

226484

Dup

INTERTIDAL CLAM RESOURCES (Manila, Littleneck and Butter Clam)

Volume II: The Southern Inside Waters of Vancouver Island and the British Columbia Mainland

R. Harbo, K. Marcus and T. Boxwell

**Fisheries and Oceans Canada
Operations Branch
South Coast Division
3225 Stephenson Point Road
Nanaimo, British Columbia V9T 1K3**

July, 1997

Canadian Manuscript Report of Fisheries and Aquatic Sciences No. 2417



Fisheries
and Oceans

Pêches
et Océans

Canada

Canadian Manuscript Report of Fisheries and Aquatic Sciences

Manuscript reports contain scientific and technical information that contributes to existing knowledge but which deals with national or regional problems. Distribution is restricted to institutions or individuals located in particular regions of Canada. However, no restriction is placed on subject matter, and the series reflects the broad interests and policies of the Department of Fisheries and Oceans, namely, fisheries and aquatic sciences.

Manuscript reports may be cited as full publications. The correct citation appears above the abstract of each report. Each report is abstracted in *Aquatic Sciences and Fisheries Abstracts* and indexed in the Department's annual index to scientific and technical publications.

Numbers 1-900 in this series were issued as Manuscript Reports (Biological Series) of the Biological Board of Canada, and subsequent to 1937 when the name of the Board was changed by Act of Parliament, as Manuscript Reports (Biological Series) of the Fisheries Research Board of Canada. Numbers 1426 - 1550 were issued as Department of Fisheries and the Environment, Fisheries and Marine Service Manuscript Reports. The current series name was changed with report number 1551.

Manuscript reports are produced regionally but are numbered nationally. Requests for individual reports will be filled by the issuing establishment listed on the front cover and title page. Out-of-stock reports will be supplied for a fee by commercial agents.

Rapport manuscrit canadien des sciences halieutiques et aquatiques

Les rapports manuscrits contiennent des renseignements scientifiques et techniques qui constituent une contribution aux connaissances actuelles, mais qui traitent des problèmes nationaux ou régionaux. La distribution en est limitée aux organismes et aux personnes de régions particulières du Canada. Il n'y a aucune restriction quant au sujet; de fait, la série reflète la vaste gamme des intérêts et des politiques du ministère des Pêches et des Océans, c'est-à-dire les sciences halieutiques et aquatiques.

Les rapports manuscrits peuvent être cités comme des publications complètes. Le titre exact paraît au-dessus du résumé de chaque rapport. Les rapports manuscrits sont résumés dans la revue *Résumés des sciences aquatiques et halieutiques*, et ils sont classés dans l'index annuel des publications scientifiques et techniques du Ministère.

Les numéros 1 à 900 de cette série ont été publiés à titre de manuscrits (série biologique) de l'Office de biologie du Canada, et après le changement de la désignation de cet organisme par décret du Parlement, en 1937, ont été classés comme manuscrits (série biologique) de l'Office des recherches sur les pêcheries du Canada. Les numéros 901 à 1425 ont été publiés à titre de rapports manuscrits de l'Office des recherches sur les pêcheries du Canada. Les numéros 1426 à 1550 sont parus à titre de rapports manuscrits du Service des pêches et de la mer, ministère des Pêches et de l'Environnement. Le nom actuel de la série a été établi lors de la parution du numéro 1551.

Les rapports manuscrits sont produits à l'échelon régional, mais numérotés à l'échelon national. Les demandes de rapports seront satisfaites par l'établissement auteur dont le nom figure sur la couverture et la page du titre. Les rapports épuisés seront fournis contre rétribution par des agents commerciaux.

**Canadian Manuscript Report of
Fisheries and Aquatic Sciences No. 2417**

1997

INTERTIDAL CLAM RESOURCES

(Manila, Littleneck and Butter Clam)

**VOLUME II: THE SOUTHERN INSIDE WATERS OF
VANCOUVER ISLAND AND THE
BRITISH COLUMBIA MAINLAND**

Edited by

R. Harbo, K. Marcus and T. Boxwell

Fisheries and Oceans Canada
Operations Branch, South Coast Division
3225 Stephenson Point Road, Nanaimo, BC V9T 1K3

Charts by Doug Campbell
Range and Bearing Environmental Resource Mapping Corp.
3747 Privateers Road, North Pender Island, B.C. V0N 2M0

(c) Minister of Supply and Services Canada 1997
Cat. No. Fs 97-4/2417E ISSN 0706-6473

Correct citation for this publication:

Harbo, R., K. Marcus and T. Boxwell (eds). 1997. Intertidal Clam Resources (Manila, littleneck and butter clam) Volume II: The Southern Inside Waters of Vancouver Island and the British Columbia Mainland. Can. Manuscr. Rep. Fish. Aquat. Sci. 2417: viii + 245 p.

TABLE OF CONTENTS

ABSTRACT.....	vii
RÉSUMÉ	viii
1.0 INTRODUCTION	1
1.1 Intertidal Clam Biology	1
1.2 Harmful Algal Blooms (HABs) - Paralytic Shellfish Poisoning (PSP) and Amnesiac Shellfish Poisoning (ASP)	2
1.2.1 History of HABs in the SIW	2
1.2.3 Sewage contaminated areas in the SIW	3
1.2.4 Contaminated areas prohibited for shellfish harvest.....	3
2.0 INTERTIDAL CLAM FISHERIES in the SIW	3
2.1 Early Commercial Clam Fisheries	4
2.2 Clam Fisheries From 1951 to 1995.....	4
2.2.1. Commercial clam landings by species and area	5
2.3 Aboriginal Fisheries.....	6
2.3.1 First Nation Pilot Projects.....	6
2.4 Depuration Fisheries	7
3.0 INTERTIDAL CLAM ASSESSMENTS	8
4.0 CLAM BEACHES SORTED BY AREA FOR THE SIW	8
4.1 Clam Species.....	8
4.2 Clam Beach Inventory Methodology.....	8
4.2.1 Charts of beach locations and measuring area (ha)	9
4.2.2 Beach closures for Aboriginal and recreational harvest	10
4.2.3 Beach listings.....	10
4.3 Summary of Beach Data	10
4.3.1 Area 13.....	10
4.3.2 Area 14.....	10
4.3.3 Area 15.....	10
4.3.4 Area 16.....	11
4.3.5 Area 17.....	11
4.3.6 Area 18.....	11
4.3.7 Area 19.....	11
4.3.8 Area 20.....	11
4.3.9 Area 28.....	12
4.3.10 Area 29.....	12
5.0 DISCUSSION	12
5.1 Recommendations.....	12
6.0 REFERENCES	13
7.0. ACKNOWLEDGMENTS	16

LIST OF TABLES

Table 1.	Common and scientific names of intertidal bivalve species exploited in British Columbia.	17
Table 2.	Annual commercial clam fishery landings (t) and landed values (\$000), 1951 to 1995, for British Columbia.	18
Table 3.	Annual landings (tonnes) of intertidal clams from the the southern inside waters of Vancouver Island and the BC mainland (Areas 13 to 20, 28 and 29) as reported on sales slips, 1951 to 1995.	19
Table 4.	Annual landings (tonnes) of intertidal clams from Area 13, as reported on sales slips, 1951 to 1995.	20
Table 5.	Annual landings (tonnes) of intertidal clams from Area 14, as reported on sales slips, 1951 to 1995.	21
Table 6.	Annual landings (tonnes) of intertidal clams from Area 15, as reported on sales slips, 1951 to 1995.	22
Table 7.	Annual landings (tonnes) of intertidal clams from Area 16, as reported on sales slips, 1951 to 1995.	23
Table 8.	Annual landings (tonnes) of intertidal clams from Area 17, as reported on sales slips, 1951 to 1995.	24
Table 9.	Annual landings (tonnes) of intertidal clams from Area 18, as reported on sales slips, 1951 to 1995.	25
Table 10.	Annual landings (tonnes) of intertidal clams from Area 19, as reported on sales slips, 1951 to 1995.	26
Table 11.	Annual landings (tonnes) of intertidal clams from Area 20, as reported on sales slips, 1951 to 1995.	27
Table 12.	Annual landings (tonnes) of intertidal clams from Area 28, as reported on sales slips, 1951 to 1995.	28
Table 13.	Annual landings (tonnes) of intertidal clams from Area 29, as reported on sales slips, 1951 to 1995.	29
Table 14.	Beaches where harvest of clams for depuration has occurred or is proposed to 1997. Estimates of beach areas are from the Clam Beach Inventory Database, compared to surveyed clam bearing area, and including estimates of Manila and littleneck stock from survey results.	30
Table 15.	Summary of the number of clam beaches and beach areas (ha) for the southern inside waters (SIW) of Vancouver Island and mainland British Columbia.	32
Table 16.	Results from unpublished clam surveys undertaken by Fisheries and Oceans Canada at selected sites in the Strait of Georgia.	33

LIST OF FIGURES

Figure 1. Pacific Fishery Management Areas 13 to 20, 28 and 2934

Figure 2. Life cycle of the Manila clam.....35

Figure 3. Life cycle of the littleneck clam.36

Figure 4. Life cycle of the butter clam.....37

Figure 5. Life cycle of the cockle.....38

Figure 6. PSP monitoring stations in 1995 for the southern inside waters of Vancouver Island and mainland British Columbia.39

Figure 7. Average monthly PSP activities in the southern inside waters of Vancouver Island and mainland British Columbia, 1987 to 1994.....40

Figure 8. Average monthly PSP outbreaks in Areas 17 to 19, 1990 to 1994.....41

Figure 9. Commercial Clam Harvest Licence Areas.42

Figure 10. 1997 Clam Licence Area B.....43

Figure 11. 1997 Clam Licence Area C.....44

Figure 12. 1997 Clam Licence Area D, Upper Strait of Georgia45

Figure 13. 1997 Clam Licence Area E, Lower Georgia Strait.....46

Figure 14. Landings (t) of intertidal clams from British Columbia, 1951 to 1995.....47

Figure 15. Landings (t) of intertidal clams from the southern inside waters of Vancouver Island and mainland British Columbia, Areas 13 to 20, 28 and 29, 1951 to 1995.....47

Figure 16. Landings (t) of intertidal clams, Areas 13 and 14, 1951 to 1995.48

Figure 17. Landings (t) of intertidal clams, Areas 15 and 16, 1951 to 1995.49

Figure 18. Landings (t) of intertidal clams, Areas 17 and 18, 1951 to 1995.50

Figure 19. Landings (t) of intertidal clams, Areas 19 and 20, 1951 to 1995.51

Figure 20. Landings (t) of intertidal clams, Areas 28 and 29, 1951 to 1995.52

LIST OF APPENDICES

APPENDIX 1. Clam Beach Tables and Maps, Areas 13 to 20, 28 and 29	53
Table 1.1. Area 13.....	54
Maps 1.1.1. to 1.1.11. Area 13.....	57
Table 1.2. Area 14.....	68
Maps 1.2.1. to 1.2.8. Area 14.....	70
Table 1.3. Area 15.....	78
Maps 1.3.1. to 1.3.6. Area 15.....	80
Table 1.4. Area 16.....	86
Maps 1.4.1. to 1.4.9. Area 16.....	89
Table 1.5. Area 17.....	98
Maps 1.5.1. to 1.5.13. Area 17.....	101
Table 1.6. Area 18.....	114
Maps 1.6.1 to 1.6.7. Area 18.....	116
Table 1.7. Area 19.....	123
Maps 1.7.1. to 1.7.5. Area 19.....	124
Table 1.8. Area 20.....	129
Maps 1.8.1. to 1.8.5. Area 20.....	130
Table 1.9. Area 28.....	134
Table 1.10. Area 29.....	134
Map 1.9.1. Area 28.	135
Map 1.10.1. Area 29.	136
APPENDIX 2. Descriptions, Table and Maps of Areas Closed to the Commercial Intertidal Clam Fishery, Areas 13 to 20, 28 and 29 (1997)	137
Maps 2.1.1 to 2.1.24.	145
APPENDIX 3. Descriptions of Contaminated Closures, Areas 13 to 20, 28 and 29 (1997)	169
APPENDIX 4. Maps of Prohibited Area Closures - Southern Inside Waters	185
APPENDIX 5. Table of Clam Beaches Sorted by Location Name, Areas 13 to 20, 28 and 29	201
APPENDIX 6. Table of Clam Beaches Sorted by Clam Beach Number, Areas 13 to 20, 28 and 29	215
APPENDIX 7. Historical Descriptions of Clam Fisheries	229

ABSTRACT

Harbo, R., K. Marcus and T. Boxwell (eds). 1997. Intertidal Clam Resources (Manila, littleneck and butter clam) Volume II: The Southern Inside Waters of Vancouver Island and the British Columbia Mainland. Can. Manuscr. Rep. Fish. Aquat. Sci. 2417: viii + 245 p.

This report documents 533 beaches and 6845 ha on the southern inside waters of Vancouver Island (SIW) and the British Columbia mainland, Pacific Fishery Management Areas 13 to 20, 28 and 29. This area supports populations of Manila, littleneck and butter clams. It is important to note this is not a complete inventory of all sites and only a portion of the identified beach area supports clam populations. The clam beach data are available in various electronic formats.

Most of the beaches identified are small 'pocket' beaches with 382 beaches being less than 10 ha in size. The largest identified beach is 281 ha.

Annual landings of intertidal clams, butter, littleneck, Manila and mixed (littleneck and Manila) are presented for the SIW. Currently the most important commercial species are the Manila and littleneck clams and the SIW may account for 65 to 75% of the annual British Columbia production. Peak landings for SIW were 3315 tonnes in 1988, of which less than 1% were butter clams. Historically, in the 1960's and earlier, butter clams were also important commercially. Other clam species may be present, but have not been commercially exploited.

Earlier assessments of clam populations indicate that recruitment is sporadic and annual rates of recruitment vary for beaches only a few kilometres apart.

There are a number of closures of beaches for allocations to Aboriginal and recreational harvest. Some beaches are also closed due to pollution. Historically, paralytic shellfish poisoning has been a problem and there are a number of mussel monitoring stations established. The southern inside waters of Vancouver Island had 21 stations in 1995. There are also concerns for the potential occurrence of amnesiac shellfish poisoning in the southern inside waters of Vancouver Island and mainland British Columbia.

There are a total of 118 commercial tenures approved (1995) to culture Manila clams in British Columbia, 106 of which are in southern inside waters, in Pacific Fishery Management Areas 14 to 17.

Since 1992, there is a growing interest to harvest clams from marginally contaminated areas for depuration.

RÉSUMÉ

Harbo, R., K. Marcus and T. Boxwell (eds). 1997. Intertidal Clam Resources (Manila, littleneck and butter clam) Volume II: The Southern Inside Waters of Vancouver Island and the British Columbia Mainland. Can. Manuscr. Rep. Fish. Aquat. Sci. 2417: viii + 245 p.

Ce rapport contient des données sur 533 plages et 6845 hectares, situés dans le secteur sud des eaux des détroits de l'île de Vancouver et la partie continentale de la Colombie-Britannique, dans les zones de gestion des pêches du Pacifique 13 à 20, 28 et 29. On y retrouve des populations de palourdes japonaises, de palourdes du Pacifique et de palourdes jaunes. Il faut remarquer qu'il ne s'agit pas d'un inventaire complet de tous les sites et que l'on retrouve des populations de palourdes uniquement sur une partie des plages désignées. Les données sur les plages où vivent des palourdes sont également consignées sous diverses formes électroniques.

La plupart des plages désignées ne sont que des petites plages situées dans des anses : 382 d'entre elles couvrent moins de 10 ha de superficie, alors que la plus vaste mesure 281 ha.

Ce rapport fournit les données sur les débarquements annuels de bivalves intertidaux, soit les palourdes jaunes, les palourdes du Pacifique, les palourdes japonaises, et une combinaison de palourdes du Pacifique et japonaises pour le secteur sud. Actuellement, les espèces commerciales les plus importantes sont la palourde japonaise et la palourde du Pacifique, et le secteur sud peut compter pour 65 à 75 % de la production annuelle de la Colombie-Britannique. Les débarquements du secteur sud ont atteint un pic de 3315 t en 1988, dont moins de 1 % étaient des palourdes jaunes. Historiquement, au cours des années 1960 et avant, les palourdes jaunes occupaient également une place importante sur le plan commercial. Il est possible que d'autres espèces de bivalves vivent dans ces secteurs, mais elles ne font pas l'objet d'une exploitation commerciale.

Les évaluations précédentes des populations de bivalves fouisseurs indiquent que le recrutement est sporadique et que les taux annuels de recrutement varient pour différentes plages séparées uniquement de quelques kilomètres.

Un certain nombre de plages sont fermées à l'exploitation commerciale et sont réservées aux Autochtones et à la pêche sportive. D'autres plages sont également fermées en raison de la pollution. Au cours de l'histoire, la présence de la neurotoxine paralysante a posé un problème, et c'est pourquoi on retrouve un certain nombre de stations de surveillance des moules. En 1995, le secteur sud des eaux des détroits de l'île de Vancouver comptait 21 stations. La présence de la toxine amnésique dans le secteur sud des eaux des détroits de l'île de Vancouver et la partie continentale de la Colombie-Britannique est également préoccupante.

En 1995, on comptait 118 exploitations commerciales approuvées pour la culture des palourdes japonaises en Colombie-Britannique, dont 106 étaient situées dans les eaux du sud des détroits, dans les zones de gestion des pêches du Pacifique 14 à 17.

Depuis 1992, on observe un intérêt grandissant pour l'exploitation des palourdes des secteurs légèrement contaminés, qui pourraient faire l'objet d'une dépollution.

1.0 INTRODUCTION

A series of three reports have been prepared to document clam beaches on the south coast of British Columbia. Two reports deal with the inside waters of Vancouver Island and mainland British Columbia. This report was prepared to document beaches on the southern inside waters (SIW) of Vancouver Island and mainland British Columbia that support populations of Manila, littleneck and butter clams, important to Aboriginal, commercial and recreational harvesters. Pacific Fishery Management Areas 13 to 20, 28 and 29 are illustrated in Fig. 1. The report identifies different sizes of beaches from <1 to 281 ha.

This report is not to be treated as a complete inventory of clam beaches and it only covers a limited number of species. There are many other additional areas of "pocket beaches" that support clam populations that have a tradition of harvest for Aboriginal, commercial or recreational purposes, as well as beaches with significant clam populations within contaminated closures. These beaches will be added to this database as they are identified. There may be sites not included in this inventory where DFO or resource users may object to a tenure or other development.

It is necessary to identify as many beaches as possible to assist in identifying sites of conflict with other uses such as aquaculture and to protect them from other potential development, such as log storage facilities that may impact on the shellfish resources. A policy was adopted by DFO in the 1980's to maintain beaches in the "wild", common property fishery for intertidal clams. DFO supported the development of clam culture on existing oyster tenures only and objected to new tenures where there was a history of Aboriginal, commercial or recreational harvest (Bourne and Dickson 1990). The identification of the beaches is also important for protection or clean-up activities in the event of environmental emergencies such as oil spills.

1.1 Intertidal Clam Biology

This report documents intertidal clam resources but is limited in scope to include Manila and littleneck clams and, to some extent, butter clams.

There are a number of clam and other bivalve species harvested for food and commercial purposes (Table 1). Cockles (*Clinocardium nuttallii*), butter clams (*Saxidomus gigantea*), littlenecks (*Protothaca staminea*), horse clams (*Tresus capax* and *T. nuttallii*), and more recently Manila clams (*Venerupis philippinarum*) have been harvested by Aboriginal and recreational harvesters on the southeast coast of Vancouver Island. Razor clams (*Siliqua patula*) are not found in inside protected waters.

The commercial fishery on the southeast coast of Vancouver Island targets on Manila and littleneck clams (the 'steamer' clams) and to a lesser degree butter clams. Others intertidal species of commercial interest include the soft-shell clam, *Mya arenaria*, introduced to the west coast sometime in the early 1900's. The giant geoduck clams, *Panopea abrupta*, are only found on the lowest tides and are exploited subtidally by divers (Harbo et al. 1986).

The biology of these species are discussed by Quayle and Bourne (1972), Quayle (1960), and Bourne (1986a; 1987a). Life cycles of the Manila clam, littleneck clam, and butter clam are illustrated in Figs. 2 to 5.

1.2 Harmful Algal Blooms (HABs) - Paralytic Shellfish Poisoning (PSP) and Amnesiac Shellfish Poisoning (ASP)

Bivalve shellfish and in some instances crabs may be affected by blooms of toxic algae or harmful algal blooms (HABs). In British Columbia, toxic shellfish are known to occur along the entire coastline but outbreaks are localized. A discussion of PSP can be found in Quayle (1969), Quayle and Bourne (1972), Bond (1975), Medcof (1985) and Anderson (1989).

PSP toxins have been found in intertidal clams (littlenecks, Manilas, butter clams, razor clams), mussels, oysters, cockles and subtidal species of scallops (rock, pink and spiny, weathervane), geoducks and horse clams. PSP toxins have also been found in Dungeness crabs.

ASP toxin (demoic acid), have been found in razor clams, mussels, oysters, and geoducks. Dungeness crabs have also been found to accumulate ASP and some fishery closures have been effected on the west coast of Vancouver Island. To date there have been no closures implemented in the SIW. (K. Schallie, DFO, Fish Inspection; pers. comm.).

1.2.1 History of HABs in the SIW

PSP monitoring has been in effect in BC since 1942 (Bond 1975). Regular monitoring of PSP in the SIW has been in effect since 1963.

Quayle (1969) reports on major occurrences of PSP in inside waters that led to deaths and illnesses of people: Comox in 1957, Theodosia Inlet in 1965, and Sechelt Narrows in 1967. Annual reports of monitoring programs and illnesses are prepared by DFO (Fish Inspection).

Since 1983, areas were closed to harvest under the Pacific Fishery Management Area Regulations until they were judged to be safe and opened. Areas were opened to the commercial and recreational fisheries when a monitoring program was established to ensure public health safety.

1.2.2 Management program for HABs

A series of mussel monitoring stations, 21 in the SIW in 1995, have been set up by DFO to determine the presence of toxin blooms (Fig. 6). Samples are regularly provided by contractors, Fishery Officers and patrol vessel crews. In addition, commercial landings of clams are periodically sampled to determine levels of PSP. Outbreaks of PSP have been recorded in all areas and in all months of the year (Figs. 7 and 8) and may affect intertidal clam species and subtidal species of clams such as geoducks and horse clams (DFO 1993).

Closures in areas may be species specific according to a number of criteria including the level of toxins recorded, the species specific nature of uptake and retention of toxin, the pattern of blooms in surrounding areas, the numbers of samples tested, and others.

1.2.3 Sewage contaminated areas in the SIW

There are a growing number of closures in the southern inside waters of Vancouver Island due to sewage contamination originating from:

- sewage outfalls and storm water discharges
- runoff from farm animal manure on fields
- septic tank seepage
- sewage from boats
- wildlife, domestic animals and marine animals.

Although Areas 19 and 20, 28 and 29 have some history of commercial clam landings, most of the beach area has been closed due to contamination in recent years. Contaminated closures for 1997 are described in Appendix 3. In some marginally contaminated areas, clams are harvested under special licence to shellfish plants with approved facilities for depurating clams prior to marketing.

1.2.4 Contaminated areas prohibited for shellfish harvest

There are a number of areas within the closed area classification which are *prohibited* to shellfish harvesting for any purpose. These areas include:

- a minimum of 300 meters closure in the vicinity of major point source discharges such as sewage and outfalls
- within 125 meters (minimum) of certain permanent or floating structures which may be a source of contamination, such as any wharf, dock, platform or floating structure used for vessel moorage, and including any marina, anchored floating structure, float home, barge, or vessel used for accommodation, fish processing or any other purpose
- areas where due to the degree of contamination in the growing waters (i.e. waters having excessive concentrations of poisonous or deleterious substances), it may not be possible to adequately depurate or naturally purify the shellfish.

Maps of a number of significant *prohibited* areas on south eastern Vancouver Island as described above are presented in Appendix 4.

2.0 INTERTIDAL CLAM FISHERIES IN THE SIW

Clams of commercial interest on SIW include butter clams, littlenecks and Manila clams. Razor clam populations do not exist in the SIW. Although there are populations of soft-shell clams, there has been no commercial interest to date.

There are no estimates of landings Aboriginal food fisheries. Some estimates of the recreational harvest were discussed by Carmichael and Bourne (1986) and Bourne et al. 1987.

2.1 Early Commercial Clam Fisheries

Early commercial landings of butter clams for canning date back to 1882. Over the period from the turn of the century to 1936, butter clams were landed from the Comox to Sidney area and sold to the cannery at Sidney, which operated from 1905 to 1939, and to canneries at Nanaimo and Vancouver (BC Packers) (Quayle 1939; Quayle and Bourne, 1972). The peak year of butter clam landings was 1938, when 2929 t (6.4 million lb.) were landed from the south coast. By this time the fishery had expanded to the Alert Bay area and the west coast of Vancouver Island (Quayle, 1939). Clams (littlenecks, butter clams) and cockles were also sold fresh in Victoria and Vancouver in the early years of the 1900's. Depletion of butter clam stocks were noted by Quayle (1939).

Manila clams were introduced with oyster seed to the SIW, and were abundant in Ladysmith Harbour in the 1930's (Bourne 1982).

2.2 Clam Fisheries From 1951 to 1995

The commercial clam fishery began just before the turn of the century, however landings were not reliably recorded until 1951. The commercial clam fisheries and fishery management have been described in Quayle and Bourne 1972, Bourne 1986(b), Bourne 1987(a) and 1987(b), Dickson and Hobbs 1990, Dickson 1992, and Webb and Hobbs 1996. Since 1971, strong markets and higher prices for littleneck and Manila clams have focused the intertidal fishery on these two species. Landings in the fishery increased dramatically between 1984 and 1988. The landings of butter clams, which enter the market as a canned product, had been declining because of the high cost of processing and a shift in demand toward fresh steamer clams. However, recent efforts have been made to reactivate the butter clam fishery.

The commercial clam fishery has been managed as a common property fishery with licence holders competing each season for a share of the harvest. A variety of regulatory controls have been put in place to support conservation and management objectives and are intended to restrain the commercial harvesting efforts to sustainable levels.

Conservation tools utilised in the clam fishery include minimum size limits of 63 mm shell length for butter clams and 38 mm for both littleneck and Manila clams. Since 1990, in-season catch monitoring which tracks digger catch per tide and relative numbers of legal sized clams, has also played a key role in active management of the fishery. Fishery openings are short and staggered to maintain market supply where possible. During the fishing season meetings are held with industry representatives in each area to determine the sequence of fishery openings and closures.

