7,10 • NW: 372500E, 5489500N; SE: 377000E, 5483000N
Description:	algae (genera names), eelgrass and marsh distribution	major algal species beds; eelgrass (<i>Zostera marina</i>); sand dollars (<i>Dendraster excentricus</i>); high and +2 ft water line; ground truth survey transects; geological boundaries; houses and road along the shore
Accompanying Text:	Courtenay River Estuary Resource Committee (1979)	Austin and Adams (1973, 1974)
Available at:	Fisheries and Oceans, Habitat Management Unit, South Coast Division, Nanaimo, B.C.	contact Alan Austin at the Dept. of Biology, University of Victoria, Victoria, B.C. for more information

Comox Subdistrict continued

Location:	Northeast Coast of Denman Island - Algal Vegetation	Rosewall Creek and Mud Bay area - Plant communities
Date on map:	August 1972 (survey transects added in 1973)	1989
Date of field checking:	Ground truth survey transects June 15, 29, July 5, 6 & 7 1972 Survey transects 1973	Field observations July 1989 Survey transects 1979
Scale:	1:10 000	1:2 500
Author(s):	A. Austin and R. Adams	K. Fry, N.K. Dawe, and A. Campbell Prentice
Habitat classification system:	major visible species	Hunter et al. (1983)
Method of mapping:	interpretation of colour, black and white, and colour infrared air photos aided by survey transects	based on field observations and transects
Base map:	Canadian Hydrographic Department (controlled mosaic at a scale of 1:10 000)	Ducks Unlimited Canada air photo mosaic for Mud Bay - Baynes Sound
Air photos used and date:	information not available	Pacific Survey Corporation: 67235,67237,67243 in March 1973
Extent of the study area:	Lambert Channel from Fillongley Park to White Spit north of Seal Islets <ul style="list-style-type: none"> • NTS map: 92 F/10 • NW: 365000E, 5500000N; SE: 374000E, 5489500N 	south end of Mud Bay, mouth of Rosewall Creek <ul style="list-style-type: none"> • NTS map: 92 F/7 • NW: 370500E, 5481000N; SE: 372000E, 5479500N
Description:	major algal species beds; eelgrass (<i>Zostera marina</i>); sand dollars (<i>Dendraster excentricus</i>); high and +2 ft water line; ground truth survey transects; geological boundaries; houses and road along the shore	8 intertidal communities with short explanation of each
Accompanying Text:	Austin and Adams (1973, 1974)	none
Available at:	contact Alan Austin at the Dept. of Biology, University of Victoria, Victoria, B.C. for more information	contact Ducks Unlimited Canada (WRPS Box 39530, White Rock, B.C. V4A 9P3) for more information

Comox Subdistrict continued

Location:	Comox Harbour Vegetation	Courtenay Estuary Habitat Inventory
Date:	1979	May 1989 (revised from March 1984)
Date of field checking:	not applicable	August 1981, March 1983, April 1989
Scale:	1:10 000	1:5 000
Author(s):	J. Morrison	K. Fry and A. Campbell Prentice
Habitat classification system:	major vegetation types	Hunter et al. (1983)
Method of mapping:	air photo interpretation drawn directly on chart	interpretation of large scale colour air photos and ground truthing, supplemented by information derived from historical reports and air photos
Base map:	Canadian Hydrographic Service chart 3599 (1979)	Cartography, Surveys and Resource Mapping Branch, B.C. Ministry of Environment
Air photos used and date:	unknown	BC87025: 5, 7, 75, 77, 78, 80, 82 in June 1987
Extent of the study area:	includes all of Comox Harbour from Gartley Point and Goose Spit to the mouth of the Courtenay River (at the sewage disposal basin) <ul style="list-style-type: none"> • NTS map: 92 F/10 • NW: 357000E, 5505000N; SE: 363000E, 5500000N 	Comox harbour from Gartley Point and Goose Spit to Courtenay Slough <ul style="list-style-type: none"> • NTS map: 92 F/10 • NW: 356500E, 5506500N; SE: 363000E, 5500000N
Description:	the upper limits of the eelgrass bed are relatively precise, but the lower limits are generalized (J. Morrison, pers. comm., 1995)	detailed description of the different types of habitat; area is calculated for each type; includes subtidal, intertidal and backshore zones
Accompanying Text:	Courtenay River Estuary Resource Committee (1979)	none
Available at:	Fisheries and Oceans, Habitat Management Unit, South Coast Division, Nanaimo, B.C.	contact Ducks Unlimited Canada (WRPS Box 39530, White Rock, B.C. V4A 9P3) for more information