An individual commercial clam licence was first introduced in 1989, along with area licensing restrictions. The South Coast was initially divided into 5 "clam licence areas". In 1992 Area G (Queen Charlotte Sound) was split off from Area B (Johnstone Strait). Fishers had to

choose to fish only one of the licence areas annually (Figs 9 to 13). Coastwide in 1995, 2448 clam licences were issued, including 1790 licences for Areas B, C, D and E combined, in the southern inside waters of Vancouver Island.

Significant problems in the management of the clam fishery are the result of too many harvesters. Openings are reduced to a few days annually, income levels are low for most harvesters and illegal harvest is a significant problem.

A Clam Reform strategy has been initiated through extensive consultations which began in 1992 with clam fishery stakeholders, DFO, First Nations and the Province of B.C. A pilot project was initiated in Licence Area C on the Sunshine Coast which consisted of licence limitation and community based management. As a result, individual diggers in Area C have earned on average three times more than harvesters from other licence areas and enforcement efforts have improved due to information received for the local community regarding illegal clam harvest activity.

As part of the proposed Clam Reform strategy, a system of licence limitation, establishment of community based management boards and improved First Nations access has been recommended for the entire commercial clam fishery, effective in January, 1998.

2.2.1. Commercial clam landings by species and area

Landings for BC and landings for the SIW are given in Tables 2 and 3 and shown in Figs. 14 and 15. Landings presented represent commercial clam fishery harvest only, and do not include landings from clam tenures. Landings for each of the Areas 13 to 20, 28 and 29, over the period 1951 to 1995, are given in Tables 4 to 13 and Figs. 16 to 20. Landings from Areas 28 and 29 are minimal or nil in recent years due to contaminated closures on most beaches.

The landings of clams from the SIW have fluctuated greatly since the collection of clam statistics, beginning in 1951 and increased dramatically in the early 1980's. Landings have ranged from a low of 10% of the total B.C. catch in the late 1950's to as high as 82% in the early 1980's. Overall, the SIW has accounted for 53% of the total intertidal clam production 1951 to 1995 (Tables 2 and 3, Figs. 14 and 15) The shift to fresh market steamer clams from processed canned product has increased the importance and value of the clams from the SIW.

Landings of butter clams were greatest in 1963, 115 tonnes (Table 2). The market shifted to steamer clams in the early 1980's and peak landings of Manilas were 836 t in 1988; 87 t of littlenecks in 1980 and 73 t of mixed clams in 1984 (Table 2). At most times, landings reported as mixed clams were predominantly Manilas but included littlenecks.

For the total production of intertidal clams from the southern inside waters of Vancouver Island since 1951, Area 13 has accounted for 17%, Area 14 for 17% Area 15 for 16%, Area 17 for 31%, Area 18 for 7%, Area 19 for 1.5%, Area 20 for 3.4%, Area 28 for 0.2% and Area 29 for only 0.02%. The total production includes landings from depuration and First Nations pilot sales projects, but not from clam lease operations.

Manila clams account for 57% of the SIW landings since 1951. The largest accumulated landings of Manila clams have come from Area 17, with 28% of the SIW total, then Area 15 - 21%, Area 14 - 20%, Area 13 - 17%, Area 16 - 7%, Area 18 - 4%, Area 19 - 0.5%, Area 28 - 0.2% and Area 29 - 2%.

The greatest recorded landings of butter clams were in 1955 at 364 tonnes (Table 3). The market shifted to steamer clams in the early 1980's and peak landings of Manilas were recorded at 3058 t in 1988; 559 t of littlenecks in 1972 and 410 t of mixed clams in 1985 (Table 3). At most times landings reported as mixed clams were predominantly Manilas but included littlenecks.

Landings of littleneck clams have been significantly less than Manilas (Tables 1 and 2). The total accumulated landings of littlenecks on the SIW is approximately 28% of the Manila clam landings. In the SIW Area 13 has accounted for 28% of the littleneck landings since 1951, Area 14 for 14%, Area 15 for 9%, Area 16 for 8%, Area 17 for 20%, Area 18 for 10%, Area 19 for 3%, Area 20 for 7%, and Area 28 for 1.1%. No landings of littlenecks are recorded for Area 29.

2.3 Aboriginal Fisheries

First Nations peoples have a long history of harvesting clams in the southern inside waters, both for food purposes and in the commercial fishery. Many beaches traditionally harvested by First Nations are closed due to contamination. A number of other areas have been closed to the commercial fishery in recent years, in order to assure First Nations access to clams for food, social and ceremonial purposes (Appendix 2). Generally, recreational harvesting has also been permitted within the Aboriginal Harvest closure areas.

First Nations participation in clam fisheries has been taken into consideration in the process of Clam Reform. First Nations will be consulted to ensure that they receive an appropriate share of limited commercial licences, to be issued in addition to those persons who qualify under the limited entry criteria.

A number of pilot (commercial) sales projects on reserve front beaches have been initiated in the north coast and inside waters of Vancouver Island. Pilot sales projects may be expanded under the Clam Reform process to include new groups and sites.

Some reports of SIW Aboriginal use of clam resources include Thompson (1913,1914), Stewart (1977), Kennedy and Bouchard (1983), and Burley (1989). The presence of middens on B.C. beaches indicate generally the presence of clam stocks and historical Aboriginal harvest.

2.3.1 First Nation Pilot Projects

Pilot projects using co-management arrangements are providing commercial opportunities for First Nations on the coast. For example, the continuation of a 1992 pilot project in the Central Coast supplies additional clams to the market and provides much needed

employment in the Bella Bella area. In the South Coast, projects have been started at Kuper Island, Kulleet Bay and Squirrel Cove.

First Nations are becoming involved in monitoring the clam resource in cooperation with the Department of Fisheries. The Heltsiuk Band Council has been given exclusive harvesting privileges in the Bella Bella area from 1992 through 1995. The licence authorizes 50 Heiltsuk individuals to harvest 250,000 pounds (113.4 t) each of Manila, littleneck and butter clams. In 1995 approximately 100 t of Manila clams worth approximately \$235 K were harvested from Area 7.

The Haida Nations in the Queen Charlotte Islands have worked with DFO and established a co-management program for razor clam fisheries in the Queen Charlottes (Subarea 1-5).

Following stock assessments at Quadra Island by the Klahoose band, a conservative annual harvest of 12,000 lb. (5.44 t) was set for 1995 at approximately 20% of the estimated legal Manila clams. Surveys at Kuper Island and Kulleet Bay have been undertaken. Approximately 21,000 lb. were harvested from Kuper Island under the pilot in 1995.

2.4 Depuration Fisheries

A small number of processing plants have been harvesting and depurating clams from marginally contaminated areas in the South Coast (Table 14). In 1995, 471 t of Manila and littleneck clams were landed for depuration and are included as part of the wild commercial landings reported in Tables 2 to 11.

Depuration licences assign the processor control and responsibility for harvest on designated beaches. The plants operate year round and provide a consistent supply to the market. Depuration has a world wide reputation as a means of producing high quality clam products. There are several other processors wishing to licence plants for depuration.

While there are benefits to expanding depuration activity in the province, there are difficulties as well. Clams in contaminated areas may be a brood stock reserve providing seed for adjacent wild beaches and their harvest may negatively impact the sustainability of the overall clam population.

Depuration facilities and therefore harvesting requests for contaminated areas are on the increase. As more and more shellfish beach is considered to be contaminated each year, it is obvious that the industry will look to depuration as a way of maintaining production. A management plan for dealing with depuration requests must be developed and applied consistently as the demand for depuration licences increases.

Conservative harvest levels on the existing licence beaches has been achieved by TAC's arbitrarily set at 25 to 50% of standing stock estimates from surveys on a beach. Surveys are conducted by the applicant (with an approved depuration facility) to determine the standing stock. A program of surveys by industry have been developed and the results are compiled by

DFO Stock Assessment before a recommended harvest level is set. This is a very time consuming process for both the harvesters and DFO staff. Table 14 contains a list of contaminated beaches where the harvest of clams for depuration has taken place or is proposed for 1997.

Depuration harvest has caused controversy as local residents object to increased harvesting activities fronting residential neighbourhoods and the majority of contaminated areas suitable for depuration operations are located within populated areas.

3.0 INTERTIDAL CLAM ASSESSMENTS

A number of surveys of Manila clam resources have been carried out in southern inside waters. Results of unpublished surveys from some of the beaches surveyed by Fisheries and Oceans Canada in the Strait of Georgia between 1981 and 1989 are presented in Table 15. Some results of clam surveys carried out in conjunction with the depuration fishery and used to set harvest limits on legal sized clams are presented in Table 14.

Surveys of intertidal clams on the SIW have been published by Adkins (1992), Adkins, and Joe (1993), Bourne and Adkins (1985), Bourne et al. (1987), Bower (1992); Bower et al. (1986); Carmichael and Bourne (1986); Gillespie et al. (1998 a,b).

Numerous butter clam surveys have been undertaken at Seal Island, Comox (Area 14) over the years (Quayle and Bourne, 1972; Kingzett and Bourne, in prep.).

4.0 CLAM BEACHES SORTED BY AREA FOR THE SIW

A summary of 533 clam beaches by different ranges of size (beach areas; ha) for the southern inside waters is presented in Table 16.

4.1 Clam Species

The beaches of most interest at beginning of data collection for clam beach inventories were beaches that had quantities of butter clams, littleneck clams and Manila clams. Not included are the predominantly rocky beaches that may have sporadic pockets of clams, or sheltered muddy beaches with populations of soft-shell clams. Beaches that support significant populations of butter clams were not identified separately from the other hard shell steamers, littlenecks and Manilas.

4.2 Clam Beach Inventory Methodology

The information on the clam beaches was obtained initially in 1986, from personal interviews with local Fishery Officers. Additional beaches have been added through consultation with Fishery Officers, Aboriginal harvesters, commercial harvesters and others. As identified earlier, not all sites of clam populations are identified. Beaches which had a long history of

closure due to contamination or oyster lease tenure were largely excluded from the initial data collection, as were numbers of beaches with historical evidence of Aboriginal harvest. Although some beaches have been recently added to the inventory, there are more beaches to mapped and measured in the future from contaminated closure, leased aquaculture or traditional First Nations harvest sites.

The type of harvesting at a beach location was originally designated by the local fishery officers in 1986 as commercial, Aboriginal or recreational use, with an associated "intensity code". These designations were arbitrary and have likely changed significantly according to markets and harvesting trends. For example, a beach with significant butter clams may not be a commercial beach under current market conditions. However, if there was a market demand for butter clams the status of many beaches may change and some additional areas be identified. For the purposes of this report, use and intensity data have been excluded pending revisions.

4.2.1 Charts of beach locations and measuring area (ha)

The beaches were first marked out by hand on a series of nautical charts which were used to create an electronic GIS (Geographic Information System). The beaches were then digitized and Savemap files created in QUIKMap version 4.0. *The beach maps are sorted by Pacific Fishery Management Area and presented in Appendix 1.*

The digital basemaps used are based on Canadian Hydrographic Service (CHS) paper charts and range in scales from 1:37,500 to 1:80,000. These basemaps were compiled by AXYS Software Ltd., in QUICKMap format. Beach areas were estimated from the polygons, first established in 1989 and the database has been continually updated since then under funding from both DFO and Environment Canada Shellfish Program. Each clam beach is defined as a geographical area in the GIS with associated attribute information. Clam beaches were defined on the GIS by "snapping" their boundaries to features in the digital map set.

Please note that beach areas were measured that encompassed the whole intertidal area and that only portions of the beach may bear clam populations. We have found that clam areas of commercial interest are often small relative to the overall size of the beach. Table 14 illustrates the difference between total beach area and the area of beaches surveyed for commercial quantities of clams. The inventory or clam bearing portions of the beach are approximately 1/4 to 1/3 of the total beach area for those sites surveyed.

Hard copy charts were produced from QUIKMap savemaps which were customized to show all the areas with clam beaches reported. Clam beach data were imported from the associated dBase GIS files to a Microsoft Access database. Hard copy tables were produced from MS Access queries and reports using MS Excel 5.0 and MS Word 6.0.

All of the data in this report are available from DFO in QUIKMap and MS Access formats.

4.2.2 Beach closures for Aboriginal and recreational harvest

Appendix 2 provides a list, descriptions and figures for 7 beaches (48 ha) closed to commercial fishing and allocated for harvest for food, social and ceremonial purposes by First Nations. In addition, there are a total of 31 areas (418 ha) closed in Areas 13, 14, 15, 16, 17, 19 and 28 for park or recreational shellfish reserves.

4.2.3 Beach listings

The beaches have been initially sorted by Pacific Fishery Management Areas 13 to 20, 28 and 29, on the southern inside coast of Vancouver Island (Fig. 1). *Tables and maps for each Management Area are presented in Appendix 1.*

Summary tables of beaches sorted alphabetically by location name and sorted by beach number are given in Appendices 4 and 5, respectively, along with the estimates of beach area.

4.3 Summary of Beach Data

4.3.1 Area 13

90 beaches (1671 ha) were identified in Area 13, shown in Appendix Figs. 1.1.1. to 1.1.11. The beaches range from <1 to 1280 ha (Appendix Table 1.1).

Since 1951, Area 13 has supported 17% of the total SIW intertidal clam production, 6% of butter clam production, 28% of littlenecks, 17% of Manilas and 25% of mixed for SIW (Table 4).

4.3.2 Area 14

51 beaches (2274 ha) were identified in Area 14, shown in Appendix Figs. 1.2.1. to 1.2.8. The beaches range from 2 to 281 ha (Appendix Table 1.2).

Since 1951, Area 14 has supported 17% of the total SIW intertidal clam production, 17% of butter clam production, 14% of littlenecks, 20% of Manilas and 5% of mixed for SIW (Table 5).

4.3.3 Area 15

There are 62 beach locations identified in Area 15 for 681 ha (Appendix Table 1.3). Six figures are presented (Appendix Figs. 1.3.1 to 1.3.6). Beach areas range from <1 to 179 ha).

Since 1951, Area 15 has supported 16% of the total SIW intertidal clam production, 1% of butter clam production, 9% of littlenecks, 21% of Manilas and 20% of mixed for SIW (Table 6). The largest beach, measured at 179 ha at Savary Island, was closed due to conservation concerns in 1990. Commercial landings by beach are not available, however the total landings in

the commercial fishery for area 15 fell from a high of 755 t in 1989 to 67 t in 1990, when the fishery was closed at Savary Island.

4.3.4 Area 16

There are 119 beaches identified in Area 16 for 567 ha (Appendix Table 1.4). Nine figures are presented (Appendix Figs. 1.4.1 to 1.4.9). The beaches are all relatively small with areas ranging from <1 to 37 ha.

Area 16 has supported 6% of the total SIW intertidal clam production, 1% of butter clam production, 8% of littlenecks , 7% of Manilas and 10% of mixed for SIW (Table 7).

4.3.5 Area 17

There are 89 beaches identified in Area 17 for 895 ha (Appendix Table 1.5). The beaches are shown on 13 figures (Appendix Figs. 1.5.1 to 1.5.13). They range in size from <1 to 75 ha.

Area 17 has supported 31 % of the total SIW intertidal clam production, 55% of butter clam production, 20% of littlenecks , 28% of Manilas and 17% of mixed for SIW (Table 8).

4.3.6 Area 18

There are 58 beaches identified in Area 18 for 302 ha (Appendix Table 1.6). Seven figures show the clam beaches (Appendix Figs. 1.6.1 to 1.6.7). The beaches are all relatively small with areas ranging from <1 to 26 ha.

Area 18 has supported 7 % of the total SIW intertidal clam production, 17% of butter clam production, 10% of littlenecks , 4% of Manilas and 3% of mixed for SIW (Table 9).

4.3.7 Area 19

There are 20 beaches identified in Area 19 for 198 ha (Appendix Table 1.7). Five figures are presented for clam beaches in this area (Appendix Figs. 1.7.1 to 1.7.5). The beaches areas range from <1 to 77 ha.

Area 19 has supported only 1.5% of the total SIW intertidal clam production, 1% of butter clam production, 3% of littlenecks , 1% of Manilas and 7% of mixed for SIW (Table 10).

4.3.8 Area 20

There are 38 beaches identified in Area 20 for 180 ha (Appendix Table 1.8). Four figures show the clam beaches (Appendix Figs. 1.8.1 to 1.8.4). The beaches are all relatively small with areas ranging from <1 to 51 ha.

Area 20 has supported 3.4% of the total SIW intertidal clam production, 3% of butter clam production, 7% of littlenecks , 1% of Manilas and 13% of mixed for SIW (Table 11).

4.3.9 Area 28

There are 4 beaches identified in Area 28 for 39 ha (Appendix Table 1.9). One figure shows the clam beaches (Appendix Fig. 1.9.1). The beaches are all relatively small with areas ranging from 1 to 14 ha.

Area 28 has supported 0.2% of the total SIW intertidal clam production, 1% of littlenecks, and a very small percentage of the other species. (Table 12).

4.3.10 Area 29

There are 2 beaches identified in Area 29 for 37 ha (Appendix Table 1.10 and Appendix Fig. 1.10.1). The beaches are all relatively small with areas ranging from 3 to 34 ha.

Area 29 is largely comprised of the mouth of the Fraser River, with virtually all beaches on the lower mainland closed due to contamination. Area 29 has supported only 0.02 % of the total SIW intertidal clam production (Table 13).

5.0 DISCUSSION

There are a large number (533) of small beaches identified and probably a number of small locations missed in this inventory. Approximately 6845 ha of beach was identified, but the clam bearing portions of the beaches are much less, in the ranges of 1/4 to 1/3 of the total beach area.

There has been a long traditional use of the beaches by First Nations and 7 beaches (48 ha) have been closed to commercial fishing for harvest for food, social and ceremonial purposes.

The testing for PSP is essential on the SIW by the testing of mussels from stations along the coast. There are many sewage contaminated closures in the inside waters of the Strait of Georgia, relative to the west coast of Vancouver Island. In addition there are a growing number of seriously contaminated areas classed as prohibited even for the clam depuration fishery (Appendix 4).

5.1 Recommendations

1. Additional resource inventories are required to identify butter clam beaches specifically. It may be important to document the distribution of other species such as soft-shell clams.
2. Further studies are required on the growth and recruitment of intertidal clams on the SIW.

6.0 REFERENCES

- Adkins, B. E., R. Harbo and N. Bourne. 1983. An evaluation and management considerations of the use of a hydraulic escalator clam harvester on intertidal clam populations in British Columbia. *Can. Manusc. Rep. Fish. Aquat. Sci.* 1716: vi + 32 p.
- Anderson, D. M. 1989. Toxic algal blooms and red tides: A global perspective, p.11-16. *In* Okaichi, T., D. M. Anderson and T. Nemoto (eds). *Red Tides: Biology, Environmental Science and Toxicology*. Elsevier, New York, NY. 489 p.
- Adkins, B. E. 1992. Clam surveys at Savary Island, British Columbia 1987 to 1991. PSARC Working Paper I92-06. 46 p.
- Adkins, B. E. and J. J. Joe. 1993. Intertidal clam survey at Savary Island, British Columbia - 1992. PSARC Working Paper I93-02. 28 p.
- Bond, R. M. 1975. Management of PSP in Canada, p. 173-182. *In* LoCicero, V. R. (ed). *Proceedings of the First International Conference on Toxic Dinoflagellate Blooms*. The Mass. Sci. and Technol. Foundation, Wakefield, MA. 541 p.
- Bourne, N. 1982. Distribution, Reproduction and Growth of the Manila Clam, *Tapes philippinarum* (Adam and Reeves, 1850), in British Columbia. *J. of Shell. Res.* 2 (1): 47-54.
- 1986a. Intertidal clams, p. 22-31. *In* Jamieson, G. S. and K. Francis (eds). *Invertebrate and Marine Plant Fishery Resources of British Columbia*. *Can. Spec. Publ. Fish. Aquat. Sci.* 91: 89 p.
- 1986 b. Bivalve fisheries: Their exploitation and management with particular reference to the Northeast Pacific region, p. 2-13. *In* G. S. Jamieson and N. Bourne (eds). *North Pacific Workshop on Stock Assessment and Management of Invertebrates*. *Can. Spec. Publ. Fish. Aquat. Sci.* 92. 430 p.
- 1987a. A review of management options and the rationale for size limits in British Columbia's commercial fisheries for intertidal clams, p 123-132. *In* Harbo, R. M. and Jamieson (eds). *Status of invertebrate fisheries off the Pacific coast of Canada (1985/86)*. *Can. Tech. Rep. Fish. Aquat. Sci.* 1576: 158 p.
- 1987b. Intertidal clam resources: Manila, littleneck, butter and razor clams, p.133-148. *In* Harbo, R. M. and G. S. Jamieson (eds). *Status of invertebrate fisheries off the Pacific coast of Canada (1985/86)*. *Can. Tech. Rep. Fish. Aquat. Sci.* 1576: 158 p.
- Bourne, N. and B. E. Adkins. 1985. Savary Island clam study. pp. 69-95. *In*: G. S. Jamieson [ed.]. 1983 and 1984 invertebrate management advice, Pacific Region. *Can Man. Rep. Fish. Aquat. Sci.* 1848.

- Bourne, N., R. A. Carmichael and B. Bishop-Lowen. 1987. Recreational clam harvest survey - 1984. Can. Tech. Rep. Fish. Aquat. Sci. 1570. 61 p.
- Bourne, N. and F. Dickson. 1990. Development of a clam farming policy for the Pacific Region of DFO, p. 162-181. *In* Thomas, G. (ed). Shellfish Stock Assessments for the West Coast of Canada in 1990 as Reviewed by the Pacific Stock Assessment Review Committee (PSARC). Can. Manusc. Rep. Fish. Aquat. Sci. 2099: vi + 307 p.
- Bower, S. M. 1992. Winter mortalities and histopathology in Japanese littlenecks (*Tapes philippinarum* [A. Adams and Reeve]) in British Columbia due to freezing temperatures. J. Shellfish Res. 11: 255-263.
- Bower, S. M., R. Harbo, B. Adkins and N. Bourne. 1986. Investigation of Manila clam (*Tapes philippinarum*) mortalities in the Strait of Georgia, with a detailed study of the problem on Savary Island, British Columbia. Can. Tech. Rep. Fish. Aquat. Sci. 1444. 25 p.
- Burley, 1989. Senewélets. Culture history of the Nanaimo Coast Salish and False Narrows Midden. Royal B.C. Museum. Victoria, B.C. Memoir 2.
- Carmichael, J. R. and N. Bourne. 1986. Proposed techniques for the assessment of recreational invertebrate harvest in British Columbia. Can. Man. Rep. Fish. Aquat. Sci. 1869. 30 p.
- Department of Fisheries and Oceans (DFO). 1993. Summary of Marine Toxin Records in the Pacific Region. DFO Inspection Branch Annual Report, Burnaby, BC. 39 p.
- Dickson, F. 1992. Intertidal Clams, p. 206-221. *In* Thomas, G. (ed). Shellfish Stock Assessments for the West Coast of Canada in 1991 as reviewed by the Pacific Stock Assessment Review Committee (PSARC). Can. Manusc. Rep. Fish. Aquat. Sci. 2169: 287 p.
- Dickson, F. and K. Hobbs. 1990. Intertidal clam fishery. p, 290-297. *In* Thomas, G. (ed). Shellfish Stock Assessments for the West Coast of Canada in 1990 as reviewed by the Pacific Stock Assessment Review Committee (PSARC). Can. Manusc. Rep. Fish. Aquat. Sci. 2099: vi + 307 p.
- Gillespie, G. E., A. R. Kronlund and G. D. Heritage. 1998. Assessment of Manila clam (*Tapes philippinarum*) stocks at Savary Island, British Columbia - 1995. *In*: B. J. Waddell, G. E. Gillespie and L.C. Walther [eds.]. Invertebrate working papers reviewed by the Pacific Stock Assessment Review Committee (PSARC) in 1995. Can. Tech. Rep. Fish. Aquat. Sci. (in prep.).
- Gillespie, G.E., A.R. Kronlund and G.D. Heritage. 1998. Intertidal clam stock estimates for selected depuration harvest beaches - 1994. *In*: B.J. Waddell, G.E. Gillespie and L.C. Walther [eds.]. Invertebrate working papers reviewed by the Pacific Stock Assessment Review Committee (PSARC) in 1995. Can. Tech. Rep. Fish. Aquat. Sci. (in prep.).

- Harbo, R. M., C. M. Hand and B. E. Adkins. 1986. The Commercial Geoduck Clam Fishery in British Columbia 1981 to 1984. *Can. Manuscr. Rep. Fish. Aquat. Sci.* 1873: 59 p.
- Harbo, R. M., K. Marcus and T. Boxwell (eds.). 1997. Intertidal Clam Resources (Manila, littleneck and butter clam) Volume III: The Northern Inside Waters of Vancouver Island and the British Columbia Mainland. *Can. Manuscr. Rep. Fish. Aquat. Sci.* 2418: viii + 79 p.
1997. Intertidal Clam Resources (Manila, littleneck and butter clam) Volume I: The West Coast of Vancouver Island. *Can. Manuscr. Rep. Fish. Aquat. Sci.* 2416: viii + 116 p.
- Kingzett, B. C. and N. F. Bourne. 1998. Assessment of intertidal clam population surveys at Seal Island, British Columbia, 1940-1992. *In*: B. J. Waddell, G. E. Gillespie and L.C. Walthers [eds.]. *Invertebrate working papers reviewed by the Pacific Stock Assessment Review Committee (PSARC) in 1995.* *Can. Tech. Rep. Fish. Aquat. Sci.* (in prep.).
- Kennedy, D. and R. Bouchard. 1983. *Sliammon Life, Sliammon Lands.* Talon Books. Vancouver. 176 p.
- Medcof, J. C. 1985. Life and death with *Gonyaulax*: An historical perspective, p. 1-8. *In* Anderson, D. M., A. W. White and D. G. Baden (eds). *Toxic Dinoflagellates: Proceedings of the Third International Conference on Toxic Dinoflagellates*, St. Andrews, New Brunswick, June 8-12, 1985. Elsevier, New York, NY. 561 p.
- Quayle, D. B. 1939. The British Columbia clam problem. *Fish. Res. Board Can. Pac. Progr. Rep.* 39: 19-20.
1960. The intertidal bivalves of British Columbia. *BC Provincial Handbook 17.* BC Provincial Museum, Victoria, BC. 104 p.
1969. Paralytic shellfish poisoning in British Columbia. *Fish. Res. Bd. Canada. Bull.* 168: 68 p.
- Quayle, D. B. and N. Bourne. 1972. The clam fisheries of British Columbia. *Fish. Res. Board Can. Bull.* 179: 70p.
- Stewart, H. 1977. *Indian Fishing: Early Methods on the Northwest Coast.* University of Washington Press: Seattle.
- Thompson, R. E. 1981. Oceanography of the British Columbia Coast. *Can. Spec. Publ. Fish. Aquat. Sci.* 56: 291 p.
- Thompson, W.F. 1913. Report on the clam beds of British Columbia. *Rep. BC Comm. Fish.* 1912: 27-56.