Comox Subdistrict continued

Location:	Courtenay River Estuary	Kye Bay - Algal Vegetation
Date on map:	1982	August 1972
Date of field checking:	May-Sept 1975 May-Sept 1976	not available
Scale:	1:4 800	1:2 500
Author(s):	K.A. Kennedy	A. Austin and R. Adams
Habitat classification system:	Mueller-Dombois & Ellenberg (1974) and Daubenmire (1962) were used to describe emergent plant communities	major visible species
Method of mapping:	tonal and textural variations associated with plant communities on aerial photographs were determined, followed by field checking	interpretation of colour, black and white, and colour infrared air photos aided by survey transects
Base map:	unknown	constructed from an uncontrolled mosaic of colour and colour infrared photos at a scale of 1:2 500
Air photos used and date:	Pacific Survey Corporation: 67263-67295 in March 1973	unknown
Extent of the study area:	Comox Harbour from Robb Bluff and Chinook Road to the sawmill at the mouth of the Courtenay River <ul style="list-style-type: none"> • NTS map: 92 F/10 • NW: 356500E, 5505500N; SE: 359500E, 5502000N 	Kye Bay from Cape Lazo to the boat launching ramp (north end) <ul style="list-style-type: none"> • NTS maps: 92 F/10 • NW: 364000E, 5509500N; SE: 366000E, 5507500N
Description:	13 emergent plant communities; some anthropogenic features such as roads, buildings, log booms, marinas, dykes	major algal species; sand dollars (<i>Dendraster excentricus</i>); high and +2 ft water line; ground truth survey transects
Accompanying Text:	Kennedy (1982)	Austin and Adams (1973, 1974)
Available at:	MacMillan Library, University of B.C., Vancouver, B.C. (Note: map is filed separately from the thesis but explanation of it is in the thesis text)	contact Alan Austin at the Dept. of Biology, University of Victoria, Victoria, B.C. for more information

Comox Subdistrict continued

Location:	Willemar Bluff to Little River Coast - Algal Vegetation	Little River to Williams Beach Coast - Algal Vegetation
Date on map:	August 1972	August 1972
Date of field checking:	Ground truth survey transects May 30 - June 2, June 13, 14, 16, July 4, Aug 11, 25 1972	Ground truth survey transects June 8, 28, July 6, 19, Aug 15, 24 1972 transect survey for <i>Iridaea</i> bed width May - Aug 1973
Scale:	1:10 000	1:10 000
Author(s):	A. Austin and R. Adams	A. Austin and R. Adams
Habitat classification system:	major visible species	major visible species
Method of mapping:	interpretation of colour, black and white, and colour infrared air photos aided by survey transects	interpretation of colour, black and white, and colour infrared air photos aided by survey transects
Base map:	prepared from B.C. Air Survey Division planimetric maps, photographically enlarged to the desired 1:10 000 scale	prepared from B.C. Air Survey Division planimetric maps, photographically enlarged to the desired 1:10 000 scale
Air photos used and date:	unknown	unknown
Extent of the study area:	north of Comox Harbour from Goose Spit to about 1 km north of the Little River ferry wharf • NTS map: 92 F/10 • NW: 360500E, 5512500N; SE: 366500E, 5502500N	1 km north of the Little River ferry wharf to Elma Bay • NTS maps: 92 F/14, 15 • NW: 349500E, 5524000N; SE: 361000E, 5512500N
Description:	major algal species; eelgrass (<i>Zostera marina</i>); sand dollars (<i>Dendraster excentricus</i>); high and +2 ft water line; ground truth survey transects; geological boundaries; houses and roads along the shore	major algal species; eelgrass (<i>Zostera marina</i>); sand dollars (<i>Dendraster excentricus</i>); high and +2 ft water line; ground truth survey transects; geological boundaries; houses and roads along the shore
Accompanying Text:	Austin and Adams (1973, 1974)	Austin and Adams (1973, 1974)
Available at:	contact Alan Austin at the Dept. of Biology, University of Victoria, Victoria, B.C. for more information	contact Alan Austin at the Dept. of Biology, University of Victoria, Victoria, B.C. for more information

Comox Subdistrict continued

Location:	Elma Bay to Shelter Point	Oyster River Estuary
Date on map:	1973	not available
Date of field checking:	Ground truth survey transects 1973 transect survey for <i>Iridaea</i> bed width 1974	May-Sept 1975 May-Sept 1976
Scale:	1:10 000	1:4 800
Author(s):	A. Austin and R. Adams	K.A. Kennedy
Habitat classification system:	major visible species	Mueller-Dombois & Ellenberg (1974) and Daubenmire (1962) were used to describe emergent plant communities
Method of mapping:	interpretation of colour air photos aided by survey transects	tonal and textural variations associated with plant communities on aerial photographs were determined, followed by field checking
Base map:	B.C. Forest Service: Cover Series No. 12, 1947-48 prepared from controlled photo-mosaics	unknown
Air photos used and date:	unknown	Pacific Survey Corporation: 67296-67303 in March 1973
Extent of the study area:	east coast of Vancouver Island from Elma Bay to Shelter Point • NTS maps: 92 F/14 • NW: 343000E, 5534500N; SE: 351000E, 5523000N	along Clarkson Road, between the marina and Laval Road • NTS map: 92 F/14 • NW: 347500E, 5526500N; SE: 348500E, 5525500N
Description:	<i>Iridaea cordata</i> (dominant at > 50% cover); <i>Sargassum muticum</i> ; <i>Nereocystis luetkeana</i> ; eelgrass (<i>Zostera marina</i>); high and +2 ft water line; ground truth survey transects; houses and roads along the shore; and substrate (sand and bedrock only)	6 emergent plant communities; some anthropogenic features such as roads, buildings, log booms, marinas, dykes
Accompanying Text:	Austin and Adams (1975)	Kennedy (1982)
Available at:	contact Alan Austin at the Dept. of Biology, University of Victoria, Victoria, B.C. for more information	MacMillan Library, University of B.C., Vancouver, B.C. (Note: map is filed separately from the thesis but explanation of it is in the thesis text)