Thompson, W.F. 1914. Report on the shell-fish beds of British Columbia (clams, mussels, and scallops). Rep. BC Comm. Fish. 1913: 103-125.

Webb, R. and K. Hobbs. 1996. Intertidal clams, p. 44-64. *In* Harbo R. and K. Hobbs (eds). Pacific Commercial Fishery Updates for Invertebrate Resources (1994). Can. Manuscr. Rep. Fish. Aquat. Sci. 2369: 181 p.

7.0. ACKNOWLEDGMENTS

Much of the information presented in this report came from the local knowledge of Fishery Officers including Gord McEachen and Randy Brahniuk (Area 14), Neil Armstrong (Area 15), Randy Tancock (Area 16), Cindy Harlow (Area 17), Bob Tupniak (Area 18) and Ron Kehl (Area 19).

Others that helped in the collection of the chart data include John Clark, Jonathon Joe, Gordon Curry, Tom Hollingshead and Mike Kattilakoski.

Table 1. Common and scientific names¹ of intertidal bivalve species exploited in British Columbia.

Class	Order	Family	Common Names	Scientific Names
Bivalvia	Heterodonta	Cardiidae	Cockle <i>Also known as:</i> Nuttall cockle heart cockle	<i>Clinocardium nuttallii</i> (Conrad, 1837)
“	“	Pharidae	Razor clam	<i>Siliqua patula</i> (Dixon, 1789)
“	“	Veneridae	Manila clam <i>Also known as:</i> Japanese littleneck	<i>Venerupis philippinarum</i> (A. Adams & Reeve, 1850) <i>Also known as:</i> <i>Tapes</i> and <i>Ruditapes</i>
“	“	Veneridae	Pacific littleneck <i>Also known as:</i> native littleneck rock cockle	<i>Protothaca staminea</i> (Conrad, 1837)
“	“	Veneridae	Butter clam	<i>Saxidomus gigantea</i> (Deshayes, 1839) <i>Also known as:</i> <i>Saxidomus giganteus</i>

¹Coan and Scott (1997)

Table 2. Annual commercial clam fishery landings (t) and landed values (\$000), 1951 to 1995, for British Columbia.

Year	LANDINGS (t)					LANDED VALUE (\$000)	TOTAL LANDINGS (t)
	Butter	Littleneck	Manila	Mixed	Razor		
1951	1,597	237	81	65	61	149	2,041
1952	2,490	224	184	65	57	222	3,020
1953	1,674	140	176	20	70	127	2,081
1954	1,314	66	204	5	123	104	1,712
1955	2,170	36	207	3	99	159	2,515
1956	1,454	14	99	*	108	102	1,676
1957	1,606	10	29	11	84	102	1,739
1958	987	18	15	6	75	65	1,101
1959	1,094	22	25	13	90	75	1,244
1960	1,800	41	6	23	101	133	1,971
1961	857	46	48	34	104	76	1,089
1962	1,533	92	69	43	77	139	1,813
1963	1,144	59	59	*	67	103	1,329
1964	570	69	26	1	48	59	714
1965	704	82	97	0	68	106	951
1966	831	105	149	1	35	125	1,121
1967	975	139	92	*	46	163	1,252
1968	399	91	164	15	12	98	681
1969	378	107	81	7	8	85	581
1970	792	144	79	15	18	184	1,049
1971	568	361	153	11	62	235	1,156
1972	645	631	265	1	17	382	1,559
1973	298	207	134	0	76	196	715
1974	531	328	182	0	69	383	1,110
1975	746	236	158	6	27	333	1,173
1976	655	173	199	70	82	340	1,179
1977	649	209	394	59	78	545	1,389
1978	383	159	753	245	47	834	1,587
1979	613	273	251	374	101	916	1,612
1980	760	358	288	151	75	1,001	1,632
1981	119	179	318	161	30	737	806
1982	102	242	598	155	68	1,135	1,165
1983	77	324	1,048	279	31	1,723	1,759
1984	130	294	1,677	410	100	2,757	2,610
1985	251	191	1,913	477	90	3,288	2,922
1986	158	284	1,893	371	142	3,801	2,848
1987	68	373	3,607	87	142	6,775	4,277
1988	134	290	3,909	27	155	7,770	4,515
1989	92	433	2,764	159	117	6,955	3,565
1990	109	465	1,456	339	114	5,279	2,483
1991	42	201	982	137	117	3,302	1,479
1992	132	116	914	124	55	2,861	1,341
1993	102	131	1,059	133	44	3,371	1,469
1994	174	94	1,376	88	105	4,410	1,838
1995**	101	140	1,292	3	140	4,724	1,677
Total:	32,010	8,433	29,472	4,193	3,434	66,429	77,516
% of Total B.C. :	41%	11%	38%	5%	4%		

* Less than 500 kg.

** 1995 values are preliminary.

Years 1957-69 from Quayle and Bourne (1972).

Years 1970-95 from sales slip records. 1992 to 1995 include depuration (Areas 14, 17, 18, 19, 20) and Aboriginal licenced harvest (Area 7) from industry catch reports.

Table 3. Annual landings (tonnes) of intertidal clams from the southern inside waters of Vancouver Island and the BC mainland (Areas 13 to 20, 28 and 29) as reported on sales slips, 1951 to 1995.

Year	Butter	Littleneck	Manila	Mixed	Total Landings
1951	411	237	81	64	792
1952	497	219	184	65	965
1953	265	136	176	16	593
1954	307	65	204	5	581
1955	364	36	207	3	610
1956	336	14	99		449
1957	232	10	29	11	281
1958	102	18	15	6	141
1959	63	22	25	13	123
1960	228	41	6	23	299
1961	43	46	48	26	162
1962	146	90	69	33	337
1963	88	58	59	0.2	206
1964	106	50	23	1	180
1965	201	43	41		286
1966	257	50	22	0.2	328
1967	349	90	69		508
1968	217	79	132	15	444
1969	159	104	73	7	343
1970	243	136	78	15	471
1971	255	339	143	11	747
1972	239	559	253	1	1,052
1973	156	179	129		464
1974	160	282	162		604
1975	127	110	71	3	310
1976	40	72	173	47	331
1977	86	157	342	53	638
1978	85	127	712	144	1,068
1979	197	161	214	202	774
1980	262	226	235	105	828
1981	110	134	290	126	660
1982	102	211	464	143	919
1983	76	248	798	257	1,379
1984	115	215	1,288	326	1,944
1985	150	147	1,359	410	2,065
1986	134	227	1,511	327	2,199
1987	35	279	2,863	75	3,252
1988	18	214	3,058	25	3,315
1989	28	303	2,107	158	2,596
1990	109	395	1,160	282	1,946
1991	35	148	841	136	1,159
1992	118	52	726	123	1,018
1993	100	68	821	133	1,122
1994	121	43	1,045	87	1,297
1995	51	95	839	3	988
Total:	7,521	6,532	23,243	3,478	40,774
% of Total SIW:	18%	16%	57%	9%	

Table 4. Annual landings (tonnes) of intertidal clams from Area 13, as reported on sales slips, 1951 to 1995.

Year	Butter	Littleneck	Manila	Mixed	Total Landings
1951	8	6	1	0.3	16
1952	55	24		20	98
1953	72	2		3	77
1954					
1955	7	0.1	0.2		8
1956	8	1	5		14
1957	11	2			13
1958					
1959	0.1				0.1
1960					
1961	5	9			14
1962	27				27
1963	0.1				0.1
1964	17	1			18
1965	19	0.3			19
1966					
1967	25	1	17		42
1968	3	4	42		48
1969	0.3	9	6		16
1970	28	13	8		48
1971	49	76	28	1	154
1972	11	234	19		264
1973	8	39	33		80
1974	14	176	70		260
1975	11	28	14		54
1976	1	19	9	0.5	29
1977	16	58	78	11	163
1978	16	17	94	21	148
1979	1	62	42	59	164
1980	1	58	24	22	105
1981	*	62	46	20	128
1982	*	66	84	47	196
1983	*	60	128	107	295
1984	*	44	198	167	409
1985	1	27	272	176	476
1986	2	33	291	72	398
1987	*	80	514	20	614
1988	*	71	593	4	668
1989	9	161	296	1	467
1990	*	292	435	97	824
1991		54	157	14	225
1992		8	112	1	121
1993		10	108	1	118
1994		4	168	*	172
1995		3	129	0.2	132
Total:	424	1814	4019	865	7121
% of Total 13:	6%	25%	56%	12%	

* Less than 500 kg.

Table 5. Annual landings (tonnes) of intertidal clams from Area 14, as reported on sales slips, 1951 to 1995.

Year	Butter	Littleneck	Manila	Mixed	Total Landings
1951	35	*		2	36
1952	2				2
1953	13	1			14
1954	53				53
1955	30		8		38
1956	33				33
1957	22				22
1958					
1959					
1960	97	0.4		0.3	98
1961	8			0.1	8
1962	17	1			18
1963	3				3
1964	4	6			10
1965	21	2			23
1966	6	1			7
1967	103	11			114
1968	55	9			65
1969	56	12	0.1		68
1970	10	2	0.4		13
1971	44	9	1		55
1972	37	10			47
1973	17	5 *			21
1974	37	12	1		50
1975	48	15	2	1	65
1976	11	4 *		10	25
1977	9	9	5	*	22
1978	34	10	4	10	58
1979	92	22	8	5	127
1980	21	14	2	1	38
1981	38	3	3	3	47
1982	13	47	10	7	77
1983	53	64	67	8	191
1984	18	74	149	15	256
1985	39	54	297	37	427
1986	31	104	375	20	530
1987	34	67	899	6	1,005
1988	10	24	749	6	789
1989	8	23	441	2	474
1990	43	86	314	45	488
1991	33	54	253	6	345
1992	30	28	258	1	316
1993	9	54	312	2	377
1994	9	36	322	0.5	368
1995	6	16	220		242
Total:	1,289	889	4,700	187	7,065
% of Total 14:	18%	13%	67%	3%	

* Less than 500 kg.

¹Landings from 1992 to 1995 include depurated clams from industry catch reports.

Table 6. Annual landings (tonnes) of intertidal clams from Area 15, as reported on sales slips, 1951 to 1995.

Year	Butter	Littleneck	Manila	Mixed	Total Landings
1951	14	84	2	1	100
1952	3	36	1		40
1953	3	13			15
1954	1	2	4		7
1955	0.1	0.4	3		4
1956	3	1	15	*	18
1957			3		3
1958					
1959					
1960					
1961	0.2	1			1
1962	1	1			2
1963	1	1			2
1964	2	1	0.3		3
1965	2				2
1966					
1967					
1968	1		7		8
1969					
1970			0.5		1
1971	1	0.5	1		2
1972	6	89	18	0.2	114
1973	9	28	46		83
1974	3	9	44		56
1975		10	2		12
1976	0.5	15	34		49
1977	0.5	8	116	29	153
1978	4	6	480	5	495
1979	6	27	142	124	299
1980	1	47	134	47	229
1981	1	26	57	65	148
1982	*	33	188	48	269
1983	2	29	212	77	321
1984	2	15	321	74	412
1985	*	9	241	77	328
1986	*	14	363	93	470
1987	*	18	618	24	659
1988	*	22	587	1	610
1989	*	59	664	30	753
1990		2	64	*	67
1991		7	109	2	118
1992		2	84	0.1	86
1993		0.4	43	0.1	44
1994		1	172	0.2	173
1995		1	175		176
Total:	65	617	4,950	697	6,329
% of Total 15:	1%	10%	78%	11%	

* Less than 500 kg.

¹Landings from 1994 and 1995 include Aboriginal licensed harvest.

Table 7. Annual landings (tonnes) of intertidal clams from Area 16, as reported on sales slips, 1951 to 1995.

Year	Butter	Littleneck	Manila	Mixed	Total Landings
1951	6	33	8	13	60
1952	6	52	1	1	61
1953	1	23	0.4	2	27
1954	15	23	2		40
1955	0.3	24	7		32
1956	1	8	0.3		9
1957	0.2	2	4		6
1958	0.4	0.1		0.5	1
1959	0.3	0.1		4	4
1960	3	6		1	11
1961	4	12	0.3	*	16
1962	1	3	0.5	2	6
1963	1	4			5
1964	1	14		1	15
1965	3	12			15
1966	2	13			15
1967	0.1	11			11
1968	0.3	0.4			1
1969		*		*	0
1970	1	33	0.1	*	34
1971	2	22		0.1	24
1972	1	19		0.1	20
1973	1	12			13
1974	0.5	15	13		28
1975		8	4		12
1976	*	2 *		1	4
1977	3	29	41	11	85
1978	1	30	55	105	191
1979		22	5	12	39
1980		* *		8	8
1981	*	3	7	22	32
1982		2	6	21	28
1983	*	48	85	50	183
1984	*	7	112	18	137
1985	1	12	108	43	164
1986	*	8	80	24	112
1987	*	2	110	2	114
1988	*	3	157	*	160
1989		11	241	7	259
1990		7	111	7	125
1991	1	10	93	8	112
1992	0.1	3	79		81
1993		1	99	1	101
1994		0.5	88	*	89
1995		0.5	57		58
Total:	58	549	1,575	364	2,547
% of Total 16:	2%	22%	62%	14%	

* Less than 500 kg.

Table 8. Annual landings (tonnes) of intertidal clams from Area 17, as reported on sales slips, 1951 to 1995.

Year	Butter	Littleneck	Manila	Mixed	Total Landings
1951	214	43	67	11	335
1952	288	34	154	13	488
1953	111	42	151	3	306
1954	147	15	161	4	327
1955	230	2	117		349
1956	210	1	71		282
1957	114	1	17	11	144
1958	25	5	5	5	40
1959	51	10	19	9	90
1960	123	4	3	21	152
1961	15	7	43	10	76
1962	65	15	38	24	143
1963	26	2	3		31
1964	44	7	6		57
1965	100	3	1		104
1966	202	11	3		216
1967	211	28	14		253
1968	114	20	36	15	184
1969	79	50	15	4	147
1970	123	47	61	15	245
1971	88	131	65	5	289
1972	38	54	25		117
1973	93	59	40	*	192
1974	79	33	19	*	131
1975	46	31	28	1	107
1976	20	20	120	12	172
1977	43	32	63	1	139
1978	18	39	62	1	120
1979	96	26	12	1	135
1980	231	88	74	24	417
1981	61	25	164	11	261
1982	81	38	161	11	291
1983	9	22	291	12	334
1984	87	31	489	28	634
1985	107	26	372	41	545
1986	102	58	367	91	619
1987	1	67	677	17	761
1988	8	66	849	3	925
1989	11	38	371	11	431
1990	66	6	212	21	305
1991	1	11	190	29	231
1992	88	11	191	44	335
1993	91	3	241	68	402
1994	112	2	286	22	422
1995	45	42	237	2	326
Total:	4115	1305	6592	599	12610
% of Total 17:	33%	10%	52%	5%	

* Less than 500 kg.

¹ Landings from 1992 to 1995 include Aboriginal licensed harvest and depurated clam landings from industry catch reports, excluding harvest from clam lease sites.

Table 9. Annual landings (tonnes) of intertidal clams from Area 18, as reported on sales slips, 1951 to 1995.

Year	Butter	Littleneck	Manila	Mixed	Total Landings
1951	123	46	3	14	185
1952	138	58	29	11	237
1953	61	33	23	8	125
1954	86	11	36	1	134
1955	92	0.5	72	0.2	165
1956	80		7		87
1957	84	*	4		88
1958	75	0.5	9	1	85
1959	12	1	3	0.2	16
1960	3	14	1	1	19
1961	8	0.4	1	15	25
1962	25	45	11	6	87
1963	37	15	43	0.2	94
1964	21	2	8		31
1965	18	4	39		61
1966	29	3	10		42
1967	5	4	27		36
1968	25	23	18	0.3	67
1969	13	9	16	3	42
1970	55	17	5	0.2	77
1971	61	79	46	5	191
1972	136	136	187	0.3	459
1973	21	21	9		51
1974	13	10	5		28
1975	20	11	9		40
1976	5	8	9	0.5	22
1977	7	9	5	*	21
1978	5	8	4	*	17
1979	*	*	1	*	1
1980	1	2		*	3
1981		*	13	1	14
1982	7	4	8	5	23
1983	12	3	14	2	30
1984	7	1	10	2	20
1985	1	3	25	10	38
1986		3	26	2	30
1987	*	11	27	1	39
1988		8	108	0.4	116
1989		6	37	4	47
1990		1	13		14
1991	*	13	26	3	42
1992		*	2		2
1993		0.1	16		16
1994			9		9
1995			1		1
Total:	1,283	622	976	95	2,975
% of Total 18:	43%	21%	33%	3%	

* Less than 500 kg.

¹ Landings from 1992 to 1995 include deperated clams from industry catch reports.

Table 10. Annual landings (tonnes) of intertidal clams from Area 19, as reported on sales slips, 1951 to 1995.

Year	Butter	Littleneck	Manila	Mixed	Total Landings
1951	7	7		4	18
1952	3	2		7	11
1953	2	7	2		10
1954	1	11			11
1955	2	2		2	6
1956					
1957	0.3	2			2
1958	1	9		0.5	11
1959	0.1	8		0.2	9
1960	0.0	15	0.5		15
1961	1	17	0.3		17
1962	5	20		0.3	24
1963	5	23 *			29
1964	2	7	0.1		9
1965	1	12			13
1966	1	4	0.4		5
1967	0.5	21	8		30
1968	6	8	0.2	0.2	14
1969	3	2			5
1970	0.5		0.1		1
1971		7	0.2		7
1972		0.1	0.5		1
1973		*			
1974	3	2			5
1975					
1976				22	22
1977	1	*	1		2
1978		*		1	1
1979	*	*			
1980					
1981				*	
1982		14	2	2	17
1983				0.3	0.3
1984		*	1	0.3	1
1985	*		5	4	9
1986	*	1	1	3	5
1987		4	7	0.3	11
1988		6	12	2	19
1989		4	57	10	71
1990			11	29	40
1991		*	13	20	33
1992				37	37
1993			3	47	50
1994				37	37
1995		15	8		23
Total:	44	226	131	228	629
% of Total 19:	7%	36%	21%	36%	

* Less than 500 kg.

¹ Landings from 1992 to 1995 include deperated clams from industry catch reports.

Table 11. Annual landings (tonnes) of intertidal clams from Area 20, as reported on sales slips, 1951 to 1995.

Year	Butter	Littleneck	Manila	Mixed	Total Landings
1951	1	0.1		18	19
1952				12	12
1953	1			1	2
1954	1			*	1
1955				0.4	0
1956					0
1957					0
1958	0.05				0
1959		*	2		2
1960	2	*	2		3
1961	1	0.5	3		4
1962	5	6	19	1	31
1963	16	13	13		43
1964	16	13	8		37
1965	37	10	1		48
1966	17	17	8	0.2	42
1967	6	15	3		24
1968	13	15	29		57
1969	8	22	36		65
1970	25	24	3		52
1971	9	14	1		24
1972	10	16	5		30
1973	6	15	1		23
1974	10	26	10		47
1975	2	6	11	0.5	20
1976	1	4	2		8
1977	6	11	34	0.5	52
1978	7	16	13	1	37
1979	2	2	4	1	9
1980	7	17	1	3	28
1981	10	16		4	30
1982	1	7	5	4	18
1983	1	23	1	1	27
1984	1	43	8	22	75
1985	2	17	38	22	79
1986		6	6	21	33
1987	1	31	12	5	48
1988		15	0.4	9	25
1989			0.2	95	95
1990		*		82	82
1991				55	55
1992				40	40
1993				14	14
1994				27	27
1995		18	12		30
Total:	226	438	293	440	1,398
% of Total 20:	16%	31%	21%	31%	

* Less than 500 kg.

¹ Landings from 1992 to 1995 include depurated clams from industry catch reports.

Table 12. Annual landings (tonnes) of intertidal clams from Area 28, as reported on sales slips, 1951 to 1995.

Year	Butter	Littleneck	Manila	Mixed	Total Landings
1951	3	18		1	22
1952	2	13		1	15
1953	1	16		*	16
1954	3	4		0.3	8
1955	1	8			9
1956	2	4			6
1957	1	3			4
1958	1	4			5
1959	0.2	2			3
1960	0	1			1
1961					
1962		*			*
1963					
1964					
1965					
1966					
1967					
1968					
1969					
1970					
1971					
1972					
1973					
1974					
1975					
1976					
1977					
1978		1	*		1
1979					
1980					
1981					
1982					
1983			*		*
1984		*			*
1985					
1986					
1987			1		1
1988			0.2		0.2
1989					
1990					
1991					
1992					
1993					
1994					
1995			0.4		0.4
Total:	14	73	1	2	91
% of Total 28:	16%	81%	2%	2%	

* Less than 500 kg.

Table 13. Annual landings (tonnes) of intertidal clams from Area 29, as reported on sales slips, 1951 to 1995.

Year	Butter	Littleneck	Manila	Mixed	Total Landings
1951					
1952					
1953					
1954					
1955					
1956					
1957					
1958					
1959					
1960					
1961	1				1
1962					
1963					
1964					
1965					
1966					
1967					
1968					
1969	0.05				0.05
1970			0.5		0.5
1971					
1972					
1973					
1974					
1975					
1976					
1977					
1978	*			*	
1979					
1980					
1981					
1982					
1983					
1984				*	
1985					
1986	*	*	1	1	2
1987			0.1		0.1
1988	1	*	3		4
1989		*			
1990			1		1
1991					
1992					
1993					
1994					
1995					
Total:	1	0	5	1	8
% of Total 29:	18%	0%	65%	17%	

* Less than 500 kg.

Table 14. Beaches where harvest of clams for depuration has occurred or is proposed up to 1997. Estimates of beach areas are from the Clam Beach Inventory Database, compared to surveyed clam bearing area, and including estimates of Manila and littleneck stock from surveys 1993 to 1997.

1997 Depuration Beaches	Fishery Management Area	Clam Beach Inventory Number	Survey Area (ha)	Inventory Beach Area (ha)	Manila Stock Est. Legal (t/ha)	Littleneck Stock Est. Legal (t/ha)
Craig Bay	14-1	n/a	16.9	-	6.3	-
Parksville Beach	14-1	portion of 44	7.4	83.78	11.69	-
Base Flats	14-8	96	1.40	33.40	19.86	0
Mud Bay	14-8	8	22.00	54.00	6.57	0.21
Berray Road	14-8	portion of 8	-	215.6	-	-
Gartley Point	14-11	portion of 17	4.1	59.12	-	-
Royston	14-14	n/a	10.79	-	2.99	0.09
Dunsmuir Islands(1996)	17-7	946	4.48	3.63	15.39	8.7
Ladysmith (Head)(1994)	17-7	417	12.32	11.15	10.93	0.13
Ladysmith (Head)(1996)	17-7	417	8.1	11.15	11.93	0.08
Wedge Point	17-7	945	0.46	5.01	18.70	2.17
Ivy Green	17-7	n/a	1.84	-	9.91	0
Clam Bay - Mud Flats	17-8	440	4.95	5.0	17.75	0
Willy Island	17-9	n/a	2.61	-	51.61	0
Booth Bay	17-9	435	3.13	15.6	36.16	0.32
Degnen Bay	17-10	898	1.6	16.4	28.85	3.73
Ganges Harbour	18-3	944	0.91	4.84	4.51	17.03
Long Harbour	18-3	998	1.98	-	21.05	12.71
Mill Bay	19-7	953	-	1.83	-	-
Bamberton	19-8	458	0.76	15.40	7.67	20.62
Goldstream	19-12	950	5.84	14.70	25.50	10.75
Sooke Harbour	20-6	951A	0.54	37.59	0.25	12.01
Sooke Basin A	20-7	952B-E	0.70	16.93	1.57	5.71
Sooke Basin B	20-7	952E-F	0.82	4.53	3.41	8.41
Sooke Basin C	20-7	952K	0.54	3.60	3.52	5.93
Sooke Basin D	20-7	664	0.21	0.37	48.96	16.33
Sooke Basin E	20-7	952L	0.80	2.81	16.00	8.00

Table 14 (cont'd).

1997 Depuration Beaches	Fishery Management Area	Clam Beach Inventory Number	Survey Area (ha)	Inventory Beach Area (ha)	Manila Stock Est. Legal (t/ha)	Littleneck Stock Est. Legal (t/ha)
Sooke Basin F & G	20-7	n/a	0.44	3.79	13.86	7.05
Sooke Basin H	20-7	952P	1.04	3.84	0.38	16.06
Sooke Basin I	20-7	668,670,952R-Q	0.44	1.48	8.41	14.32
Sooke Basin J	20-7	952G-J	0.41	5.87	17.07	17.32
Beach Area Totals ¹:			100.5	381.3		

¹Note: only those beaches with both surveys of clam bearing area and measured beach area in the Clam Beach Inventory are included in totals.

n/a - beaches with a long history of contaminated closure or oyster lease tenure were not consistently included in the initial collection of data for this inventory

Table 15. Summary of the number of clam beaches and beach areas (ha) for the southern inside waters (SIW) of Vancouver Island and mainland British Columbia.

Management Area	No. of Beaches	Area of Beaches	Range of Areas	No. of beaches in size ranges (ha)						
				< 10	10 to < 20	20 to < 30	30 to < 40	40 to < 50	50 to < 60	60+
13	90	1670.9	0.2 to 279.7	62	14	4	1	1	2	6
14	51	2274.3	1.7 to 280.9	9	7	6	7	8	4	10
15	62	681.1	0.08 to 179.2	47	9	2	0	0	1	3
16	119	566.6	0.2 to 37.1	103	14	1	1	0	0	0
17	89	895.1	0.6 to 75.2	61	17	7	0	1	1	2
18	58	302.1	0.3 to 25.8	49	6	3	0	0	0	0
19	20	197.7	0.4 to 76.9	15	4	0	0	0	0	1
20	38	180.6	0.05 to 50.9	34	1	0	2	0	1	0
28	4	39.16	1.3 to 13.8	1	3	0	0	0	0	0
29	2	37.0	3.4 to 33.7	1	0	0	1	0	0	0
Total SIW:	533	6844.5	<1 to 281	382	75	23	12	10	9	22
% Total No. Beaches:				71.7%	14.1%	4.3%	2.3%	1.9%	1.7%	4.1%

Table 16 . Results from unpublished clam surveys undertaken by Fisheries and Oceans Canada at selected sites in the Strait of Georgia.

Site	Area	Year Surveyed	No. of Plots	Plot Size (m ²)	Mean Densities (kg/m ²) Manila				Mean Densities (kg/m ²) Littleneck			
					Legal		Sublegal		Legal		Sublegal	
					kg/m ²	S.D.	kg/m ²	S.D.	kg/m ²	S.D.	kg/m ²	S.D.
Fillongley Park	14-10	1983	22	0.50	0.40	0.48	0.56	0.63	0.60	0.57	0.34	0.46
		1989	16	0.50	0.06	0.09	0.18	0.53	0.70	0.80	0.18	0.22
Piper's Lagoon	17-21	1981	24	1.00	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
		1989	13	0.50	0.60	0.76	0.87	0.74	0.00	0.01	0.01	0.02
Percy Anchorage	17-16	1981	n/a	n/a	0.29	0.40	0.21	0.31	0.25	0.29	0.06	0.09
		1985	n/a	n/a	0.27	0.52	0.13	0.29	0.40	0.35	0.09	0.10
		1987	12	0.25	0.13	0.16	0.89	1.10	0.88	1.00	0.33	0.33
		1989	12	0.50	0.25	0.42	0.99	2.35	0.33	0.36	0.15	0.18
Gabriola Bar	17-16	1981	n/a	n/a	0.01	n/a	0.01	n/a	0.11	n/a	0.02	n/a
		1985	n/a	n/a	0.06	n/a	0.01	n/a	0.68	n/a	0.08	n/a
		1987	37	0.25	0.15	0.34	0.06	0.15	0.77	0.73	0.16	0.23
		1989	49	0.50	0.11	0.31	0.25	0.65	0.85	0.85	0.11	0.21
Savary Island	15-2	1984	30	n/a	1.02	0.78	3.52	2.85	0.17	0.28	0.17	0.24
		1985	35	0.50	0.61	0.71	0.98	1.36	0.08	0.17	0.14	0.13
		1987	44	0.25	0.38	0.42	0.43	0.68	0.20	0.29	0.14	0.20
		1989	58	0.50	0.28	0.27	0.13	0.14	0.40	0.71	0.14	0.20

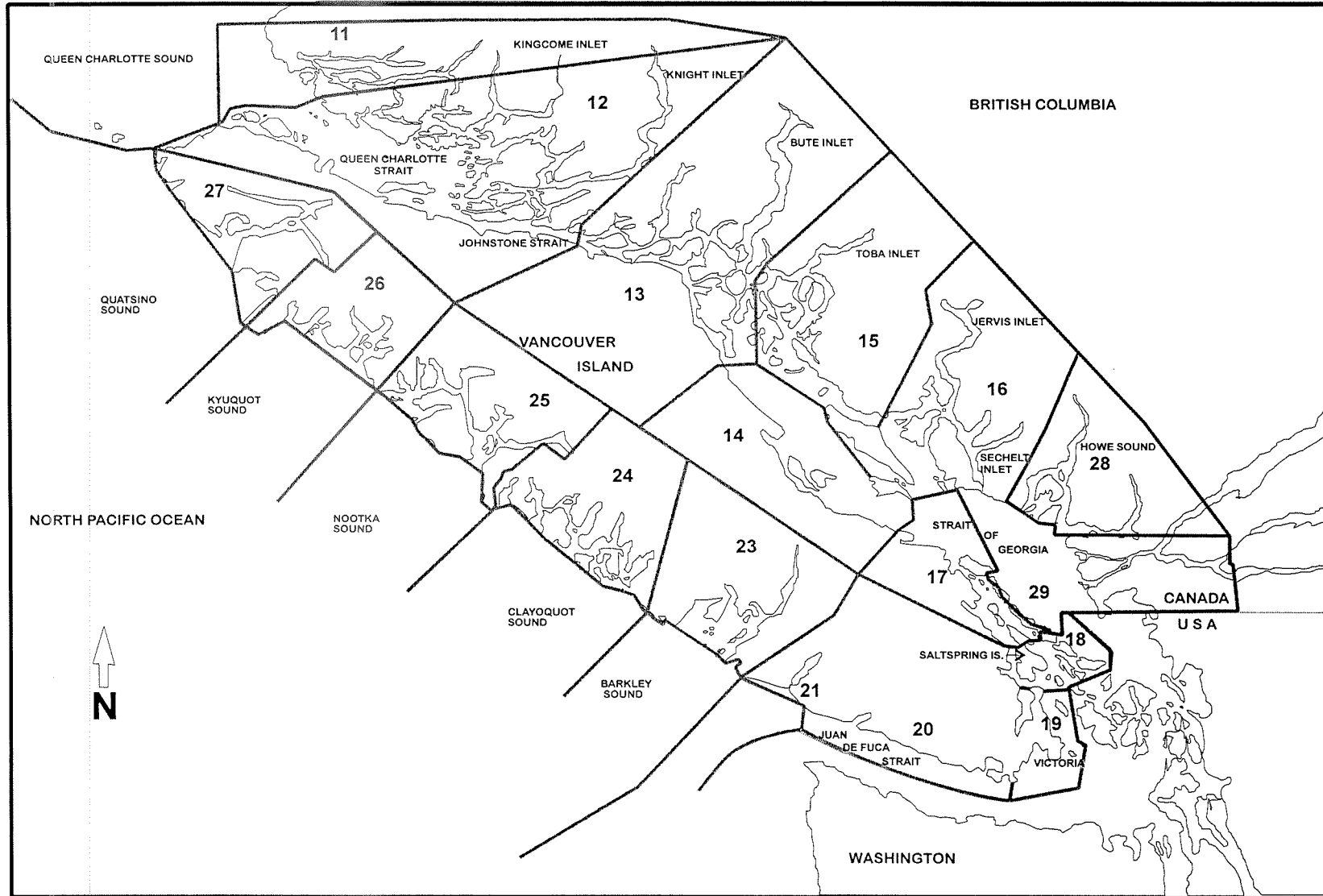


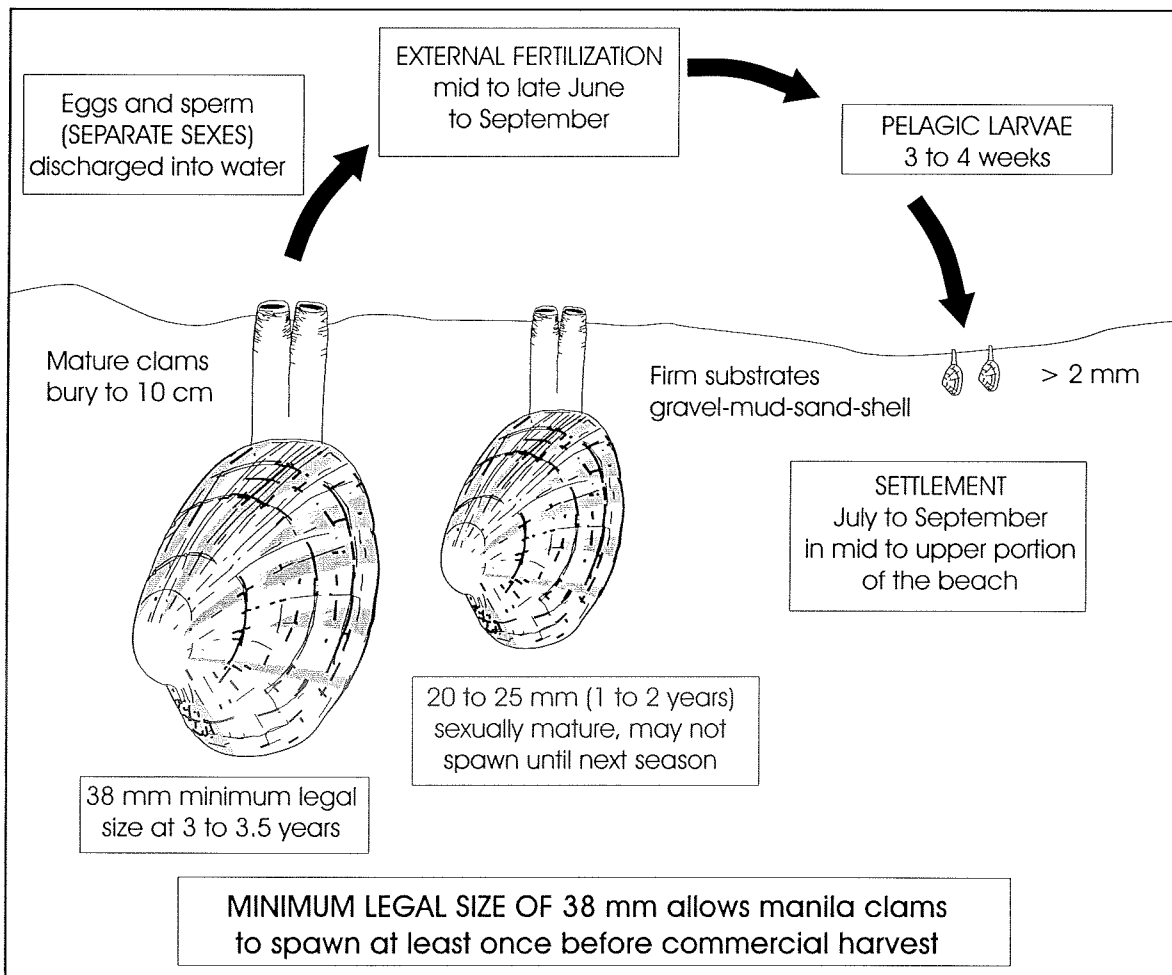
Figure 1. Pacific Fishery Management Areas 13 to 20, 28 and 29, the southern inside waters of Vancouver Island and mainland British Columbia.

MANILA CLAM

Manila clams, *Venerupis philippinarum* (A. Adams and Reeve, 1850), also called *Tapes philippinarum*, were accidentally introduced to BC with Pacific Oyster seed from Japan in the 1930's. This clam spread quickly in the Strait of Georgia and, in the 1950's, along the west coast of Vancouver Island. In the 1960's manila clams spread to the Queen Charlotte Strait area and, in the 1970's, to the central coast area as far north as Bella Bella.

Manila clam shells are longer than they are high and the clam has a distinct oblong shape. The shells are heavy with radiating ridges crossing the concentric growth rings. The external colour varies from a greyish-white, through yellowish-buff to brown, often with geometric patterns of black and white in the young. The internal surface is smooth and yellowish-white with deep purple at the siphon (posterior) end. The inside edge of the shell is smooth and distinct from that of the native littleneck, which has regular shallow notches along the edges of the shell. The tip of the siphon is split, unlike the native littleneck. Manila clams measure up to 7.5 cm in length at 14 years.

LIFE CYCLE OF THE MANILA CLAM (*Venerupis philippinarum*)



Clams of British Columbia

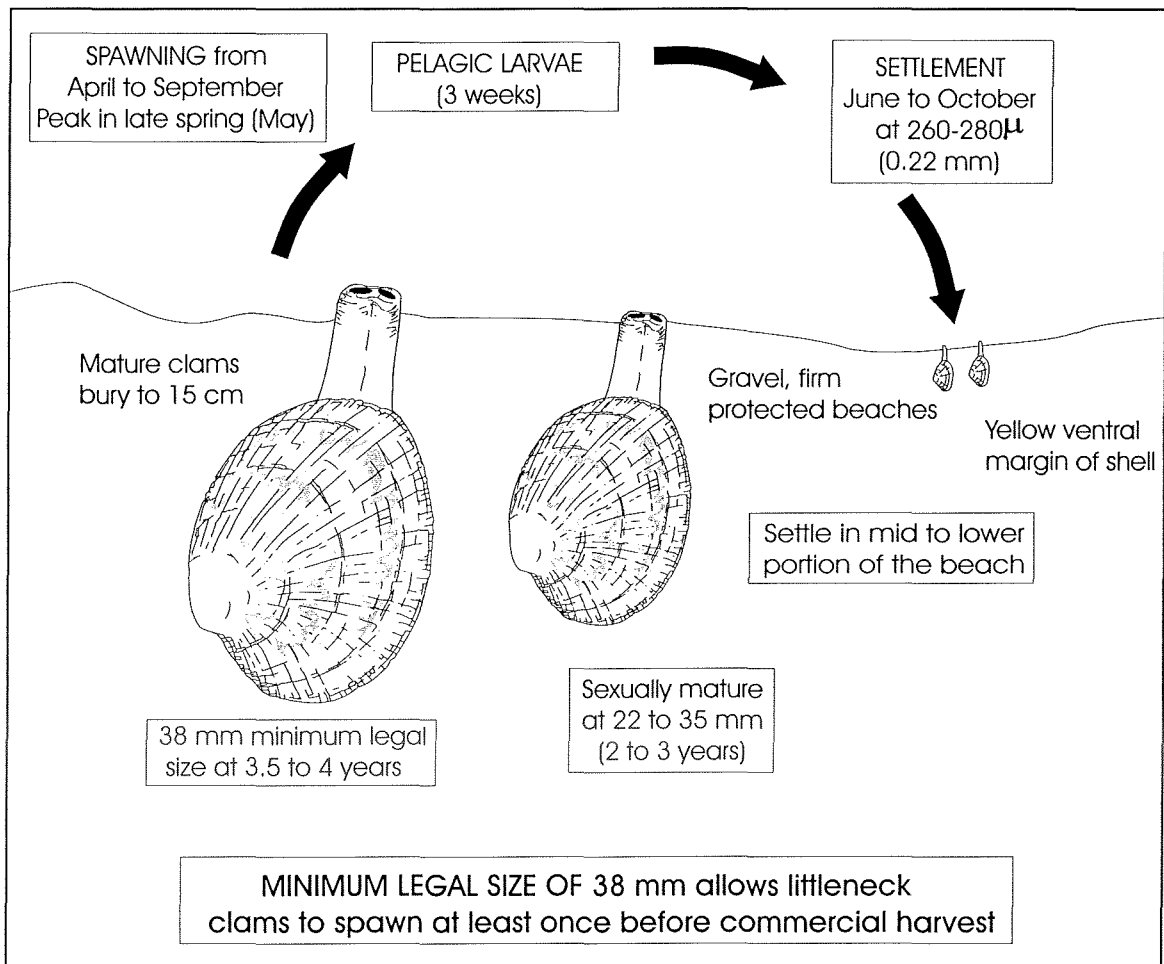
Figure 2. Life cycle of the Manila clam.

LITTLENECK CLAM

Littleneck clams, *Protothaca staminea* (Conrad, 1837), are medium size intertidal clams that may attain a shell length of 75 mm and ages to 14 years.

Littleneck shells are thick, oval to round with strong radiating ribs and less prominent concentric ridges. The external colour may vary from white to chocolate brown, often with angular patterns. The internal surface is smooth and white with fine notches on the margin. Unlike the manila clam, the siphon tips are fused.

LIFE CYCLE OF THE LITTLENECK CLAM (*Protothaca staminea*)



Clams of British Columbia

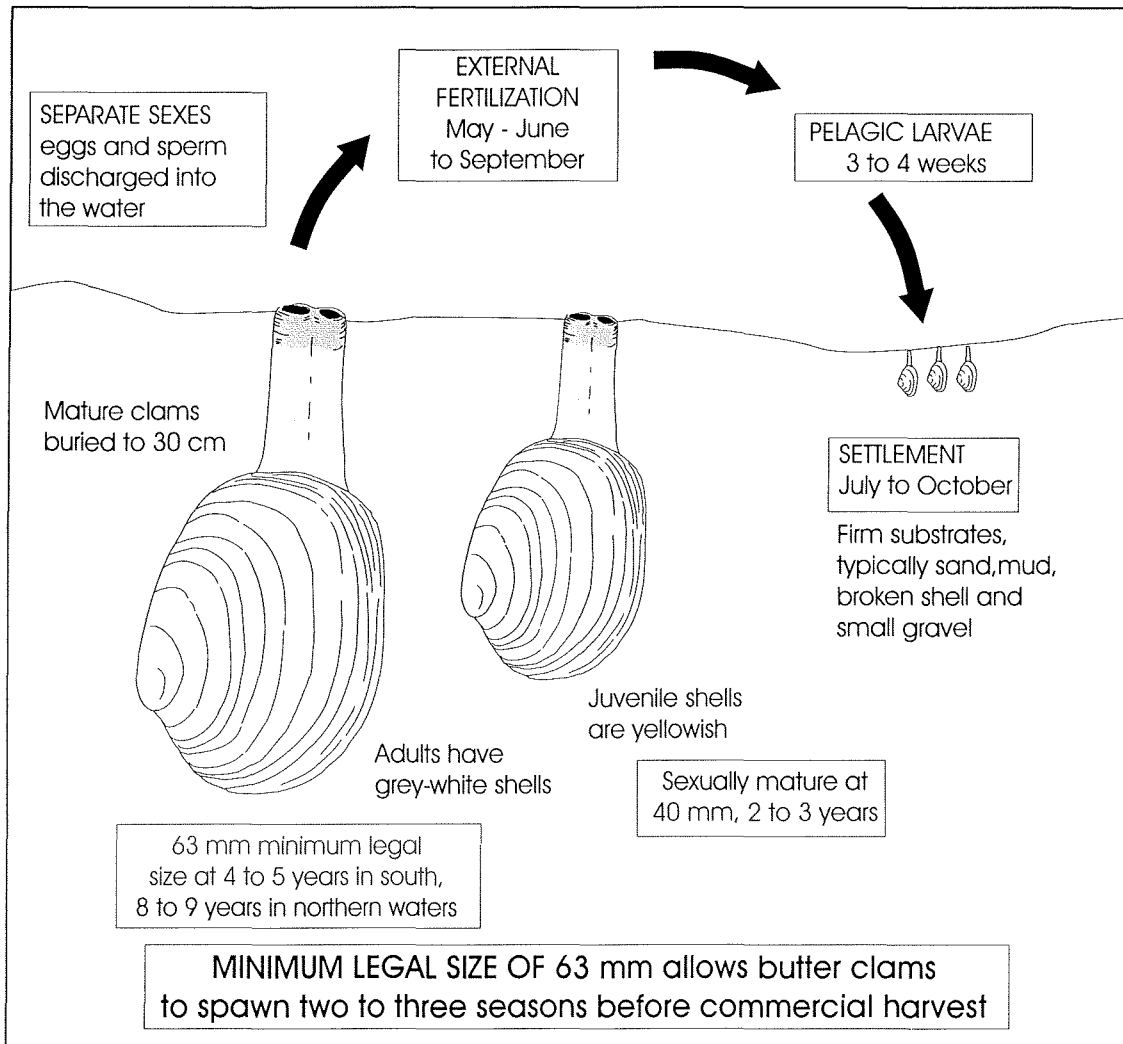
Figure 3. Life cycle of the littleneck clam.

BUTTER CLAM

Butter clams, *Saxidomus gigantea* (Deshayes, 1839), are large intertidal clams that may attain a shell length of 130 mm and ages to 20 years. They form the greatest biomass of intertidal clams in British Columbia.

The shells are heavy and square to oval in shape. There is a strong prominent external hinge ligament. The exterior is gray-white (yellow in juveniles) with prominent concentric striations and deep winter checks. The internal surface is a dull white and smooth with large indented muscle scars. The siphon tips are black.

LIFE CYCLE OF THE BUTTER CLAM (*Saxidomus gigantea*)



Clams of British Columbia

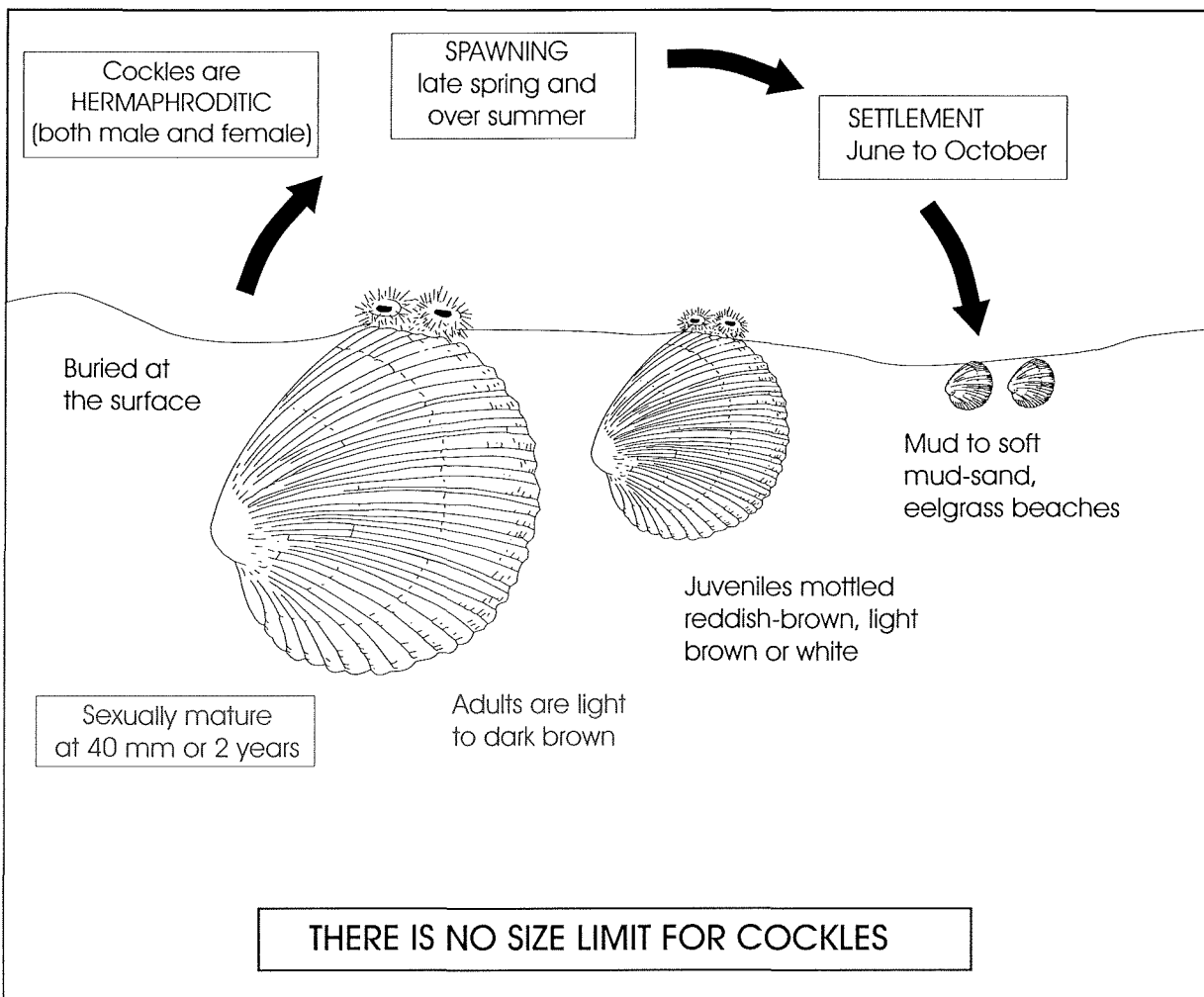
Figure 4. Life cycle of the butter clam.

COCKLE

Cockles, *Clinocardium nuttallii* (Conrad, 1837), are medium size with shell lengths to 140 mm and ages generally to 7 years, but some grow as old as 16 years. They are generally found in soft substrates in the lower intertidal zone and subtidally to 30 m.

The shells are thick with 34 to 38 prominent radial ribs and less prominent concentric growth rings. The exterior of adult shells are light to dark brown and juveniles have a mottled reddish brown, light brown or white colour. The internal surface of the shell is chalky white.

LIFE CYCLE OF THE COCKLE (*Clinocardium nuttallii*)



Clams of British Columbia

Figure 5. Life cycle of the cockle.

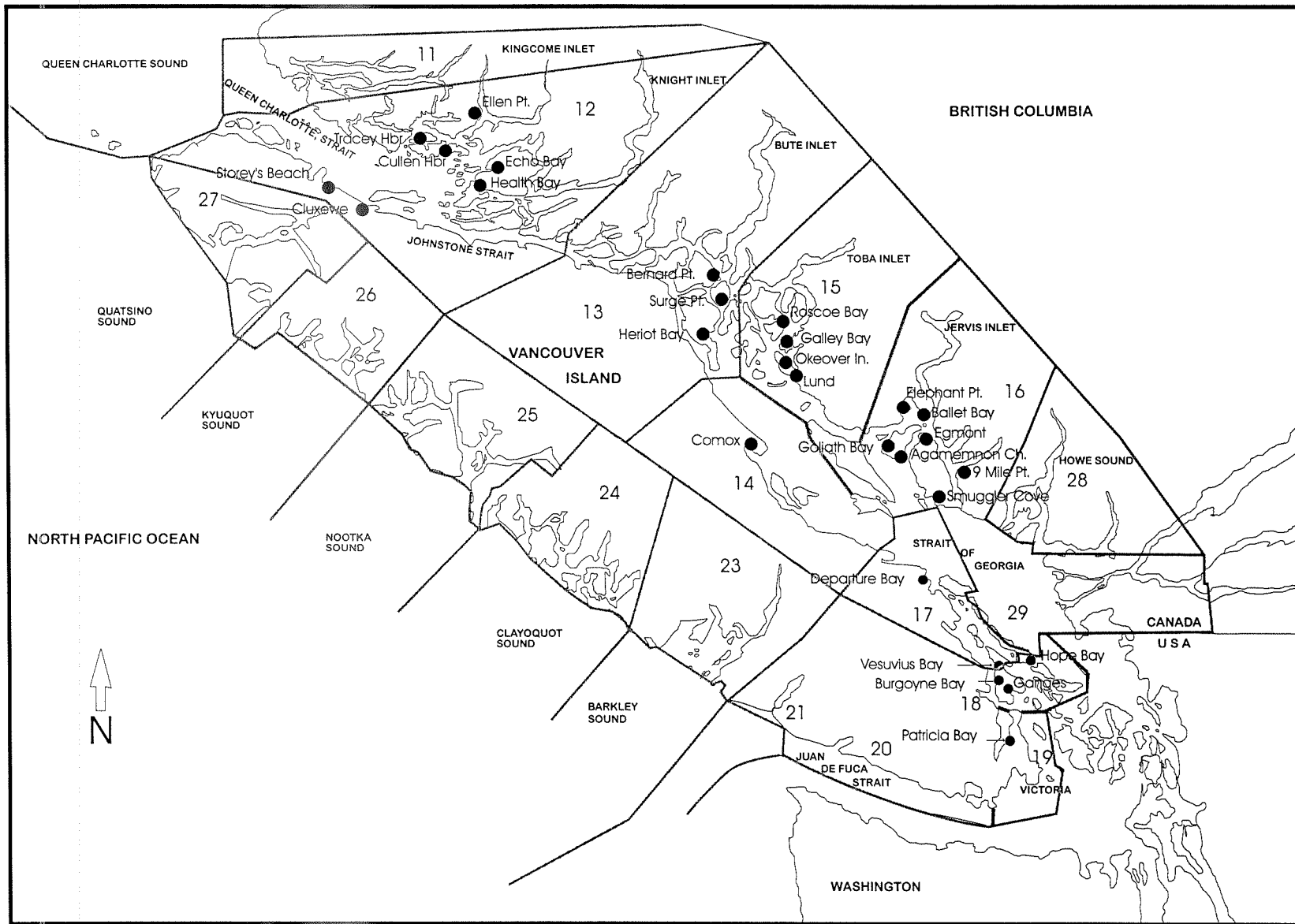


Figure 6. PSP monitoring stations in 1995 for the southern inside waters of Vancouver Island and mainland British Columbia.