Comox Subdistrict continued

Published

- Campbell Prentice, A., and W.S. Boyd. 1988. Intertidal and adjacent upland habitat in estuaries located on the east coast of Vancouver Island - a pilot assessment of their historical changes. Canadian Wildlife Service, Pacific and Yukon Region, Technical Report Series 38: 75 p.
- Courtenay River Estuary Resources Committee. 1979. An overview of the resources of Baynes Sound and Comox Harbour. Fisheries and Oceans, Vancouver, B.C.
- Haegle, C.W., and M.J. Hamey. 1981. Shoreline vegetation on herring spawning grounds for Comox, Denman Island, and Hornby Island. Can. Manuscr. Rep. Fish. Aquat. Sci. 1617: 41 p.
- Hay, D.E., C.D. Levings, and M.J. Hamey. 1984. Distribution of a herring fishery relative to submerged vegetation, herring spawn distribution and oceanographic factors. Can. Manuscr. Rep. Fish. Aquat. Sci. 1760: 53 p.
- Holmes, P.E., M.L. Tarves, R. Tomio, and W. Jansen. 1985. Fish and fish habitat impact study of seven British Columbia coastal marinas. 1984. Can. Manuscr. Rep. Fish. Aquat. Sci. 1809: 121p. (Comox Marina)
- Romaine, M.J. 1981. East Coast of Vancouver Island (Race Point to Hatch Point and adjacent islands). Volume II. Coastal Resources Folio, Lands Directorate, Environment Canada, Vancouver, B.C. Section 5: 90 p. and Section 6: 54 p.

Nanaimo District 3
Powell River Subdistrict 15

Unpublished

Location:	Hernando Island - Algal Vegetation
Date on map:	May 1975
Date of field checking:	Ground truth survey transects 1973 transect survey for <i>Iridaea</i> bed width 1974
Scale:	1:10 000
Author(s):	A. Austin and R. Adams
Habitat classification system:	major visible species
Method of mapping:	interpretation of colour air photos aided by survey transects
Base map:	B.C. Forest Service: Cover Map 92-F-15-3, 14-h; 1966 prepared from controlled photo-mosaics
Air photos used and date:	July 21, 1974
Extent of the study area:	west coast of Hernando Island from Ashworth Point to Spilsbury Point <ul style="list-style-type: none"> • NTS maps: 92F/15 • NW: 360500E, 5541000N; SE: 364000E, 5535000N
Description:	<i>Iridaea cordata</i> (dominant at > 50% cover); <i>Sargassum muticum</i> ; <i>Nereocystis luetkeana</i> ; eelgrass (<i>Zostera marina</i>); high and +2 ft water line; ground truth survey transects; houses and road along the shore; and substrate (sand and bedrock only)
Accompanying Text:	Austin and Adams (1975)
Available at:	contact Alan Austin at the Dept. of Biology, University of Victoria, Victoria, B.C. for more information

Published

Holmes, P.E., M.L. Tarves, R. Tomio, and W. Jansen. 1985. Fish and fish habitat impact study of seven British Columbia coastal marinas. 1984. Can. Manusc. Rep. Fish. Aquat. Sci. 1809: 121p. (Beach Gardens Marina)

Nanaimo District 3
Nanaimo/Ladysmith Subdistrict 17

Unpublished

Location:	Chemainus Estuarine Habitat Inventory	Chemainus River Estuary
Date on map:	August 1982 (revised from May 1958)	1982
Date of field checking:	June 1981	May-Sept 1975 May-Sept 1976
Scale:	1:5 000	1:4 800
Author(s):	R.A. Hunter, A. Campbell, L.E. Jones, and M.M. Wayne	K.A. Kennedy
Habitat classification system:	Hunter et al. (1983)	Mueller-Dombois & Ellenberg (1974) and Daubenmire (1962) were used to describe emergent plant communities
Method of mapping:	interpretation of large scale colour air photos and ground truthing, supplemented by information derived from historical reports and air photos	tonal and textural variations associated with plant communities on aerial photographs were determined, followed by field checking
Base map:	provided by Surveys and Mapping Branch, Department of Lands and Forests, 1958, Drawing No. M-67	unknown
Air photos used and date:	BCC261: 183-223 in July 1980	Pacific Survey Corporation: 67106-67139 in March 1973
Extent of the study area:	Canadian Pacific Railway forms the west and south limit; Willy and Shoal Islands form the northeastern limit; includes the estuaries of Chemainus River and Bonsall Creek <ul style="list-style-type: none"> • NTS map: 92 B/13 • NW: 449000E, 5417500N; SE: 452500E, 5414000N 	Chemainus River estuary delimited by the Canadian Pacific Railway, Howe Road and Willy Island <ul style="list-style-type: none"> • NTS map: 92 B/13 • NW: 449000E, 5418000N; SE: 453000E, 5413500N
Description:	detailed description of the different types of habitat; area is calculated for each type; includes intertidal and backshore zones	19 emergent plant communities; some anthropogenic features such as roads, buildings, log booms, marinas, dykes
Accompanying Text:	none	Kennedy (1982)
Available at:	contact Ducks Unlimited Canada (WRPS Box 39530, White Rock, B.C. V4A 9P3) for more information	MacMillan Library, University of B.C., Vancouver, B.C. (Note: map is filed separately from the thesis but explanation of it is in the thesis text)