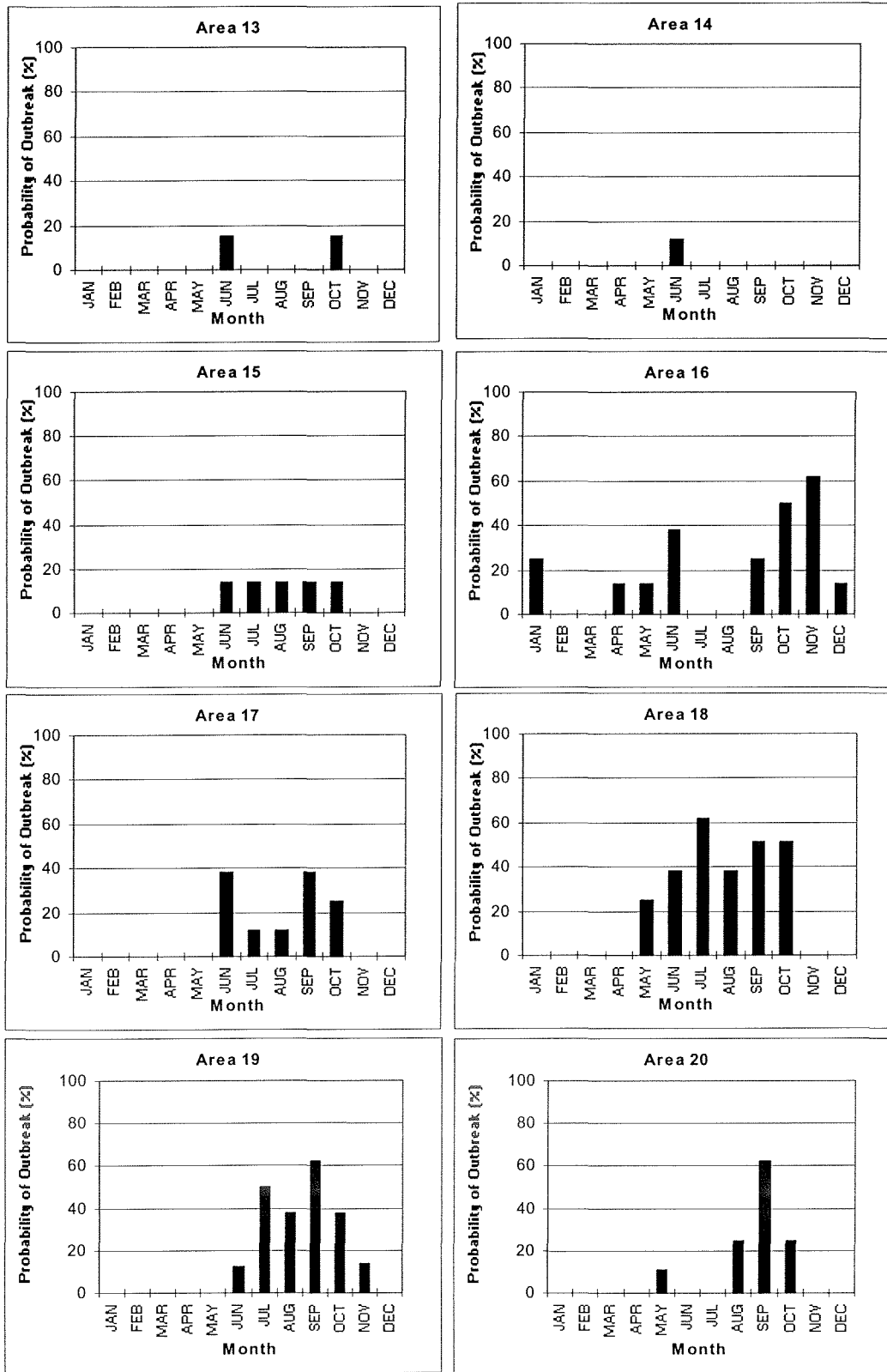


Figure 7. Average monthly PSP activities in the southern inside waters of Vancouver Island and mainland British Columbia, 1987 to 1994. PSP levels shown are greater than 210 μ /100g.

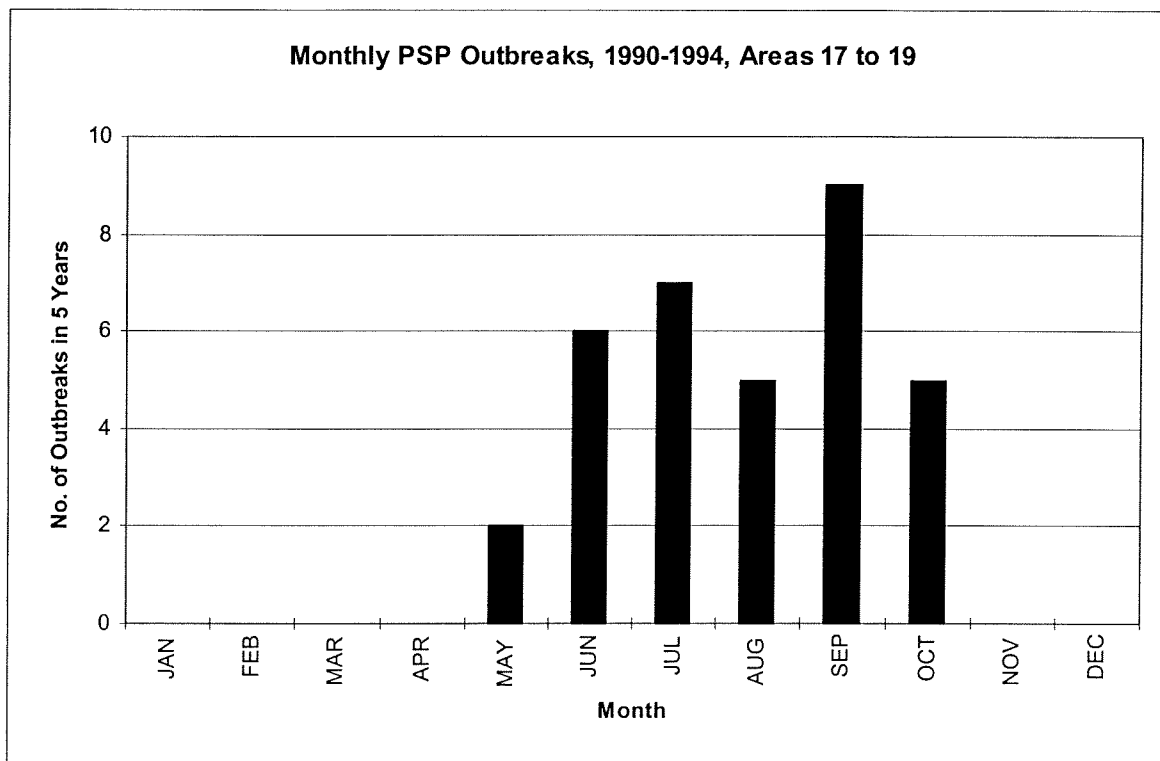


Figure 8. Average monthly PSP outbreaks in the Areas 17 to 19, 1990 to 1994.

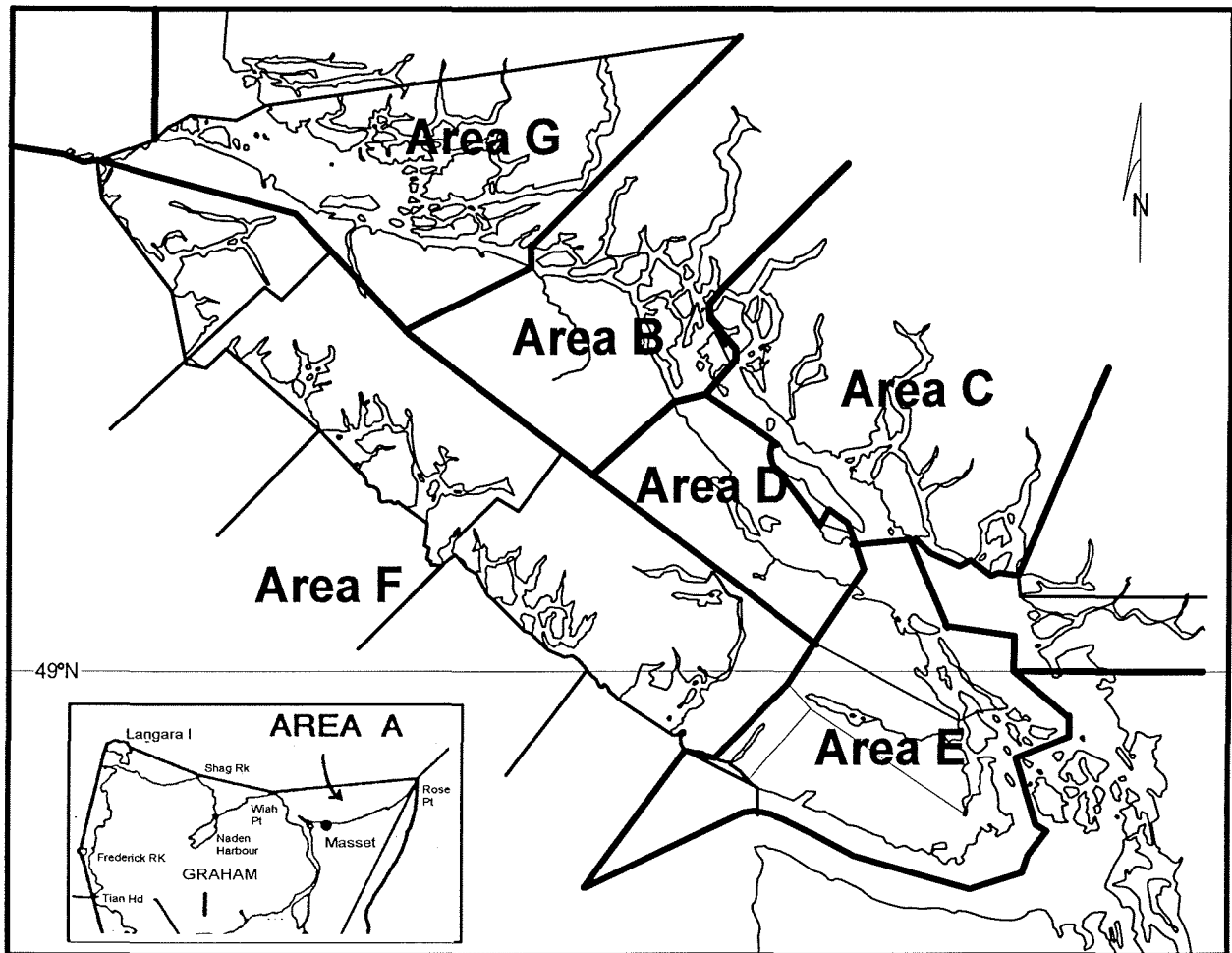


Figure 9. Commercial Clam Harvest Licence Areas.

A: North Coast
B: Johnstone Strait
C: Sunshine Coast

D: Upper Strait of Georgia
E: Lower Strait of Georgia
F: West Coast of Vancouver Island

G: Queen Charlotte Sound

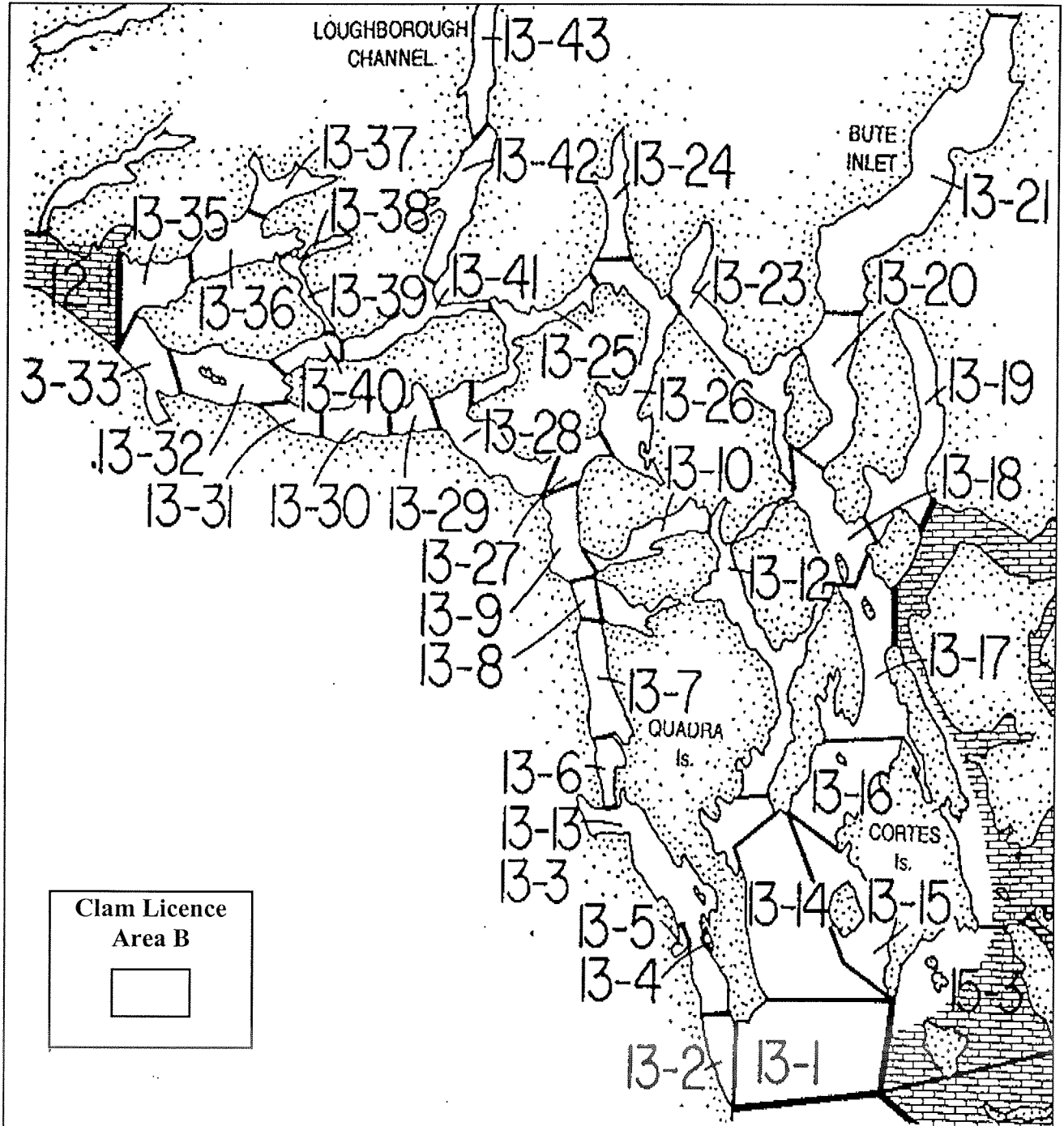


Figure 10. 1997 Clam Licence Area B: Area 13, all Subareas, and those portions of Areas 15-3 and 15-5 including the shore of Cortes and Twin Islands.

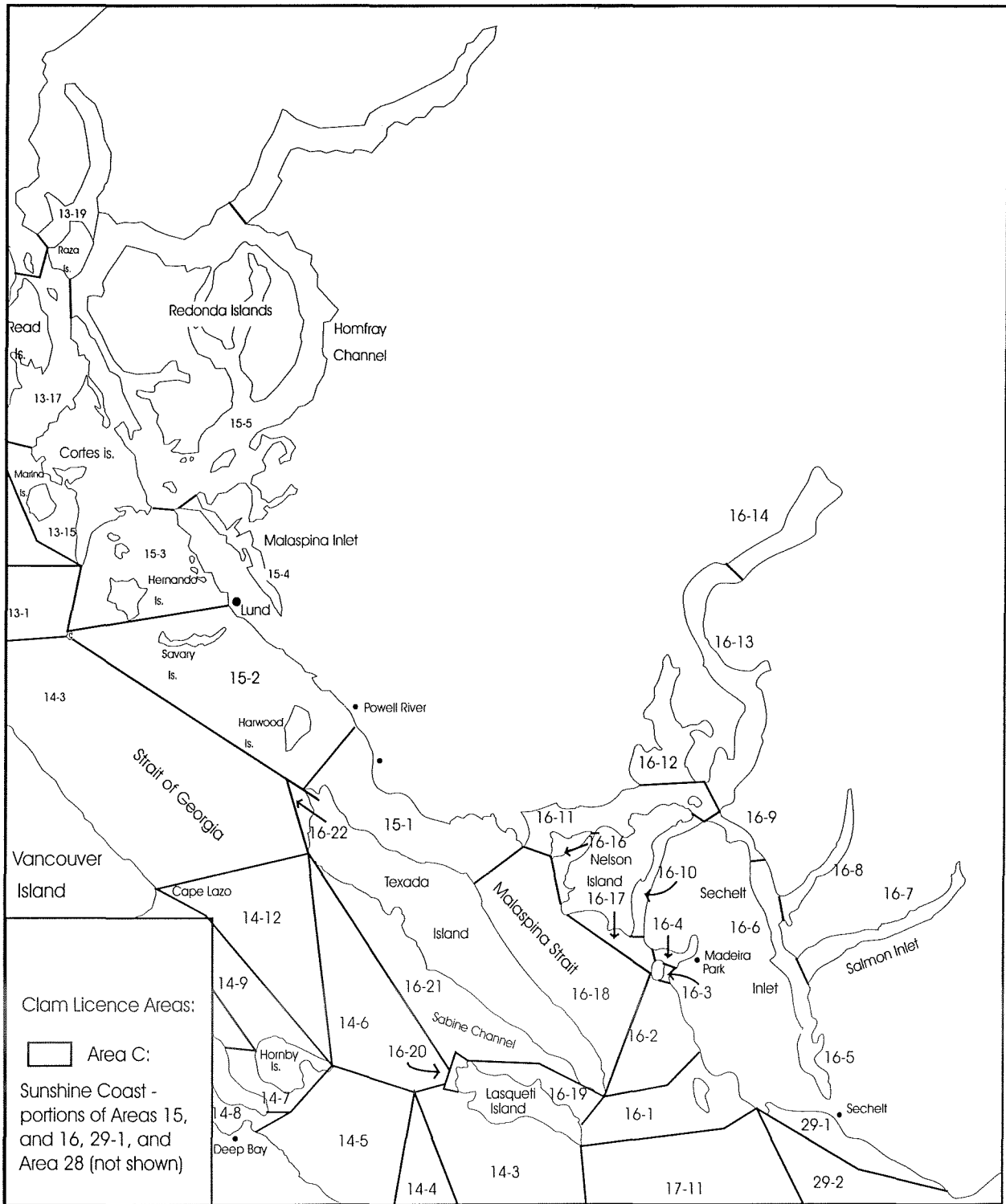


Figure 11. 1997 Clam Licence Area C: portion of Area 15 NOT INCLUDING Cortes Island and Twin Islands; portion of Area 16 NOT INCLUDING Subareas 16-19 and 16-20 (Lasqueti Island shore); Area 28 (not shown); and Subarea 29-1.

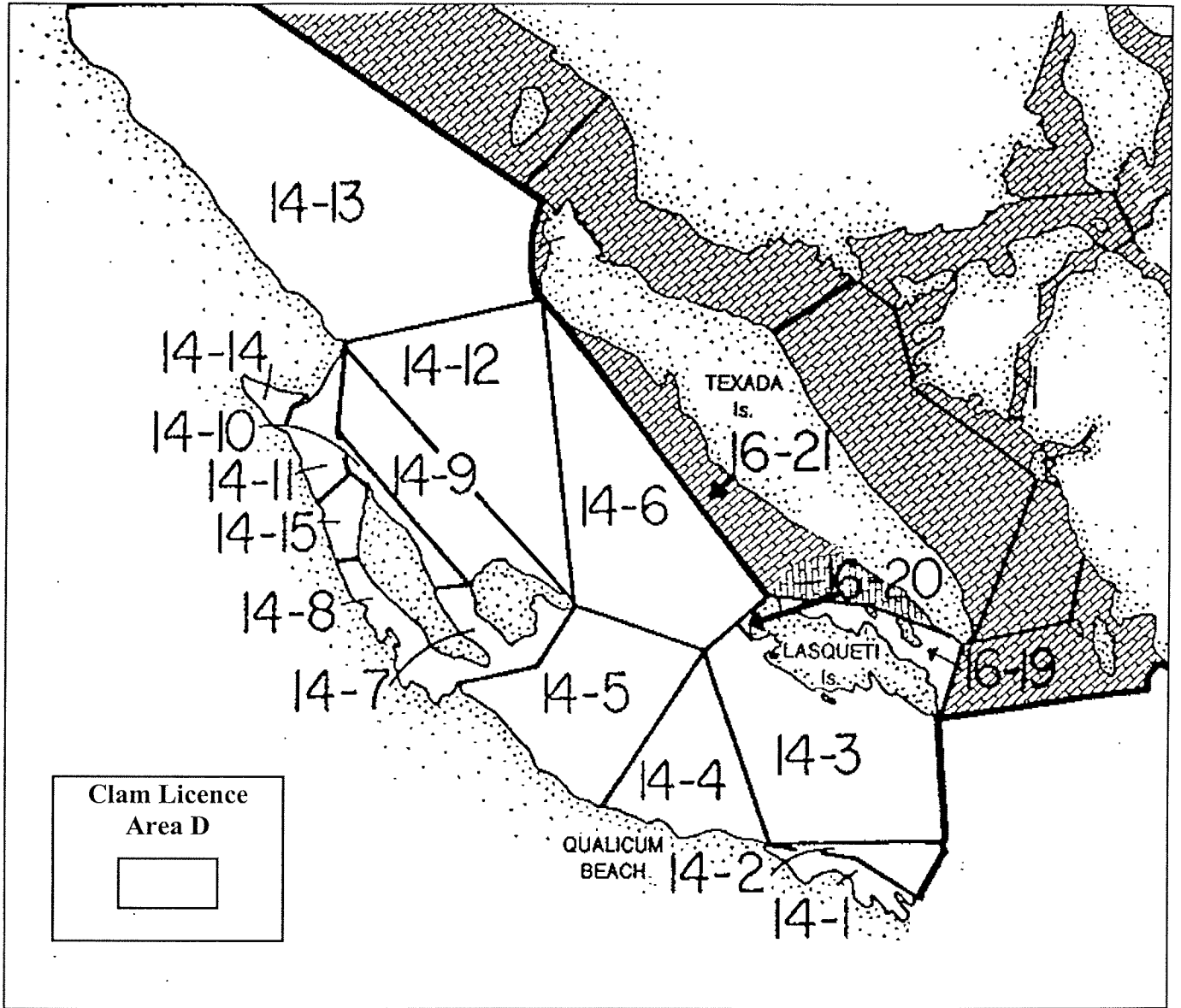


Figure 12. 1997 Clam Licence Area D, Upper Strait of Georgia: Area 14 (all Subareas) and Areas 16-19 and 16-20.

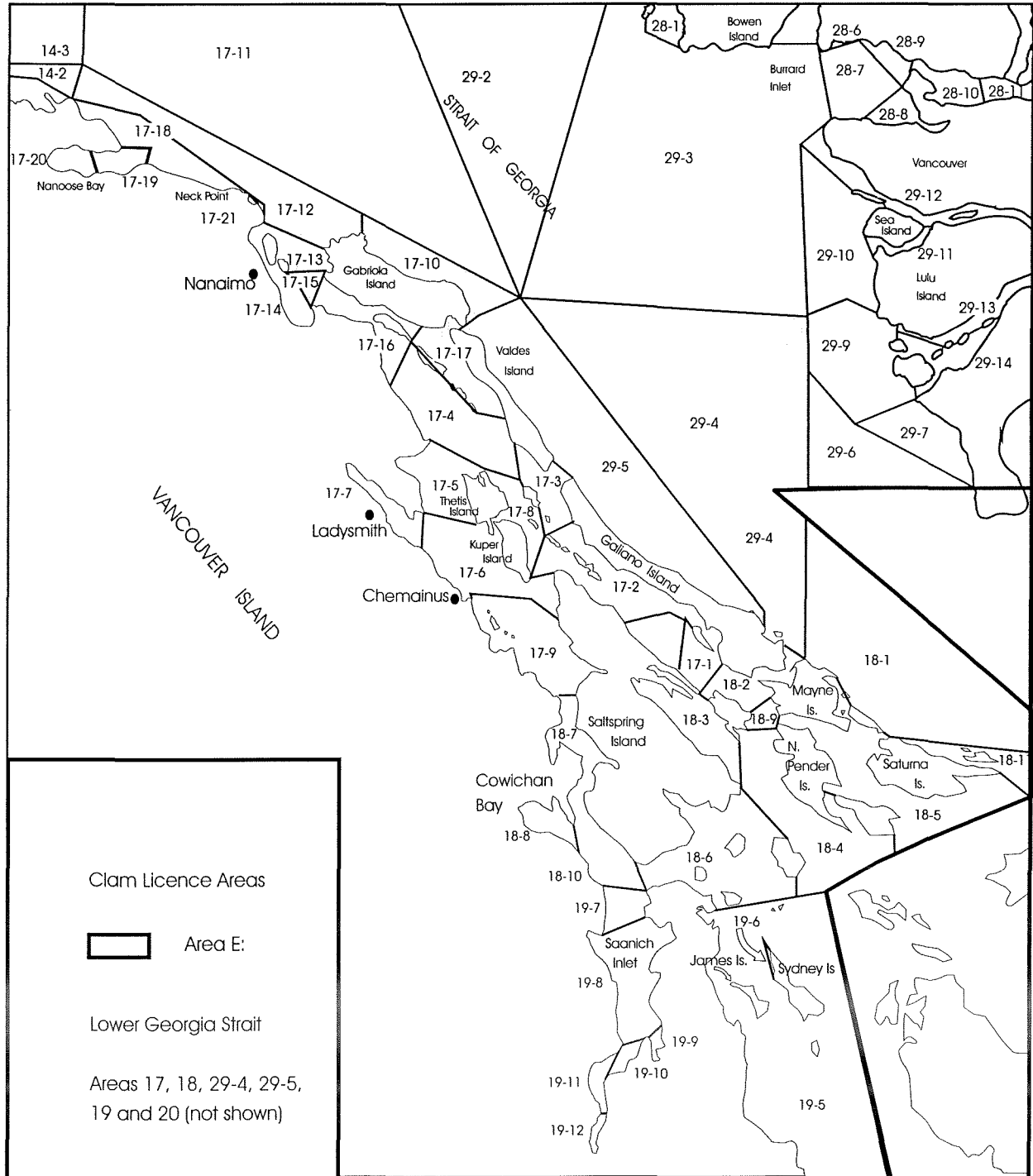


Figure 13. 1997 Clam Licence Area E: Lower Georgia Strait Areas 17, 18, 19 and 20 and Subareas 29-4 and 29-5.

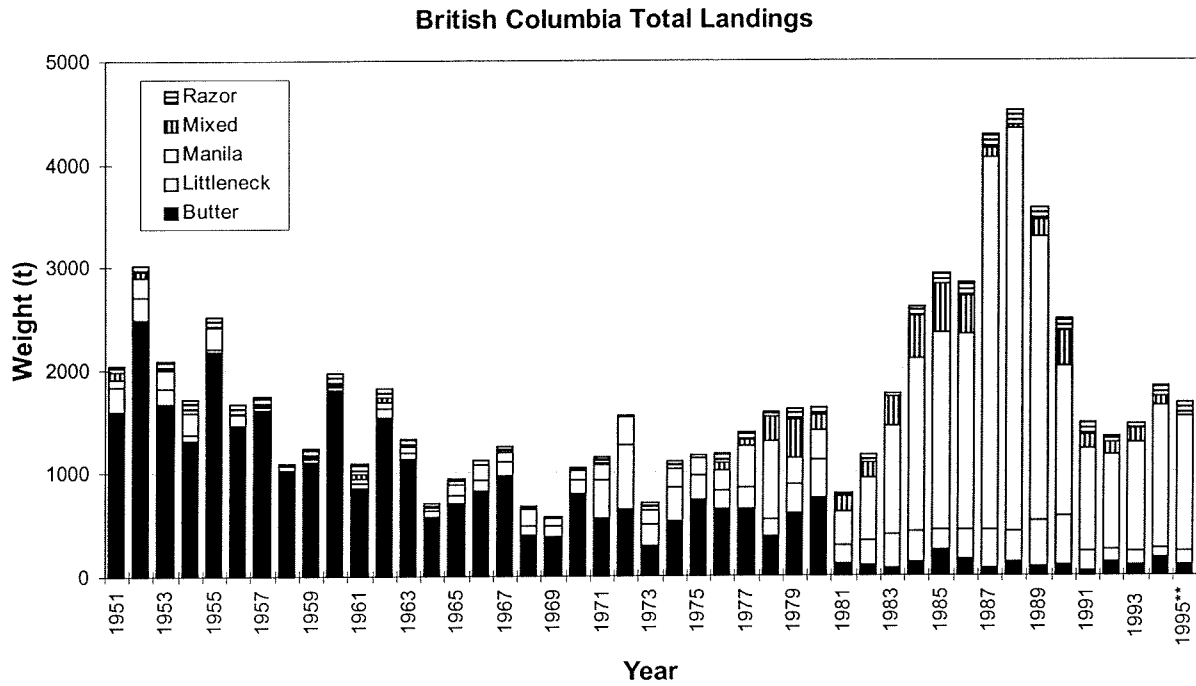


Figure 14. Landings (t) of intertidal clams from British Columbia, 1951 to 1995.

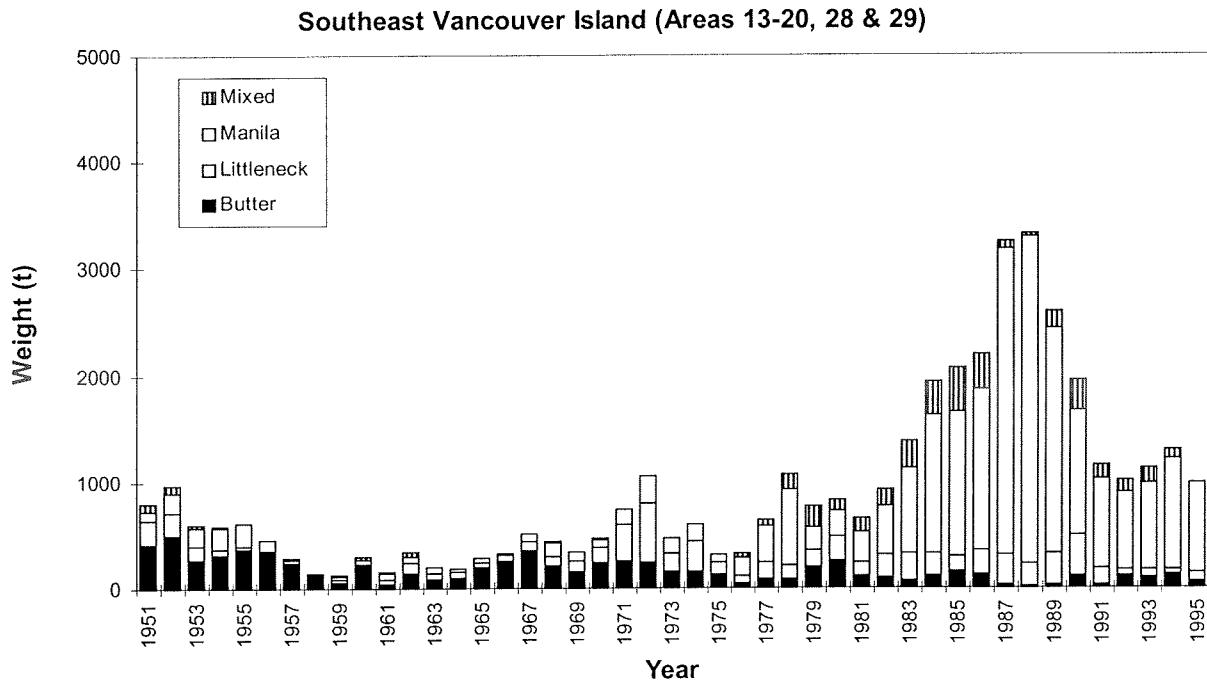


Figure 15. Landings (t) of intertidal clams from the southern inside waters of Vancouver Island and mainland British Columbia, Areas 13 to 20, 28 and 29, 1951 to 1995.

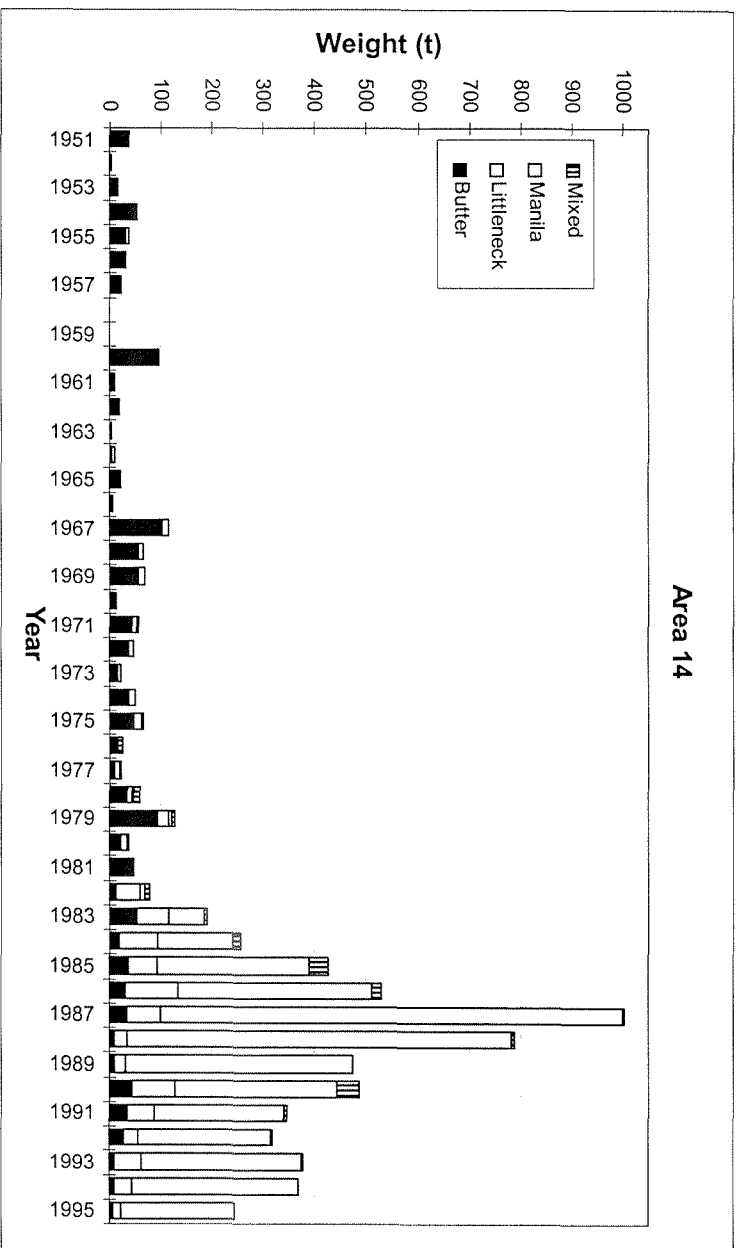
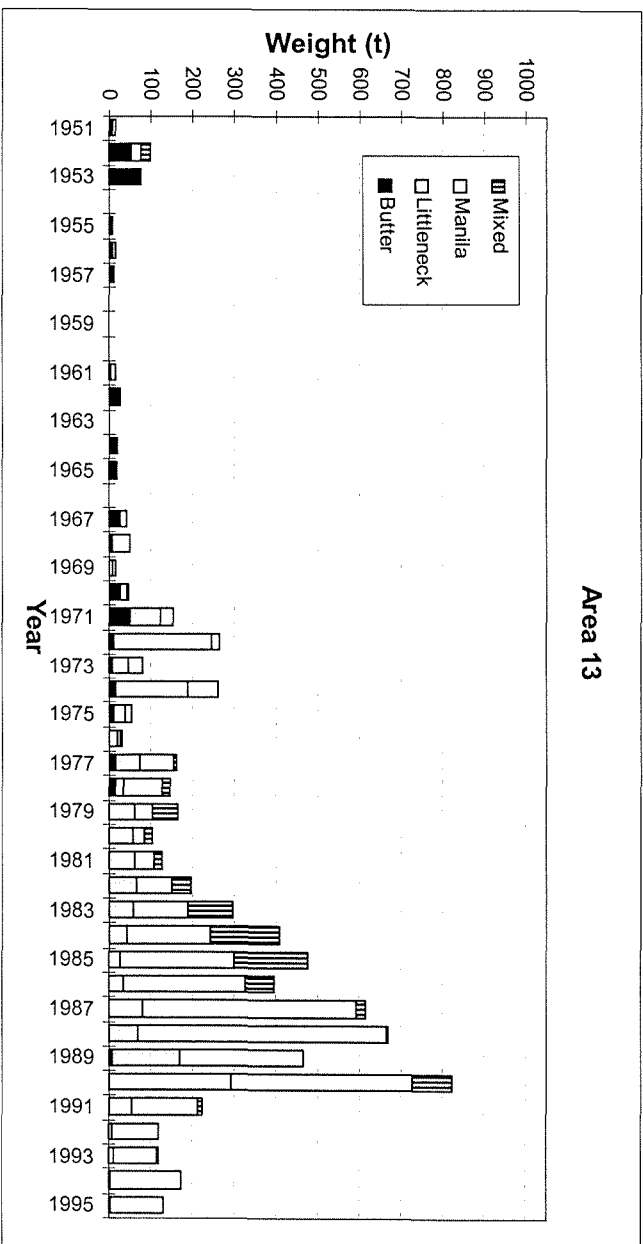


Figure 16. Landings (t) of intertidal clams, Areas 13 and 14, 1951 to 1995.

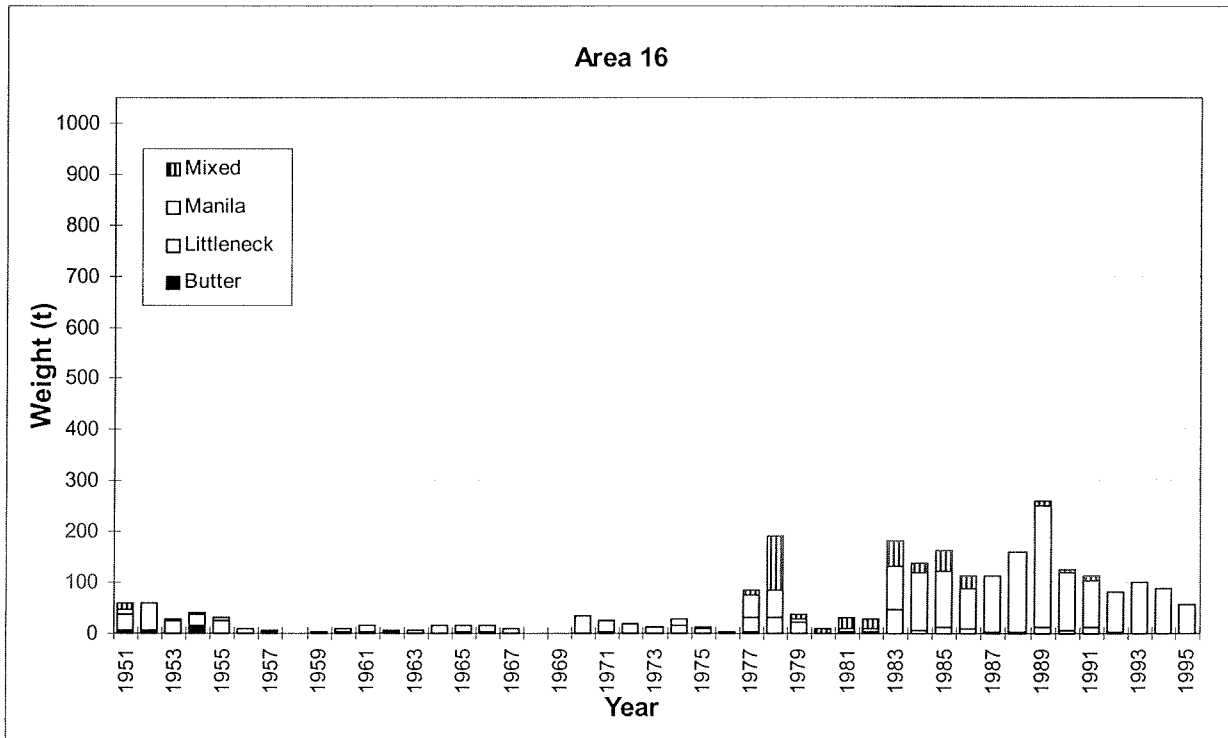
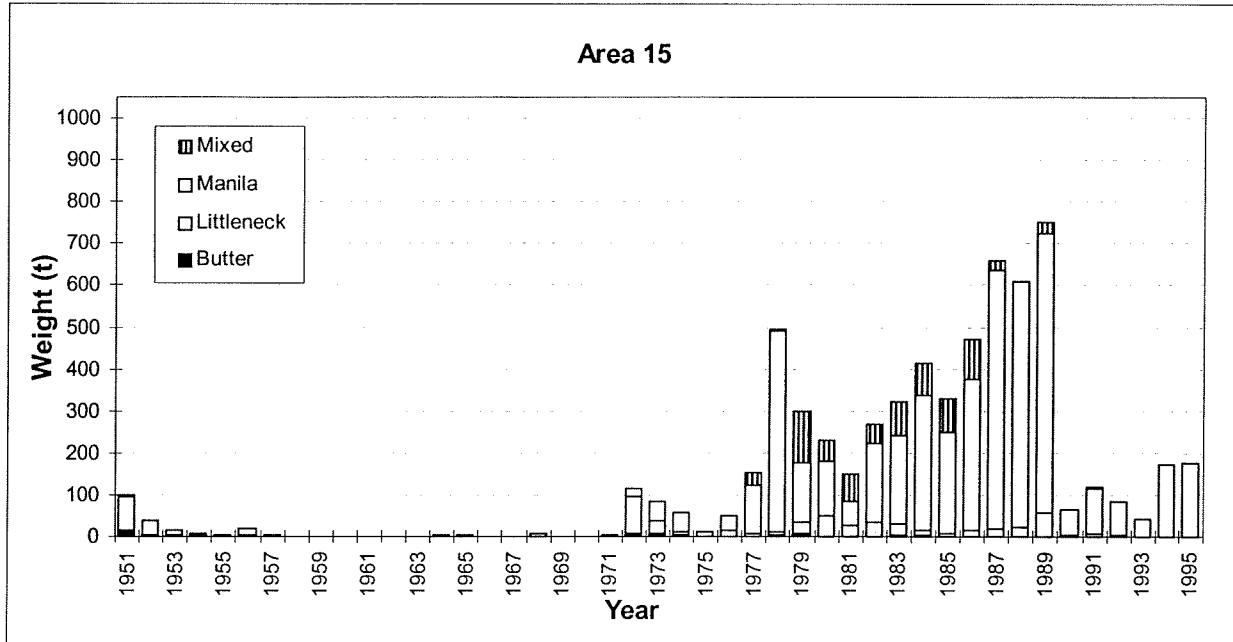


Figure 17. Landings (t) of intertidal clams, Areas 15 and 16, 1951 to 1995.

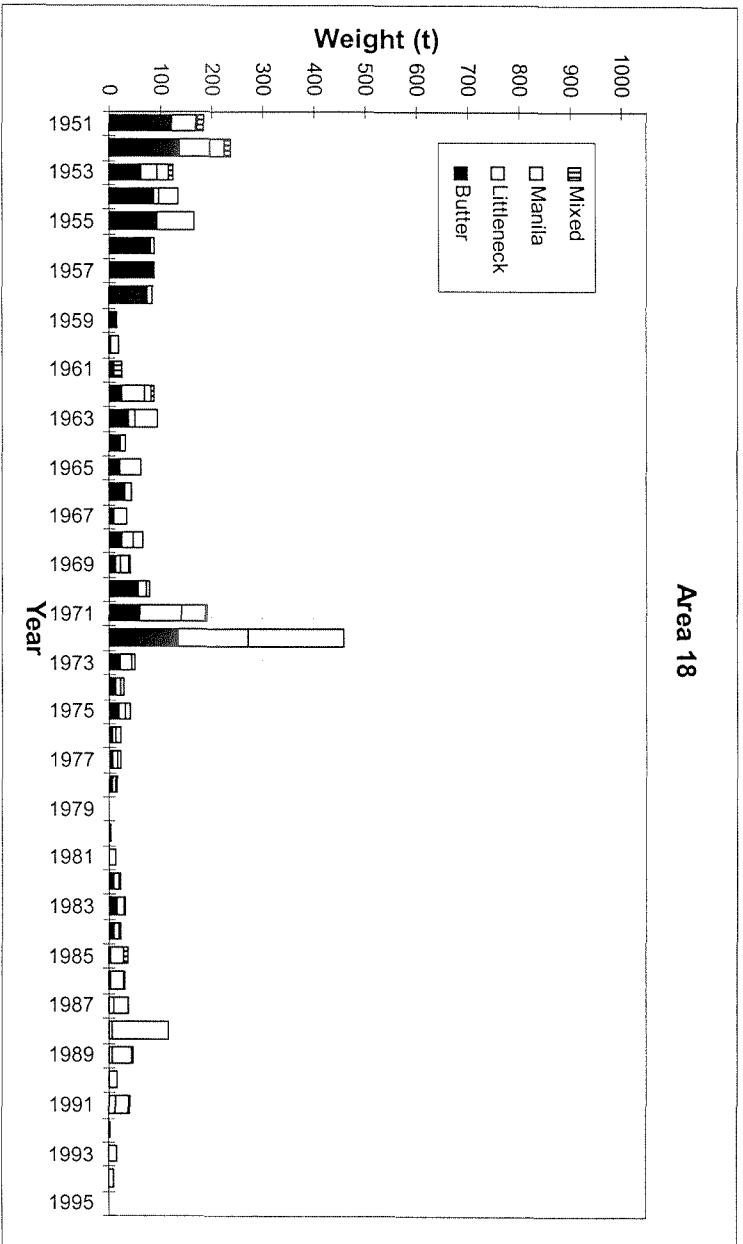
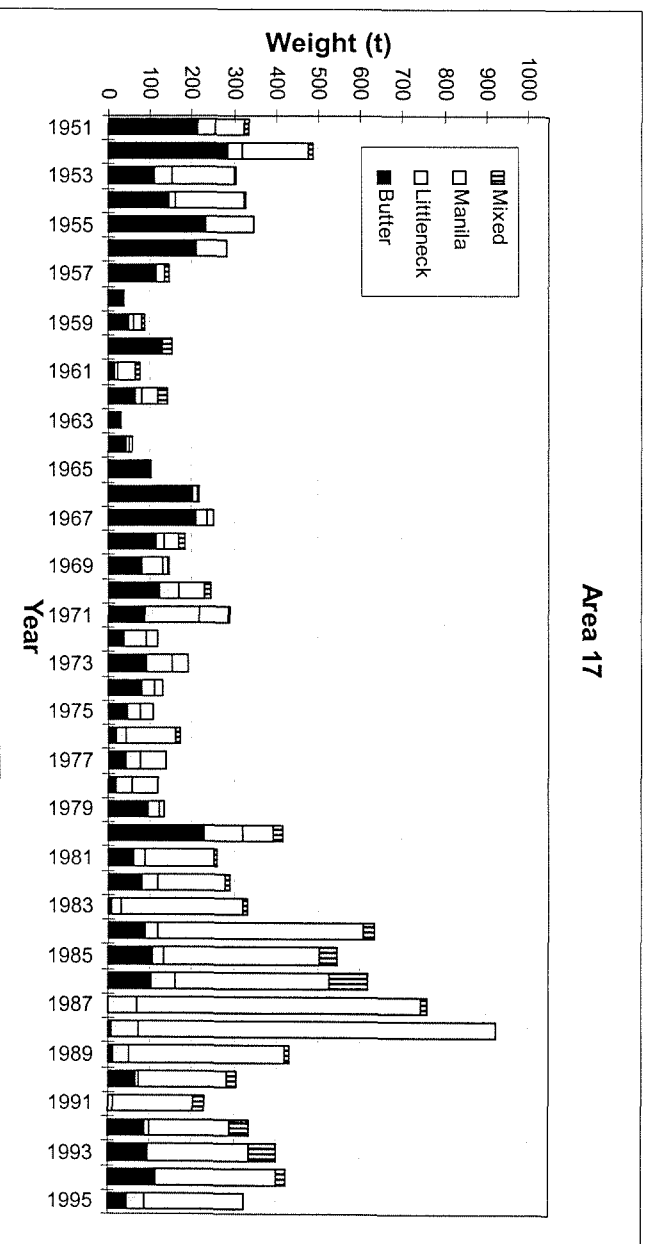


Figure 18. Landings (t) of intertidal clams, Areas 17 and 18, 1951 to 1995.

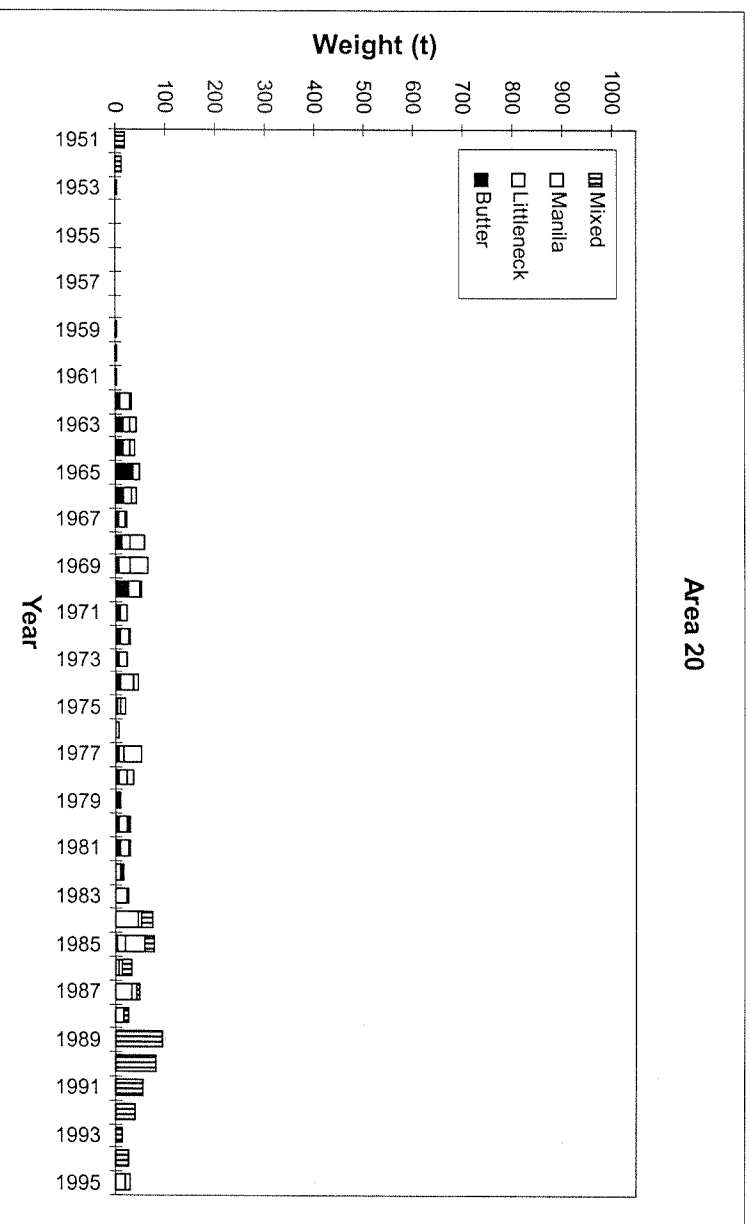
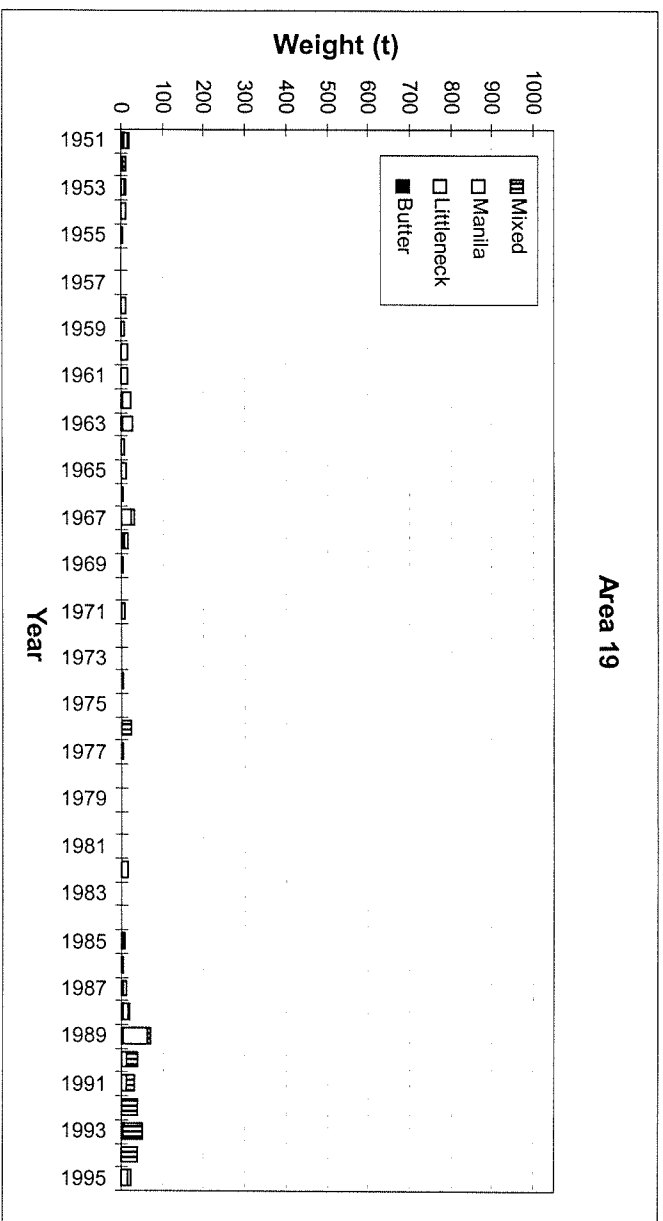


Figure 19. Landings (t) of intertidal clams, Areas 19 and 20, 1951 to 1995.