Nanaimo/Ladysmith Subdistrict continued

Location:	Gabriola - Valdes Islands Nearshore/Subtidal	Nanaimo Estuarine Habitat Inventory
Date on map:	1995	October 1988
Date of field checking:	1972-1974	July 1988
Scale:	approx. 1:12 000	1:5 000
Author(s):	R. Foreman and M. Morris	K. Fry and A. Campbell Prentice
Habitat classification system:	cluster analysis of algal species assemblages, attached to physical mapping of depth, substrate, and wave energy	Hunter et al. (1983)
Method of mapping:	species assemblages predicted from derived biophysical model; digital physical mapping from Howes et al. (1993)	interpretation of large scale colour air photos and ground truthing, supplemented by information derived from historical reports and air photos
Base map:	digital Canadian Hydrographic Service chart 3475	from topographic and Cadastral maps: 92G.011.2.3, 926.011.1.4, 92G.011.4.1 and 92G.011.3.2
Air photos used and date:	not applicable	BC(C)88:149-159 in Sept 1973; BCC216: 69-73, 100-102, 120-123 in July 1979
Extent of the study area:	includes De Courcy, Ruxton, Pylades and Flat Top Islands, eastern end of Gabriola Island and northern half of Valdes Island <ul style="list-style-type: none"> • NTS map: 92 G/4 • NW: 446000E, 5445500N; SE: 455000E, 5434000N 	Nanaimo River estuary from the mouth of the river to Jack Point <ul style="list-style-type: none"> • NTS map: 92G/4 • NW: 432000E, 5446500N; SE: 437000E, 5442000N
Description:	map is based on two combined digital data sets: samples of biota from Foreman (1976) data and physical shoreline attributes from B.C. coastal mapping (Howes et al. 1993); project is to develop and test a nearshore subtidal habitat mapping /inventory technique	detailed description of the different types of habitat; area is calculated for each type; includes intertidal and backshore zones; partial coverage by UTM
Accompanying Text:	M.Sc. thesis by M. Morris, in progress	none
Available at:	Mary Morris, Botany Dept., University of B.C., Vancouver, B.C.	contact Ducks Unlimited Canada (WRPS Box 39530, White Rock, B.C. V4A 9P3) for more information

Nanaimo/Ladysmith Subdistrict continued

Location:	Nanaimo River Estuary	Nanoose-Bonell Creeks Estuary
Date on map:	1982	1982
Date of field checking:	May-Sept 1975 May-Sept 1976	May-Sept 1975 May-Sept 1976
Scale:	1:4 800	1:4 800
Author(s):	K.A. Kennedy	K.A. Kennedy
Habitat classification system:	Mueller-Dombois & Ellenberg (1974) and Daubenmire (1962) were used to describe emergent plant communities	Mueller-Dombois & Ellenberg (1974) and Daubenmire (1962) were used to describe emergent plant communities
Method of mapping:	tonal and textural variations associated with plant communities on aerial photographs were determined, followed by field checking	tonal and textural variations associated with plant communities on aerial photographs were determined, followed by field checking
Base map:	unknown	unknown
Air photos used and date:	Pacific Survey Corporation: 67159-67192 in March 1973	Pacific Survey Corporation: 67193-67202 in March 1973
Extent of the study area:	Nanaimo River estuary from the river mouth to Jack Point <ul style="list-style-type: none"> • NTS map: 92G/4 • NW: 432000E, 5446000N; SE: 437000E, 5441500N 	Nanoose-Bonell Creeks estuary between the Canadian Pacific Railway and the camp ground on the north shore of Nanoose Bay <ul style="list-style-type: none"> • NTS map: 92 F/8 • NW: 412500E, 5458000N; SE: 414000E, 5458000N
Description:	22 emergent plant communities; some anthropogenic features such as roads, buildings, log booms, marinas, dykes	11 emergent plant communities; some anthropogenic features such as roads, buildings, log booms, marinas, dykes
Accompanying Text:	Kennedy (1982)	Kennedy (1982)
Available at:	MacMillan Library, University of B.C., Vancouver, B.C. (Note: map is filed separately from the thesis but explanation of it is in the thesis text)	MacMillan Library, University of B.C., Vancouver, B.C. (Note: map is filed separately from the thesis but explanation of it is in the thesis text)

Nanaimo/Ladysmith Subdistrict continued

Published

- Cameron, A.T. 1916. The commercial value of the kelp-beds of the Canadian Pacific coast - a preliminary report and survey of the beds. Fisheries and Marine Service, Sessional Papers, LI(27): 37-40.
- Campbell Prentice, A. and W.S. Boyd. 1988. Intertidal and adjacent upland habitat in estuaries located on the east coast of Vancouver Island - a pilot assessment of their historical changes. Canadian Wildlife Service, Pacific and Yukon Region, Technical Report Series No. 38: 75 p.
- Dawe, N.K., and E.R. White. 1986. Some aspects of the vegetation ecology of the Nanoose-Bonell estuary, Vancouver Island, British Columbia. *Can. J. Bot.* 64: 27-34.
- Haegle, C.W., and M.J. Hamey. 1979. Shoreline vegetation on herring spawning grounds in Stuart Channel, Strait of Georgia, British Columbia. Fisheries and Marine Service Manuscript Report No. 1534: 29 p.
- Haegle, C.W., and M.J. Hamey. 1976. Shoreline vegetation maps of Nanoose and Ganges herring management units. *Fish. Res. Board Can. Manusc. Rep. Series No. 1408*: 43 p.
- Haegle, C.W., and R.D. Humphreys. 1976. Surveys of vegetation in herring spawning localities in the vicinity of Nanoose Bay, British Columbia. *Fish. Res. Board Can. Manusc. Rep. Series No. 1412*: 37 p.
- Holmes, P.E., M.L. Tarves, R. Tomio, and W. Jansen. 1985. Fish and fish habitat impact study of seven British Columbia coastal marinas. 1984. *Can. Manusc. Rep. Fish. Aquat. Sci.* 1809: 121 p. (Nanaimo Marina)
- Ministry of Environment. 1976. Ladysmith Harbour: a guide for environmental management of foreshore resources. Land Management Branch, B.C. Lands Service, Ministry of Environment. (available at B.C. Ministry of Environment, Lands and Parks library, Victoria, B.C.) 98 p.
- Nanaimo Estuary Fish Habitat and Log Management Task Force. 1980. Report of the Fish Habitat Sub-Committee to the Steering Committee. Prepared by Department of Fisheries and Oceans and the Province of British Columbia. Victoria, B.C. 41 p.
- Romaine, M.J. 1981. East Coast of Vancouver Island (Race Point to Hatch Point and adjacent islands). Volume II. Coastal Resources Folio, Lands Directorate, Environment Canada, Vancouver, B.C. Section 5: 90 p. and Section 6: 54 p.

Nanaimo District 3
Duncan (Cowichan) Subdistrict 18

Unpublished

Location:	Cowichan Estuarine Habitat Inventory	Cowichan River Estuary
Date on map:	January 1983	1982
Date of field checking:	July 1982	May-Sept 1975 May-Sept 1976
Scale:	1:2 500	1:4 800
Author(s):	R.A. Hunter and M.M. Wayne	K.A. Kennedy
Habitat classification system:	Hunter et al. (1983)	Mueller-Dombois & Ellenberg (1974) and Daubenmire (1962) were used to describe emergent plant communities
Method of mapping:	interpretation of large scale colour air photos and ground truthing, supplemented by information derived from historical reports and air photos	tonal and textural variations associated with plant communities on aerial photographs were determined, followed by field checking
Base map:	B.C. Ministry of Environment orthophoto #92B-07-4-2	unknown
Air photos used and date:	BCC264:24-25, 39-42 in July 1980	Pacific Survey Corporation: 67068-67105 in March 1973
Extent of the study area:	Blackley farm; between the Doman Mill site, Tzouhalem Road and the north arm of Cowichan River <ul style="list-style-type: none"> • NTS map: 92 B/13 • NW: 453000E, 5402000N; SE: 454000E, 5400500N 	Cowichan Bay from the CN Rail Terminal to Tzouhalem Road and Cowichan Bay Road <ul style="list-style-type: none"> • NTS map: 92 B/12, 13 • NW: 452000E, 5402000N; SE: 455000E, 5398500N
Description:	detailed description of the different types of habitat; area is calculated for each type; includes intertidal and backshore zones	16 emergent plant communities; some anthropogenic features such as roads, buildings, log booms, marinas, dykes
Accompanying Text:	none	Kennedy (1982)
Available at:	contact Ducks Unlimited Canada (WRPS Box 39530, White Rock, B.C. V4A 9P3) for more information	MacMillan Library, University of B.C., Vancouver, B.C. (Note: map is filed separately from the thesis but explanation of it is in the thesis text)

Duncan (Cowichan) Subdistrict continued

Published

Campbell Prentice, A. 1989. Vegetation change one to three years following dyke breaching at the Blackley farm enhancement area, Cowichan River estuary. Fish and Wildlife Branch, B.C. Ministry of Environment, Lands, and Parks, Nanaimo, B.C. 60 p.

Campbell Prentice, A., and W.S. Boyd. 1988. Intertidal and adjacent upland habitat in estuaries located on the east coast of Vancouver Island - a pilot assessment of their historical changes. Canadian Wildlife Service, Pacific and Yukon Region, Technical Report Series No. 38: 75 p.