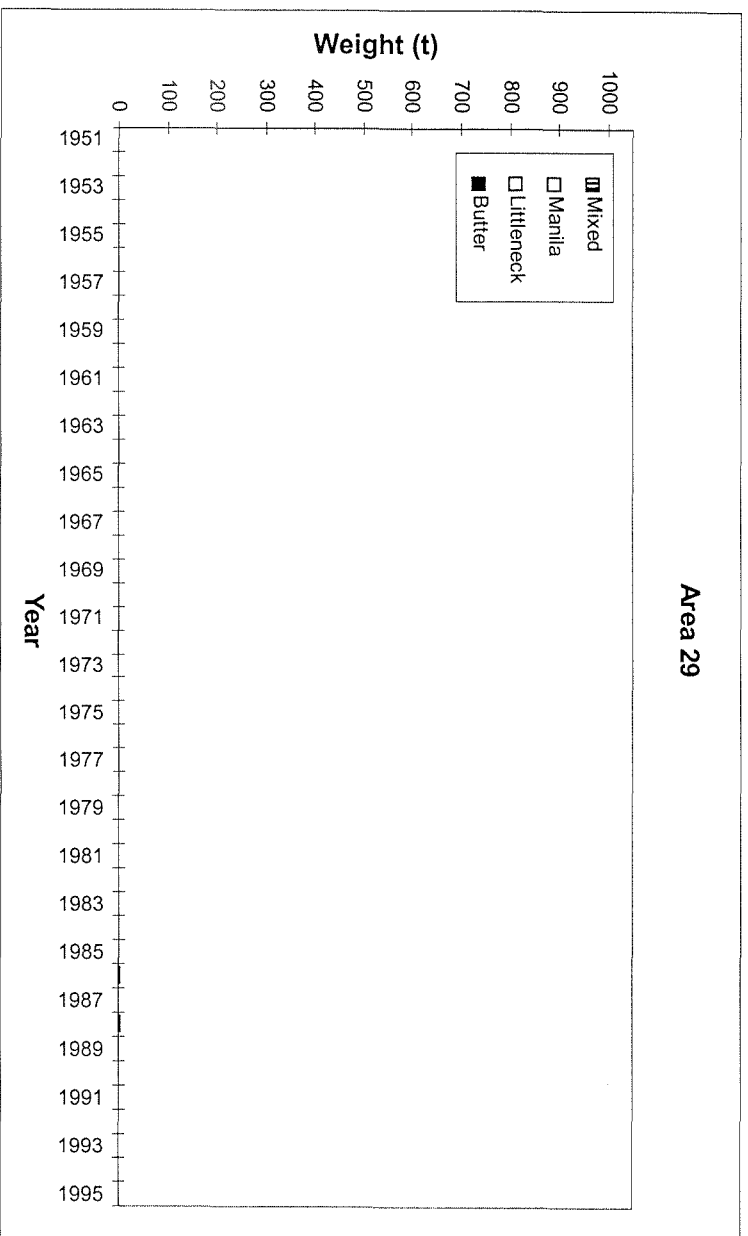
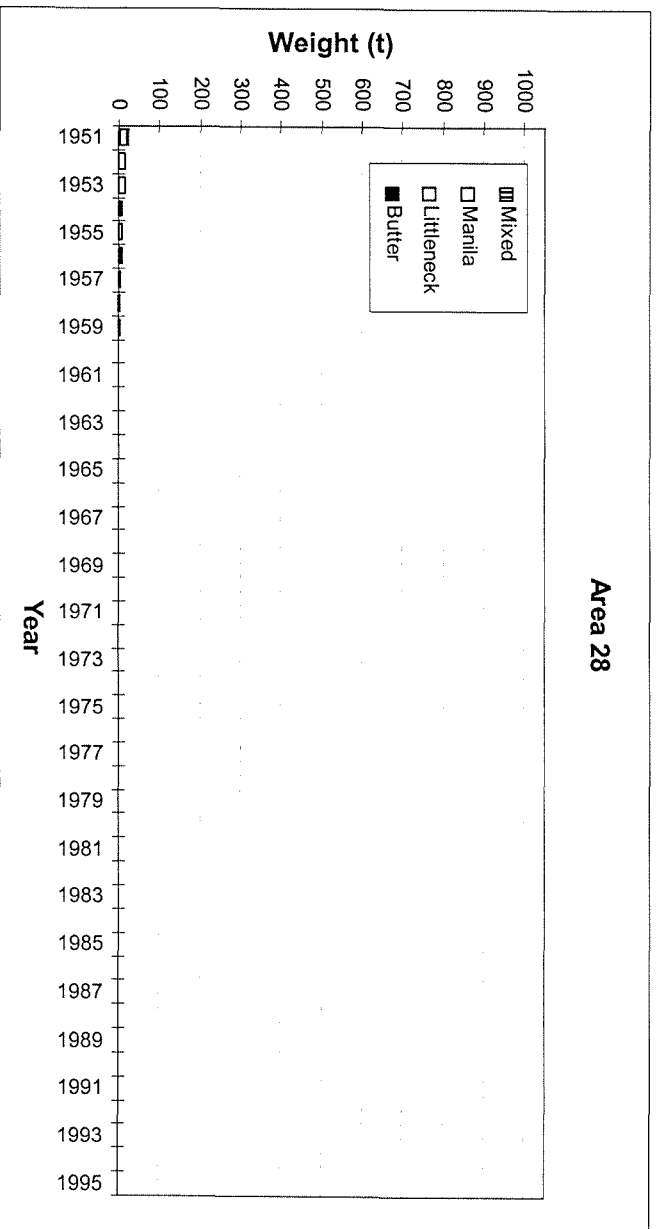


Figure 20. Landings (t) of intertidal clams, Areas 28 and 29, 1951 to 1995.

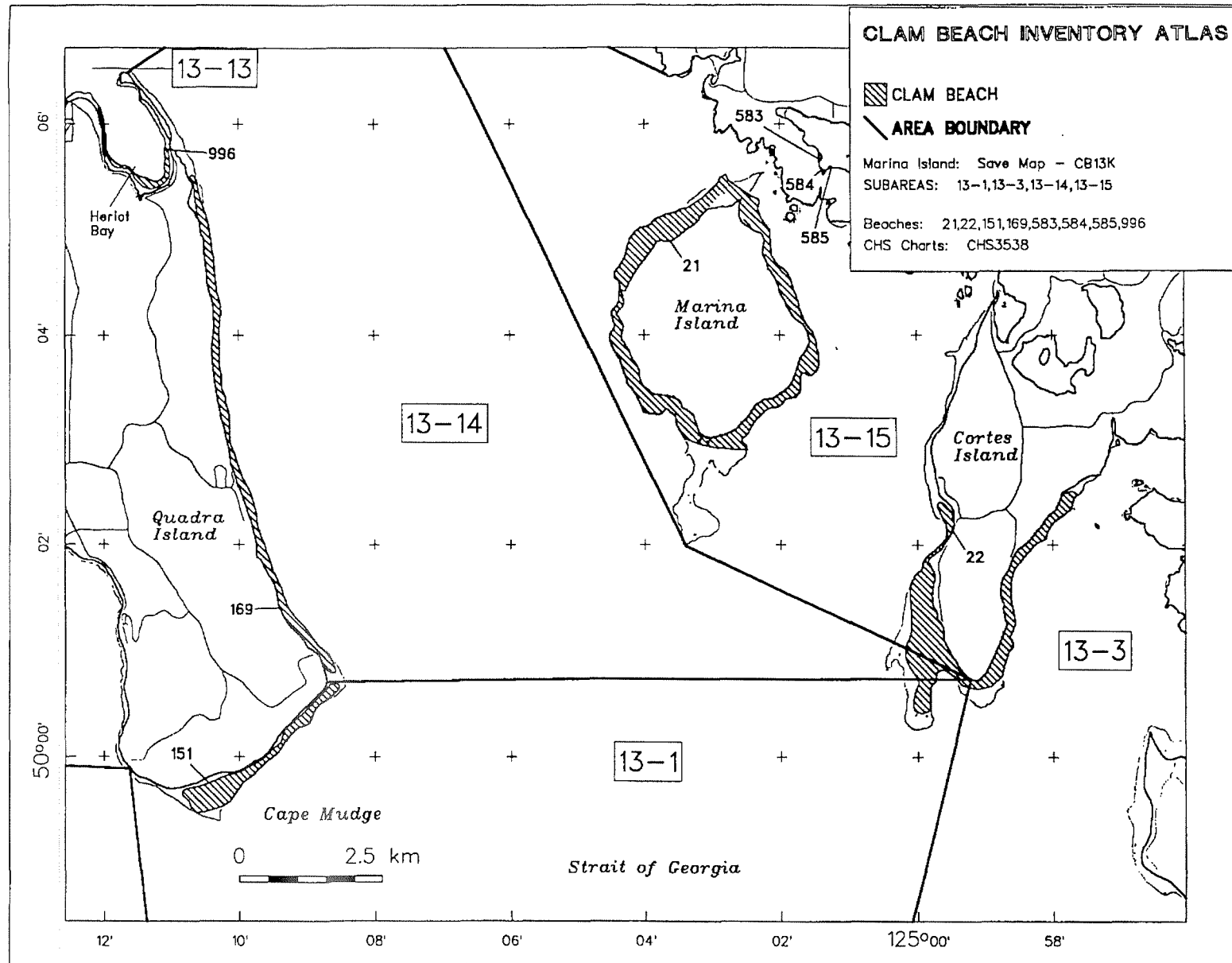
APPENDIX 1.
CLAM BEACH TABLES AND MAPS
AREAS 13 TO 20, 28 AND 29

Appendix Table 1.1. British Columbia Clam Beach Inventory, sorted by Subarea for Management Area 13.

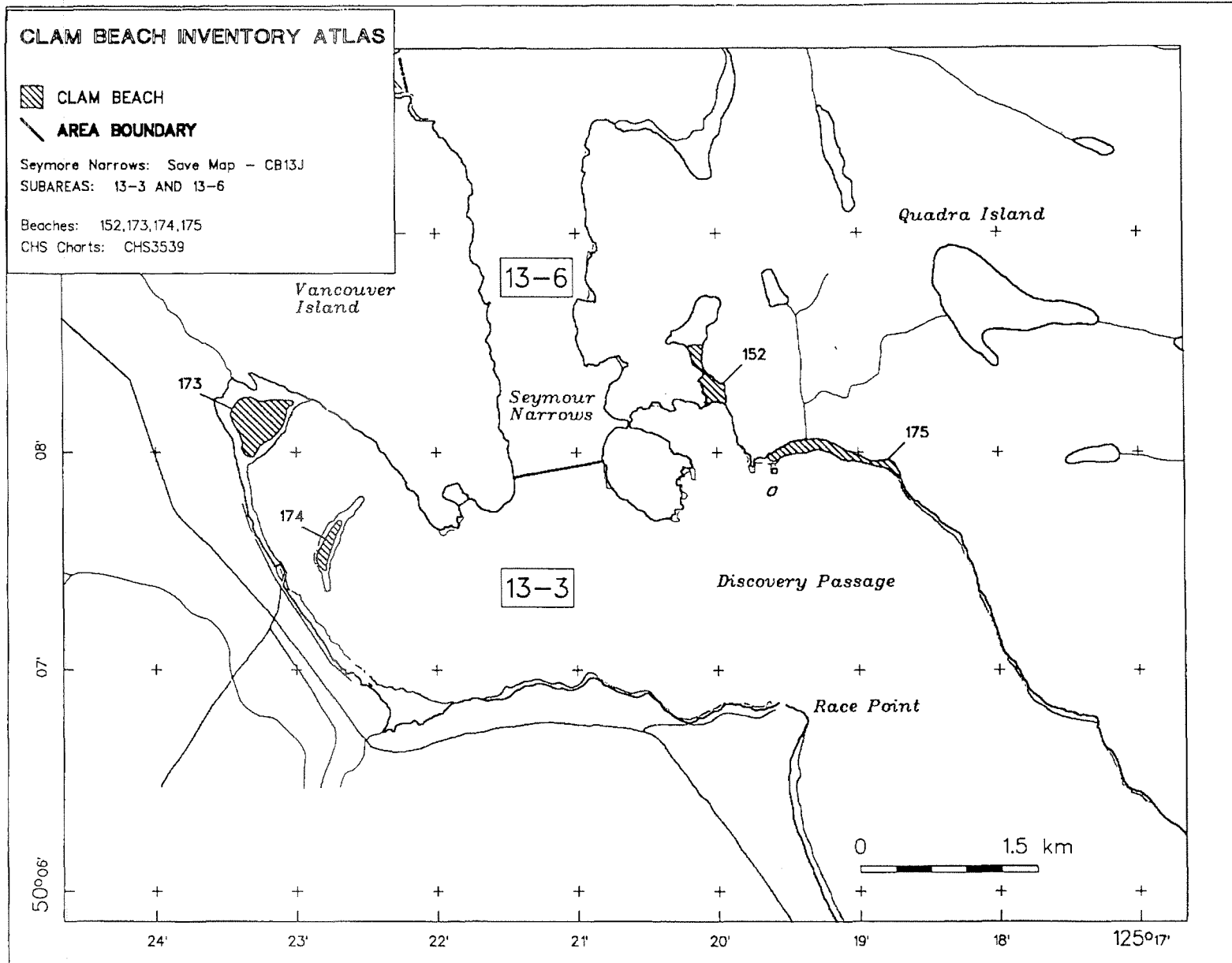
Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
13	1	151	Cape Mudge	70.79	
13	3	152	Mt. Lolo Bay	5.97	
13	3	173	Menzies Bay	16.03	
13	3	174	Menzies Bay	3.37	
13	3	175	Mt. Lolo Bay	9.10	
13	6	900	Harriot Island	7.07	
13	9	153	Otter Cove	2.97	
13	10	154	Chomat Point	20.22	
13	11	155	Granite Bay	11.95	
13	11	156	Bodega Point	5.32	
13	11	176	Small Inlet	21.21	
13	11	731	Kanish Bay	1.99	
13	12	84	Whiterock Passage	4.99	
13	12	157	King Islets (Hoskyn Channel)	3.69	
13	12	158	Waiatt Bay (N)	1.61	
13	12	159	Village Bay	3.06	
13	12	160	Village Bay	2.02	
13	12	161	Hjorth Bay	3.31	
13	12	162	Owen Bay	11.21	
13	12	163	Waiatt Bay (N)	3.73	
13	12	164	Waiatt Bay	1.86	
13	12	165	Waiatt Bay	1.20	
13	12	166	Octopus Island	7.63	
13	12	869	Crescent Channel, A	1.15	
13	12	870	Crescent Channel, B	0.80	
13	12	871	Crescent Channel, C	1.57	
13	13	167	Open Bay	2.36	
13	13	168	Open Bay	6.11	
13	13	612	Hyacinthe Bay	2.01	
13	13	613	Hyacinthe Bay	0.58	
13	13	614	Hyacinthe Bay	0.56	
13	13	996	Drew Harbour	190.72	
13	14	169	Rebecca Spit to Francisco Pt	116.99	
13	15	21	Marina Island	279.68	
13	15	22	Sutil Point	212.82	
13	15	583	Gorge Harbour	0.67	
13	15	584	Gorge Harbour	0.44	
13	15	585	Gorge Harbour	0.16	
13	16	85	Burdwood Bay	19.37	
13	16	86	Coulter Bay	10.55	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
13	16	87	Carrington Bay	1.39	
13	16	88	Plunger Pass	3.92	
13	16	89	Subtle Island	0.93	
13	17	170	Penn Island	1.65	
13	17	529	Robertson Lake	1.29	
13	17	530	Evans Bay (Head)	10.54	
13	17	586	Von Donop Inlet	2.72	
13	17	587	Von Donop Inlet	1.52	
13	17	588	Von Donop Inlet	0.25	
13	17	589	Von Donop Inlet	0.26	
13	17	590	Von Donop Inlet	6.48	
13	17	591	Von Donop Inlet	3.35	
13	17	592	Von Donop Inlet	1.03	
13	17	593	Von Donop Inlet	10.48	
13	17	713	Evans Bay	7.27	
13	17	730	Bird Cove	16.28	
13	18	604	Rendezvous Island	2.36	
13	18	605	Rendezvous Island	1.12	
13	18	606	Rendezvous Island	2.01	
13	18	607	Rendezvous Island	3.28	
13	18	608	Rendezvous Island	1.90	
13	18	609	Rendezvous Island	2.50	
13	18	610	Rendezvous Island	1.04	
13	22	150	Bute Inlet, Head	161.24	
13	23	611	Big Bay	0.53	
13	25	177	Charles Bay	14.25	
13	25	178	Bickley Bay	5.10	
13	26	171	Cameleon Harbour	41.95	
13	26	172	Thurston Bay	4.32	
13	26	180	Hemming Bay	1.50	
13	26	181	Hemming Bay	2.22	
13	26	182	Hemming Bay	2.24	
13	26	732	Hemming Bay	0.60	
13	28	863	Turn Island, A	1.27	
13	28	864	Turn Island (NW), B	4.89	
13	28	865	Walkem Islands, A	5.65	
13	28	866	Walkem Islands (NW), B	6.37	
13	29	183	Knox Bay	11.91	
13	32	184	Vere Cove	2.10	
13	33	531	Kelsey Bay	12.68	
13	33	532	Kelsey Bay	12.81	
13	37	179	Jackson Point	1.04	
13	37	185	Haswell Point	34.78	
13	37	186	Topaze Harbour	28.94	

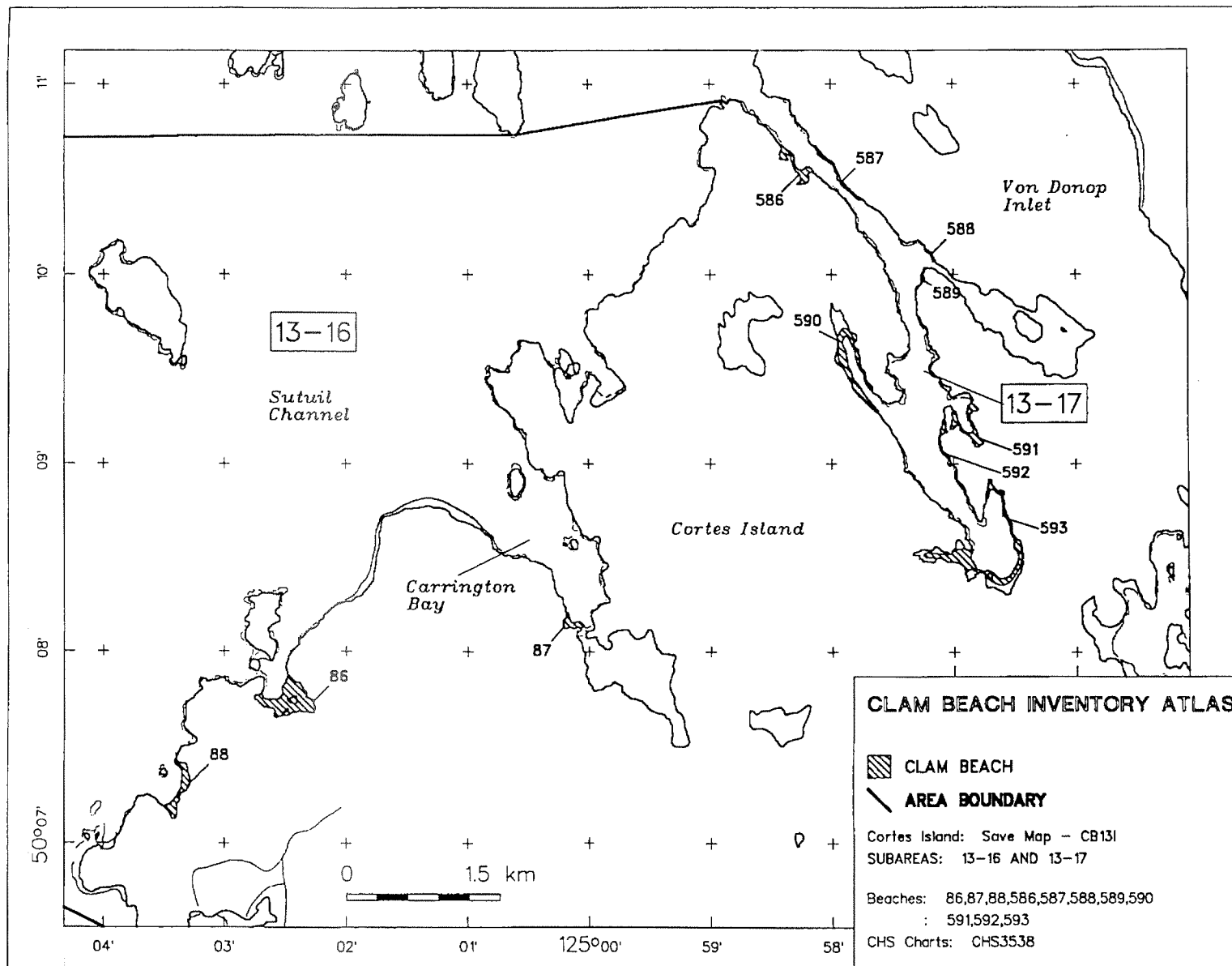
Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
13	37	745	Jackson Bay	54.39	
13	38	187	Douglas Bay	2.05	
13	38	188	Forward Harbour	16.11	
13	43	189	Mcbride Bay	52.18	
13	43	190	Mcbride Bay	15.59	
13	43	191	Frazer Bay	23.78	
<i>Total Beaches:</i>		90	<i>Total Beach Area:</i>	1670.90	



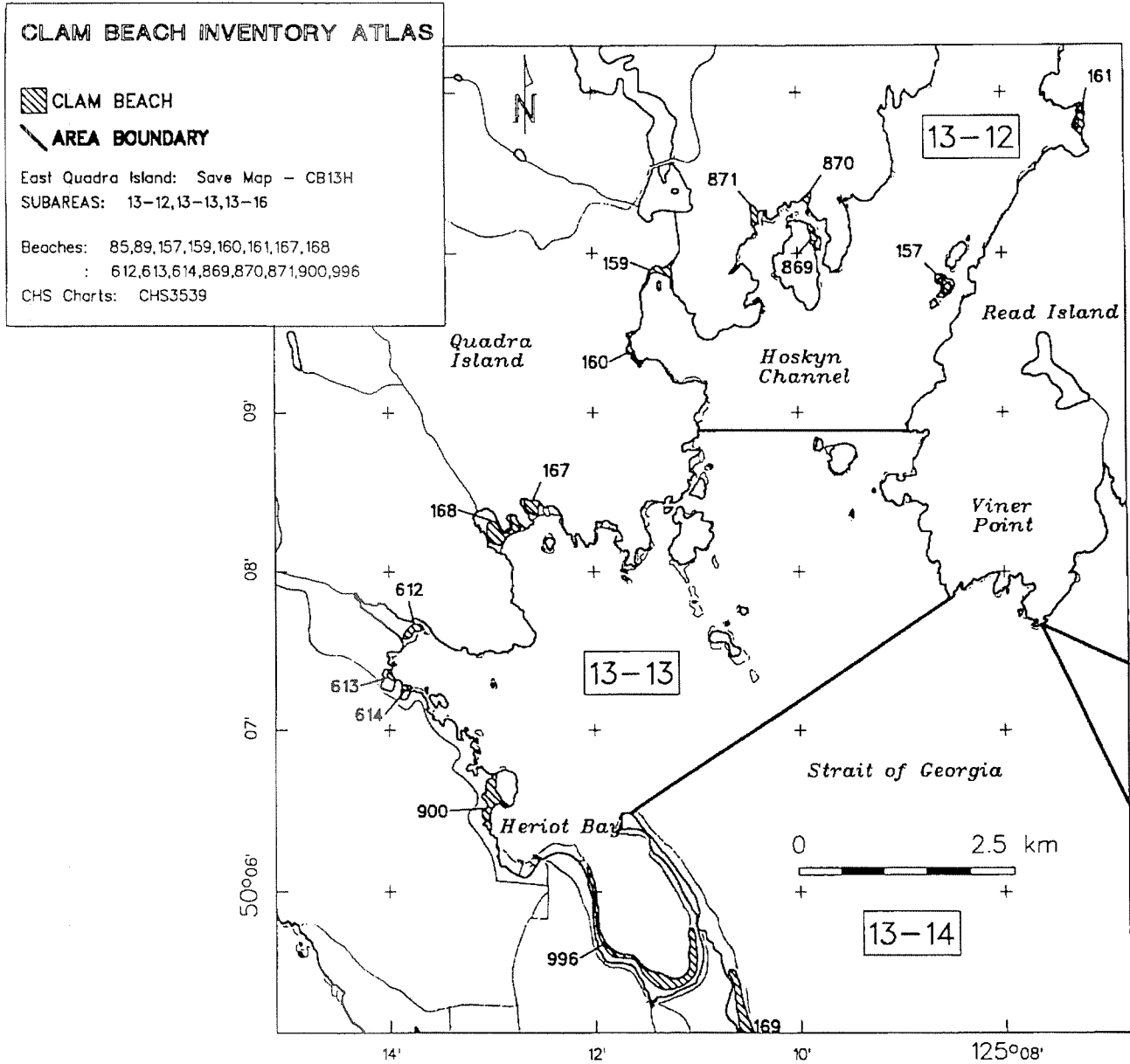
Appendix Figure 1.1.1.