Gates, B.R. 1980. Cowichan Estuary Task Force Report. Environment and Land Use Committee Secretariat, Victoria, B.C., 210 p. + appendices 1 and 2.

Romaine, M.J. 1981. East Coast of Vancouver Island (Race Point to Hatch Point and adjacent islands). Volume II. Coastal Resources Folio, Lands Directorate, Environment Canada, Vancouver, B.C. Section 5: 90 p. and Section 6: 54 p.

Campbell River District 5
Campbell River Subdistrict 13N

Unpublished

Location:	Shelter Point to Campbell River - Algal Vegetation	Campbell River Estuary
Date on map:	May 1975	1982
Date of field checking:	Ground truth survey transects 1973 transect survey for <i>Iridaea</i> bed width 1974	May-Sept 1975 May-Sept 1976
Scale:	1:10 000	1:4 800
Author(s):	A. Austin and R. Adams	K.A. Kennedy
Habitat classification system:	major visible species	Mueller-Dombois & Ellenberg (1974) and Daubenmire (1962) were used to describe emergent plant communities
Method of mapping:	interpretation of colour air photos aided by survey transects	tonal and textural variations associated with plant communities on aerial photographs were determined, followed by field checking
Base map:	B.C. Forest Service: Cover Series No. 12, 1947-48 and Cover Map 92-K-3-b, F-14-g; 1966, 1967 prepared from controlled photo-mosaics	unknown
Air photos used and date:	July 21, 1974 (Air photo number not available)	Pacific Survey Corporation: 67304- 67320 in March 1973
Extent of the study area:	Discovery Passage from Shelter Point to Campbell River marina (north of Yaculta Bank); also includes Cape Mudge and Francisco Point on Quadra Island • NTS maps: 92 F/14, 92 K/3 • NW: 339500E, 5544000N; SE: 344000E, 5534000N	Campbell River estuary delimited by the Island Highway and the east and north sides of Tyee Spit • NTS map: 92 K/3 • NW: 337500E, 5546500N; SE: 339500E, 5544000N
Description:	<i>Iridaea cordata</i> (dominant at > 50% cover); <i>Sargassum muticum</i> ; <i>Nereocystis luetkeana</i> ; eelgrass (<i>Zostera marina</i>); high and 2+ ft water line; ground truth survey transects; houses and road along the shore, and substrate (sand and bedrock only)	8 emergent plant communities; some anthropogenic features such as roads, buildings, log booms, marinas, dykes
Accompanying Text:	Austin and Adams (1975)	Kennedy (1982)
Available at:	contact Alan Austin at the Dept. of Biology, University of Victoria, Victoria, B.C. for more information	MacMillan Library, University of B.C., Vancouver, B.C. (Note: map is filed separately from the thesis but explanation of it is in the thesis text)

Campbell River Subdistrict continued

Location:	Campbell River estuary - Vegetation Map
Date on map:	October 30, 1995
Date of field checking:	August 1994
Scale:	1:5 000
Author(s):	B. Bravender, K. Conlin, B. Hillaby, C.D. Levings
Habitat classification system:	Major vegetation and substrates
Method of mapping:	interpretation of air photos, ground truthing and local knowledge
Base map:	mosaic of georeferenced air photos
Air photos used and date:	30BCC95032: 1-14 on July 15, 1995
Extent of the study area:	from 800 m above the Island Hwy. bridge to the mouth of the river <ul style="list-style-type: none"> • NTS map: 92 K/3 • NW: 336900E, 5547500N; SE: 339100E, 5544800N
Description:	Habitat polygons on hard copy and digital maps
Accompanying Text:	Korman et al.(in prep.)
Available at:	D.F.O. - West Vancouver Laboratory, South Coast Division office (Nanaimo), and Habitat Management

Campbell River Subdistrict continued

Published

- Campbell Prentice, A. and W.S. Boyd. 1988. Intertidal and adjacent upland habitat in estuaries located on the east coast of Vancouver Island - a pilot assessment of their historical changes. Canadian Wildlife Service, Pacific and Yukon Region, Technical Report Series No. 38: 75 p.
- Holmes, P.E., M.L. Tarves, R. Tomio, and W. Jansen. 1985. Fish and fish habitat impact study of seven British Columbia coastal marinas. 1984. Can. Manuscr. Rep. Fish. Aquat. Sci. 1809: 121 p. (Fresh Water Marina, Campbell River estuary).
- Raymond, B.A., M.M. Wayne, and J.A. Morrison. 1985. Vegetation, invertebrate distribution and fish utilization of the Campbell River Estuary, British Columbia. Can. Manuscr. Rep. Fish. Aquat. Sci. 1829: 46 p.
- Romaine, M.J. 1981. East Coast of Vancouver Island (Race Point to Hatch Point and adjacent islands). Volume II. Coastal Resources Folio, Lands Directorate, Environment Canada, Vancouver, B.C. Section 5: 90 p. and Section 6: 54 p.
- Waddell, B., and S. Markowski. 1983. Campbell River foreshore biophysical inventory. Prepared for Water Use Unit, Habitat Management Division, Department of Fisheries and Oceans, Vancouver, B.C., 153 p.

Victoria District 6
Victoria/Saanich Subdistrict 19

Unpublished

Location:	Goldstream Estuary	Saanich Inlet - Eelgrass mapping
Date on map:	1982	1996
Date of field checking:	May-Sept 1975 May-Sept 1976	ground truth survey July 9-14, 1995
Scale:	1:3 200	Airphotos: 1:6 000, mapping scale: 1:10 000
Author(s):	K.A. Kennedy	C. Durance
Habitat classification system:	Mueller-Dombois & Ellenberg (1974) and Daubenmire (1962) were used to describe emergent plant communities	Location and distribution of eelgrass beds
Method of mapping:	tonal and textural variations associated with plant communities on aerial photographs were determined, followed by field checking	tonal and textural variations associated with eelgrass beds on aerial photographs were used, along with field survey observations and GPS data
Base map:	unknown	TRIM 1:20 000
Air photos used and date:	BC7401: 166 in July 1972	BCC95026: 152-154, BCC95027: 1-167, BCC95033: 1-56, in July 1995
Extent of the study area:	Goldstream estuary from the Goldstream River mouth to the marina on the west side of Finlayson Arm (Saanich Inlet) <ul style="list-style-type: none"> • NTS map: 92 B/5 • NW: 459000E, 5371500N; SE: 460000E, 5370000N 	Goldstream River estuary to Satellite Channel <ul style="list-style-type: none"> • NTS maps: 92 B/5, 11, 12 • NW: 461000E, 5393400N; SE: 460000E, 5371000N
Description:	9 emergent plant communities; some anthropogenic features such as roads, buildings, log booms, marinas, dykes	Eelgrass (<i>Zostera marina</i> and <i>Z. japonica</i>) habitat and distribution, roads, coastline and delineation of the low tide line at the time of photography
Accompanying Text:	Kennedy (1982)	Lessard et al. (1996); Durance (1996)
Available at:	MacMillan Library, University of B.C., Vancouver, B.C. (Note: map is filed separately from the thesis but explanation of it is in the thesis text)	D.F.O., West Vancouver Laboratory and B.C. Ministry of Environment, Lands and Parks, Victoria, B.C.

Published

- Cameron, A.T. 1916. The commercial value of the kelp-beds of the Canadian Pacific coast- a preliminary report and survey of the beds. Fisheries and Marine Service, Sessional Papers, LI(27): 37-40.
- Holmes, P.E., M.L. Tarves, R. Tomio, and W. Jansen. 1985. Fish and fish habitat impact study of seven British Columbia coastal marinas, 1984. Can. Manuscr. Rep. Fish. Aquat. Sci. 1809: 121p. (Saanichton Bay and Canoe Cove Marina)
- Howes, D.E., and J.R. Harper. 1984. Physical shorezone analysis of the Saanich Peninsula. B.C. Ministry of Environment. MOE Tech. Rep. 9: 42 p.
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- Austin, A., and R. Adams. 1975. Red algal resource studies in Canadian Pacific waters: Carrageenophyte inventory and experimental/cultivation phase 1974/75 (Volume I - Text 125 p.; and Volume II - Appendices 91 p.). Submitted to the Federal Minister of Fisheries and the Provincial Minister of Recreation and Conservation, November 1975 by the Department of Biology, University of Victoria, Victoria, B.C.
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- Courtenay River Estuary Resource Committee. 1979. An overview of the resources of Baynes Sound and Comox Harbour. (available at: Department of Fisheries and Oceans, Habitat Management Unit, South Coast Division, Nanaimo, B.C.)
- Cox, B., D. Blower, B. Raymond, D. Trethewey, and J. Jordan. 1981. The Squamish Estuary Management Plan: Habitat Work Group Final Report. Available through B.C. Ministry of Environment, Lands, and Parks, Surrey, B.C. or Maps-BC, Victoria, B.C. 159 p.
- Daubenmire, R.F. 1962. Plants and environment: A Textbook of Plant Autecology. 2nd ed., John Wiley & Sons, New York. 422 p.
- Durance, C. 1996. Saanich Inlet Study: Eelgrass habitat assessment. Prepared for Water Quality Branch, British Columbia Ministry of Environment, Lands and Parks. Victoria, B.C. and Marine Environment and Habitat Science Division, Department of Fisheries and Oceans, West Vancouver, B.C. (unpublished) 10 p.
- Foreman, R.E. 1976. Nearshore ecosystems study. Botany Department, University of B.C. Vancouver B.C. BERP report 76-3: 73 p.
- Howes, D.E., and J.R. Harper. 1984. Physical shorezone analysis of the Saanich Peninsula. B.C.. Ministry of Environment. MOE Tech Rep. 9: 42 p.

- Howes, D., P. Wainwright, J. Haggarty, J. Harper, E. Owens, D. Reimer, K. Summers, J. Cooper, L. Berg, and R. Baird. 1993. Coastal resources and oil spill response atlas for the southern Strait of Georgia. B.C. Ministry of Environment, Lands and Parks, Environmental Emergencies Coordination Office, Victoria, B.C. 317 p.
- Hunter, R.A., L.E. Jones, M.M. Wayne, and B.A. Pendergast. 1983. Estuarine habitat mapping and classification system manual. Ministry of Environment, Surveys and Resource Mapping Branch, Victoria, B.C. MOE Manual 3. 33 p.
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- Langer, O.E., R.U. Kistritz, and C.D. Levings, 1994. Fish habitat management: policy for the management of fish habitat in the lower Fraser. Proc. Submerged Lands Conference, October 2-4 1994. New Westminster, B.C. 9 p.
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- Levings, C.D., and R.M. Thom. 1994. Habitat changes in the Georgia basin: implications for resource management and restoration. In: Proceedings of the B.C./Washington Symposium on the Marine Environment, January 13 and 14, 1994 (R.C.H. Wilson, R.J. Beamish, F. Aitkens, and J. Bell, eds.). Can. Tech. Rep. Fish. Aquat. Sci. 1948: 330-349.
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- Ward, P., K. Moore, and R. Kistritz. 1992. Wetlands of the Fraser Lowland, 1989: an inventory. Tech. Rep. Ser. No. 146. Canadian Wildlife Service, Pacific and Yukon Region, B.C. 216 p.

Appendix A. List of published fish habitat maps from the Strait of Georgia available at Maps-BC

The following is a list of relevant maps that may only be obtained by sending a letter to or phoning the Provincial Agency, Maps-BC (B.C. Ministry of Environment, Lands & Parks, 1802 Douglas Street, Victoria, B.C. V8V 1X4; Telephone (604) 387-1441). This listing was taken from the Resource Mapping Inventory (B.C. Surveys and Resource Mapping, 1993), which is a comprehensive catalogue available from Maps-BC. The catalogue mainly deals with terrestrial information. From this catalogue we have extracted the pertinent titles dealing with the coastal zone to assist fish habitat managers seeking particular information.

Each project indicated below may include several geographical areas as well as several themes (e.g. seaweeds and marshes, marine birds, and recreation). In some cases, two maps with different themes are printed on the same map sheet. To order a specific map, the following is needed: 1) the title of the project, 2) the theme name, and 3) the theme number. For the latter it may be necessary to check in the Resource Mapping Inventory for the specific area of interest.

Project 1. Coastal Resource Folio - East Coast of Vancouver Island (Race Point to Hatch Point & adjacent islands)

Year: 1980-1981

Scale: 2 series: 1:15 840 and 1:50 000

Areas:

- Cowichan (1 area, 3 sheets, 6 themes)
- Chemainus (1 area, 3 sheets, 6 themes)
- Ladysmith Harbour (1 area, 2 sheets, 4 themes)
- Nanaimo (1 area, 3 sheets, 6 themes)
- Nanoose (1 area, 1 sheet, 1 theme)
- Courtenay-Comox (1 area, 3 sheets, 6 themes)
- Campbell River (1 area, 3 sheets, 6 themes)

Inventory: 1:15 840

- Surficial sediments
- Marine birds
- Seaweed and marshes
- Intertidal fauna

1:50 000

- Marine substrate
- Physical shorezone
- Seaweeds, saltmarshes & marine mammals
- Marine bird surveys
- Fish and shellfish resources
- Fish spawning & rearing areas

Accompanying report: Romaine (1981)

Project 2. Oil & Chemical Spill Countermeasures Series

Year: 1976

Scale: 1:50 000

Inventory: 5 themes

- Biological resources (92B/5, 6)
- Birds, mammals & aquatic vegetation (92B/11W, 12E, 13, 14)
- Fish & shellfish (92B/11W, 12E, 13, 14)

Project 3. Aquatic Biophysical

Year: 1983

Scale: 1:25 000 and 1:50 000

Areas: consult the Resource mapping Inventory (B.C. Surveys and Resource Mapping, 1993) to determine specific area of interest as this series covers all of the B.C. coast

Project 4. Physical shorezone analysis of the Saanich Peninsula

Year: 1984

Scale: 1:25 000

Accompanying report: Howes and Harper (1984)

Project 5. Gulf Islands Resource Folio (Galiano, Valdes, Thetis)

Year: 1979

Scale: 1:20 000

Areas: Galiano Island (13 themes)

Thetis Island (13 themes)

Valdes Island (13 themes)

Inventory: Aquatic biophysical inventory
Ecological shorezone inventory
Physical shorezone inventory

Project 6. Baynes Sound Crown Foreshore Plan

Year: 1983

Scale: 1:20 000

Inventory: 8 themes, north and south parts (16 sheets)

- Oyster productivity & potential
- Oyster leases, licences & shellfish closure areas
- Marine vegetation
- Shore units
- Spring birds
- Summer birds
- Autumn birds
- Winter birds

Project 7. Gambier-Anvil

Year: 1987

Scale: 1:20 000

Inventory: 10 themes

- Biophysical shore-zone types
- Ecosystem associations

Project 8. Bowen Island Resource Folio

Year: 1978

Scale: 1:10 000

Inventory: 8 themes, north and south halves (16 sheets)

- Aquatic analysis

Project 9. Squamish Estuarine Habitat Classification

Year: 1981

Scale: 1:5 000

Accompanying report: Cox et al. (1981)