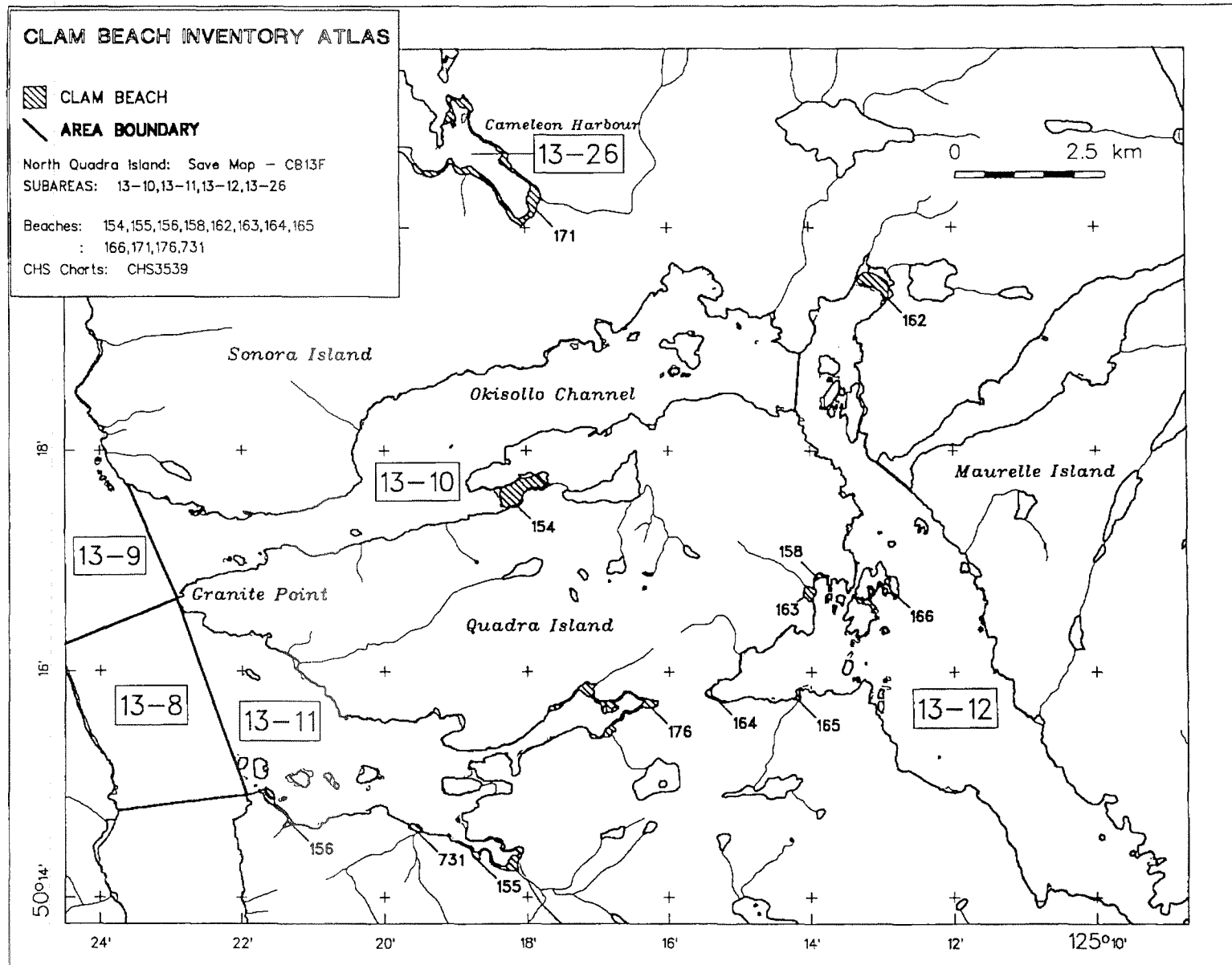
Appendix Figure 1.1.2.



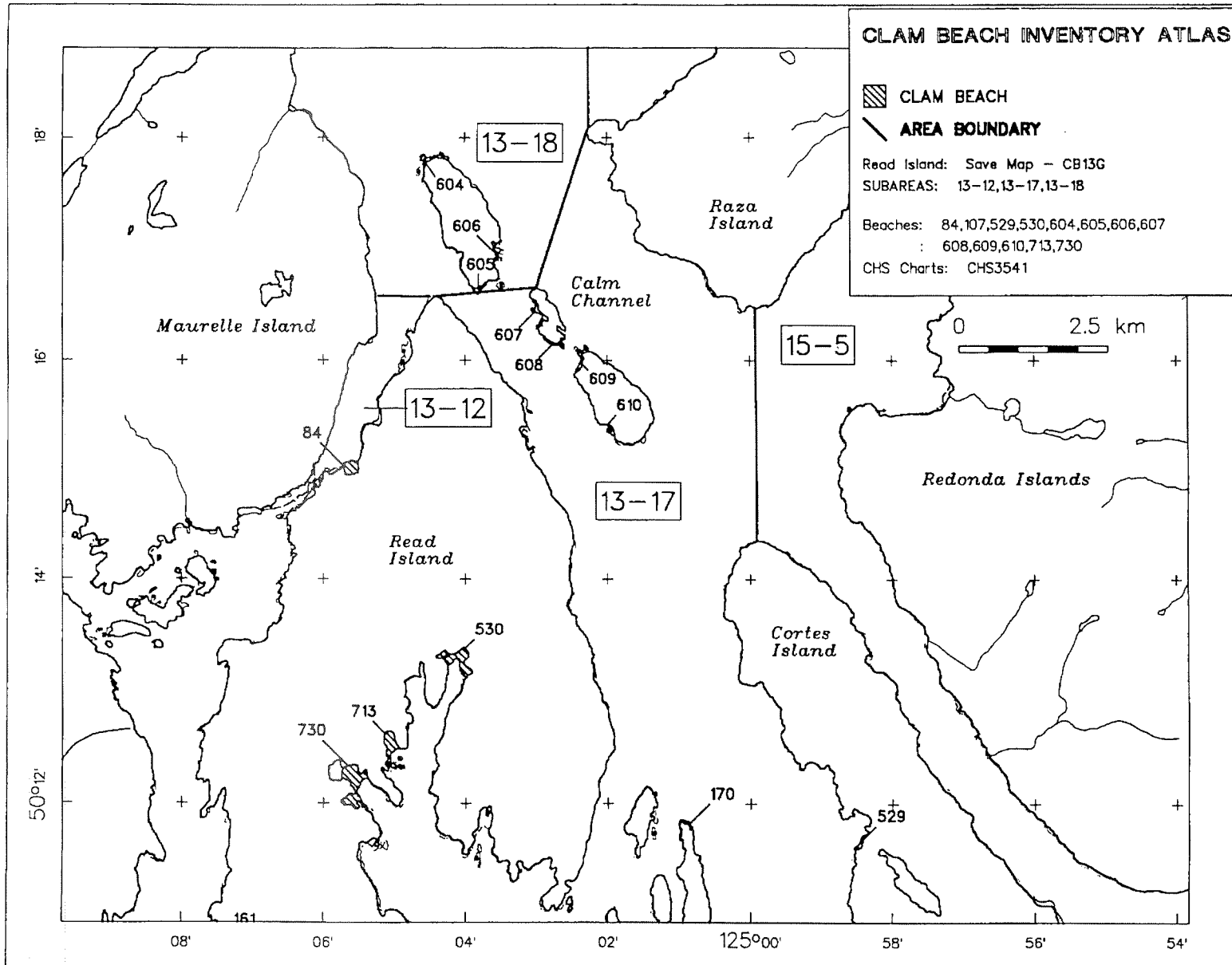
Appendix Figure 1.1.3.



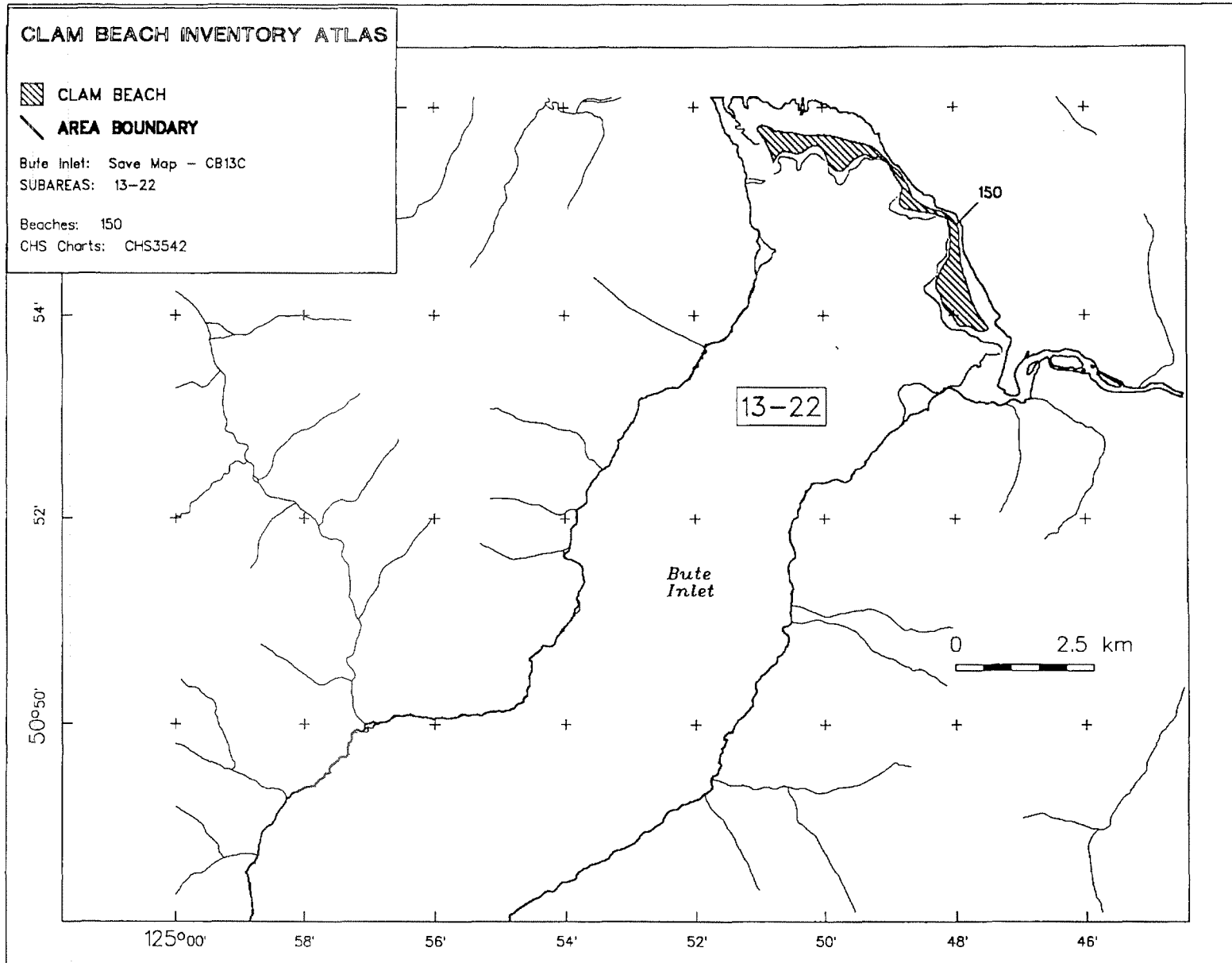
Appendix Figure 1.1.4.



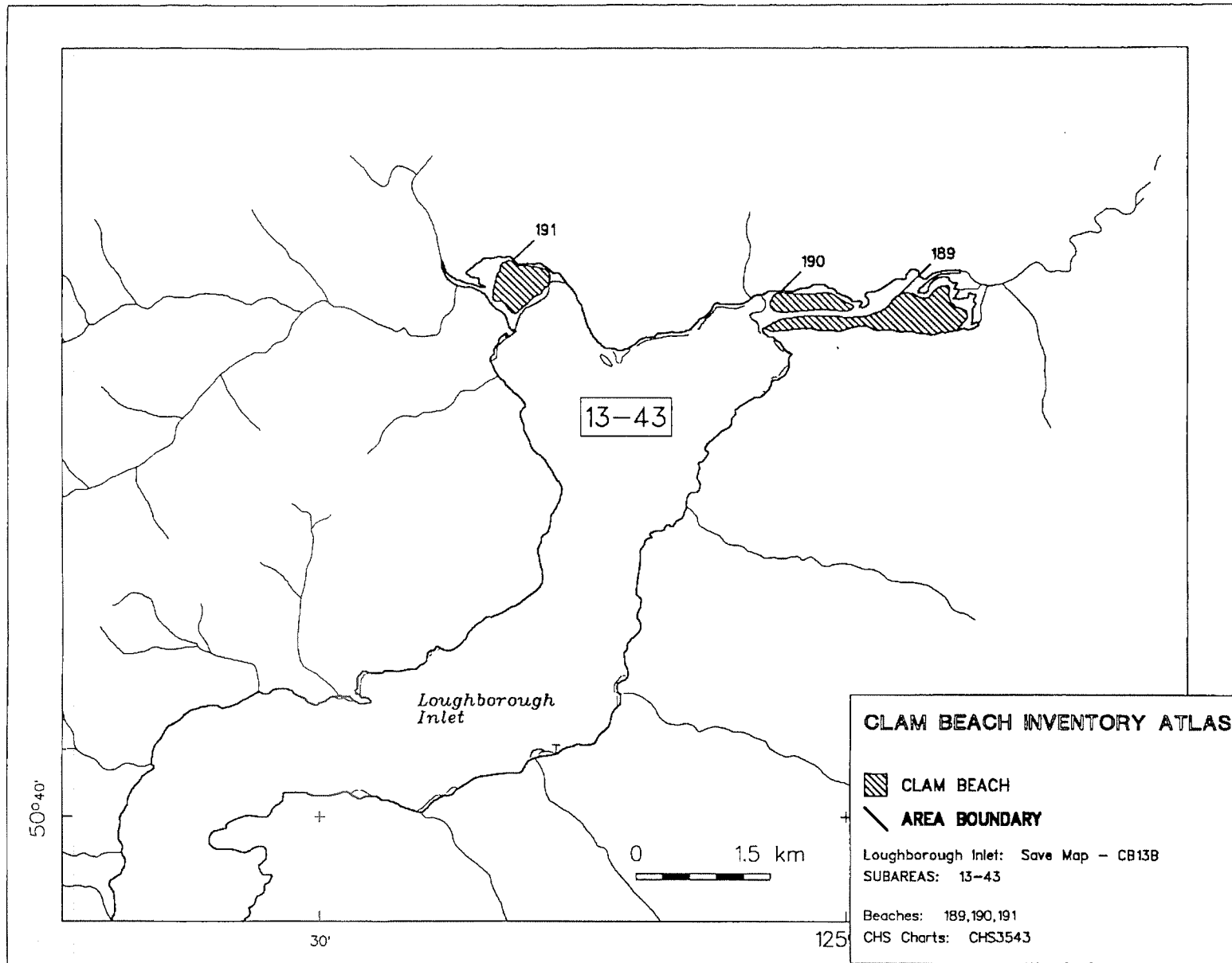
Appendix Figure 1.1.5.



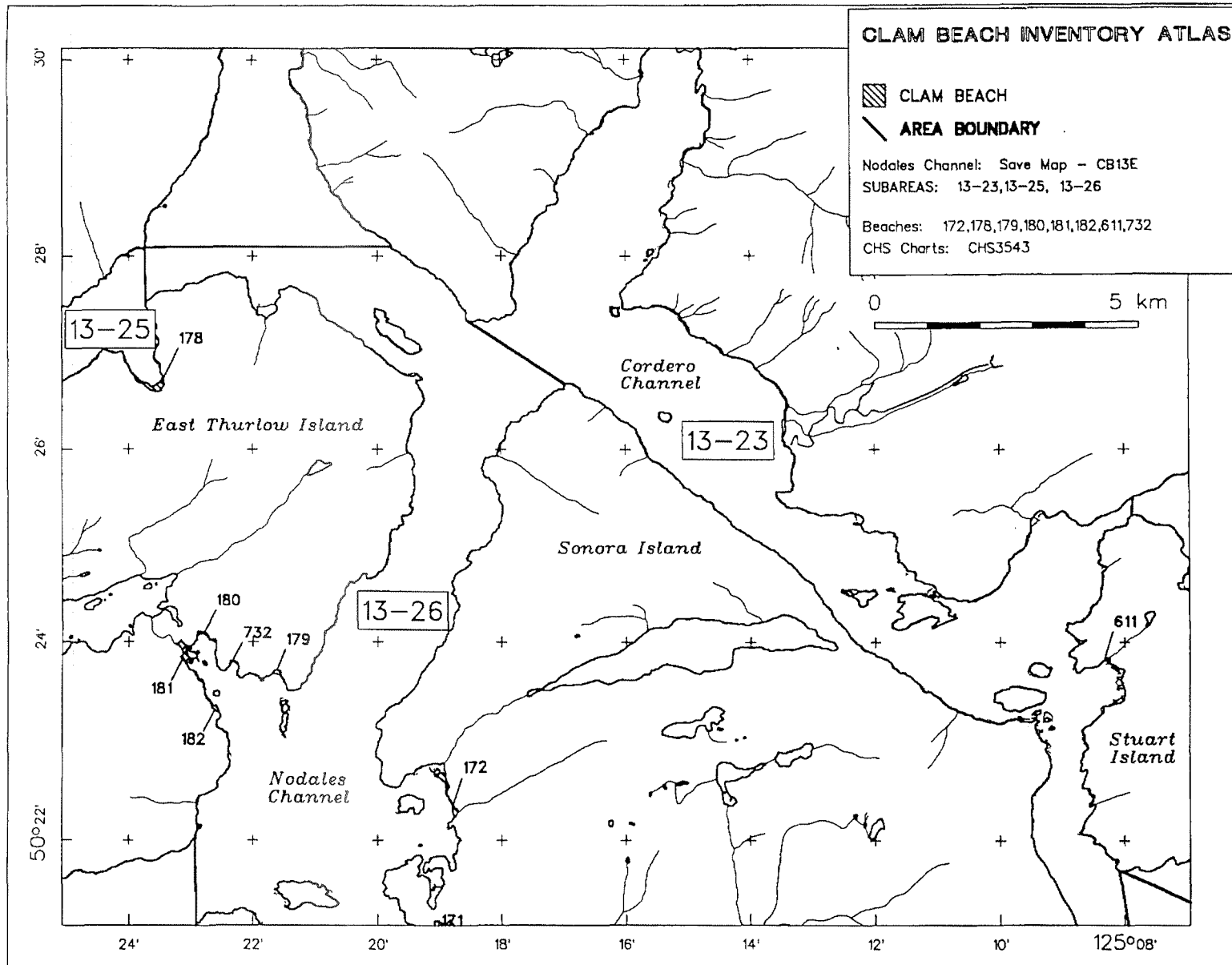
Appendix Figure 1.1.6.



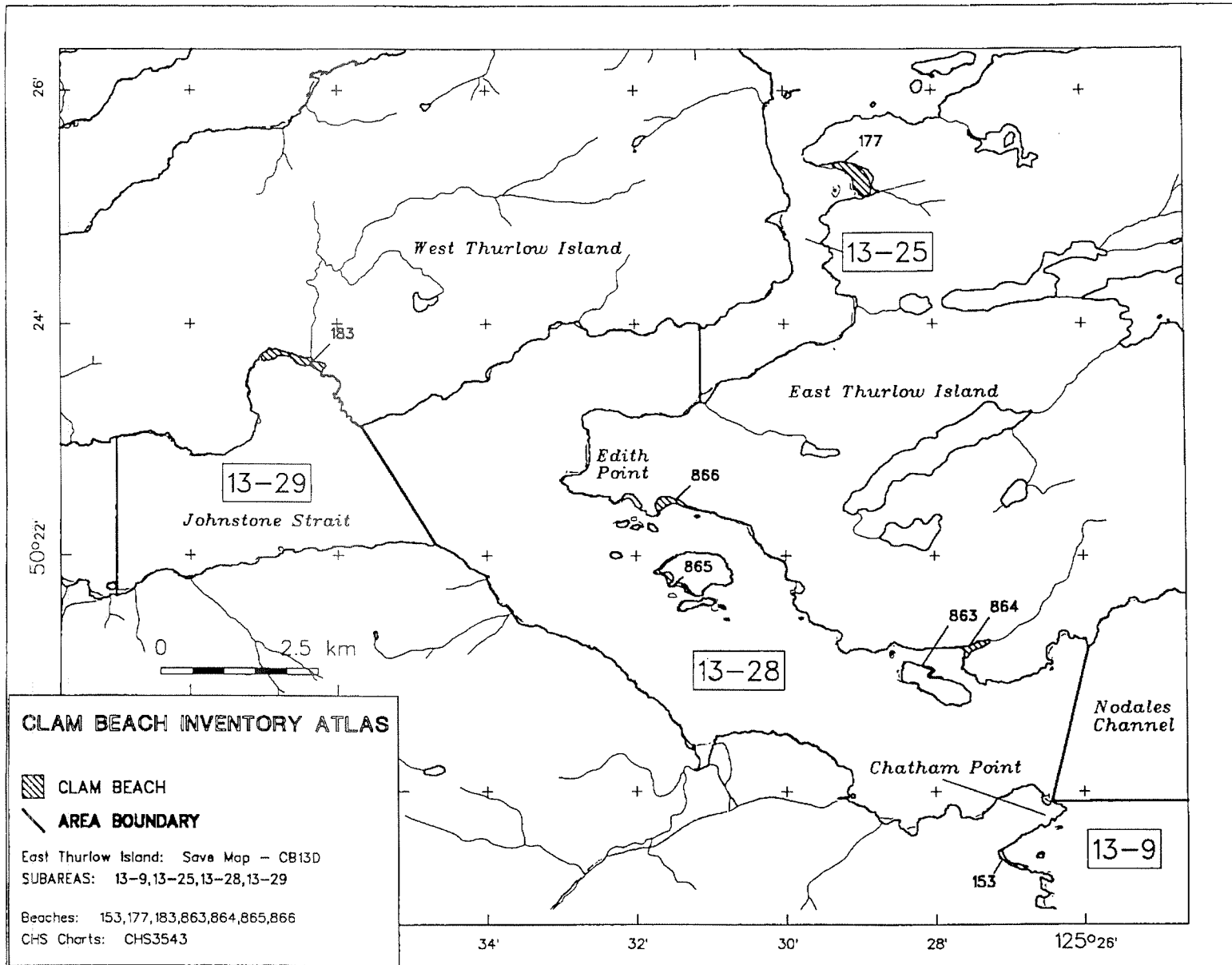
Appendix Figure 1.1.7.



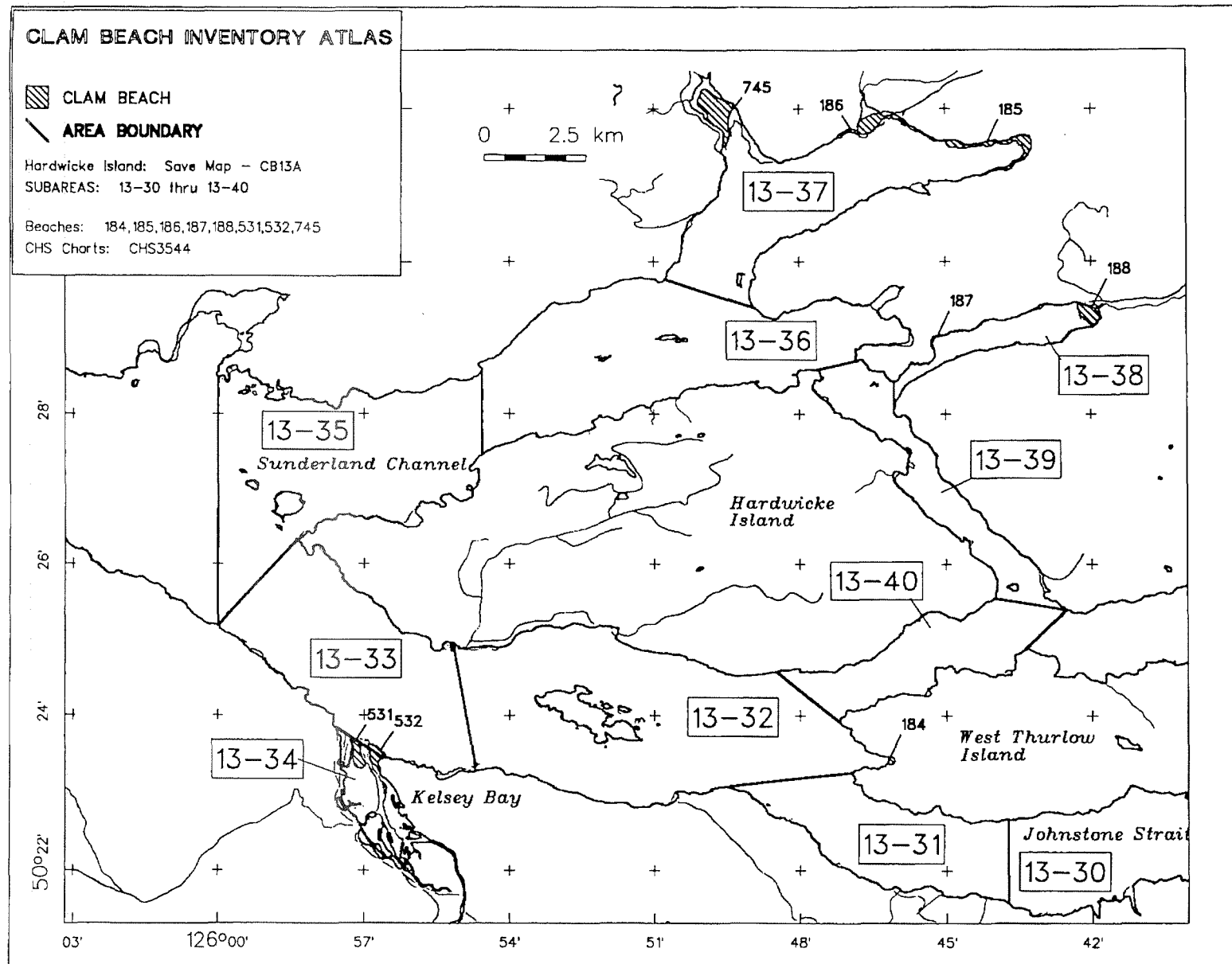
Appendix Figure 1.1.8.



Appendix Figure 1.1.9.



Appendix Figure 1.1.10.

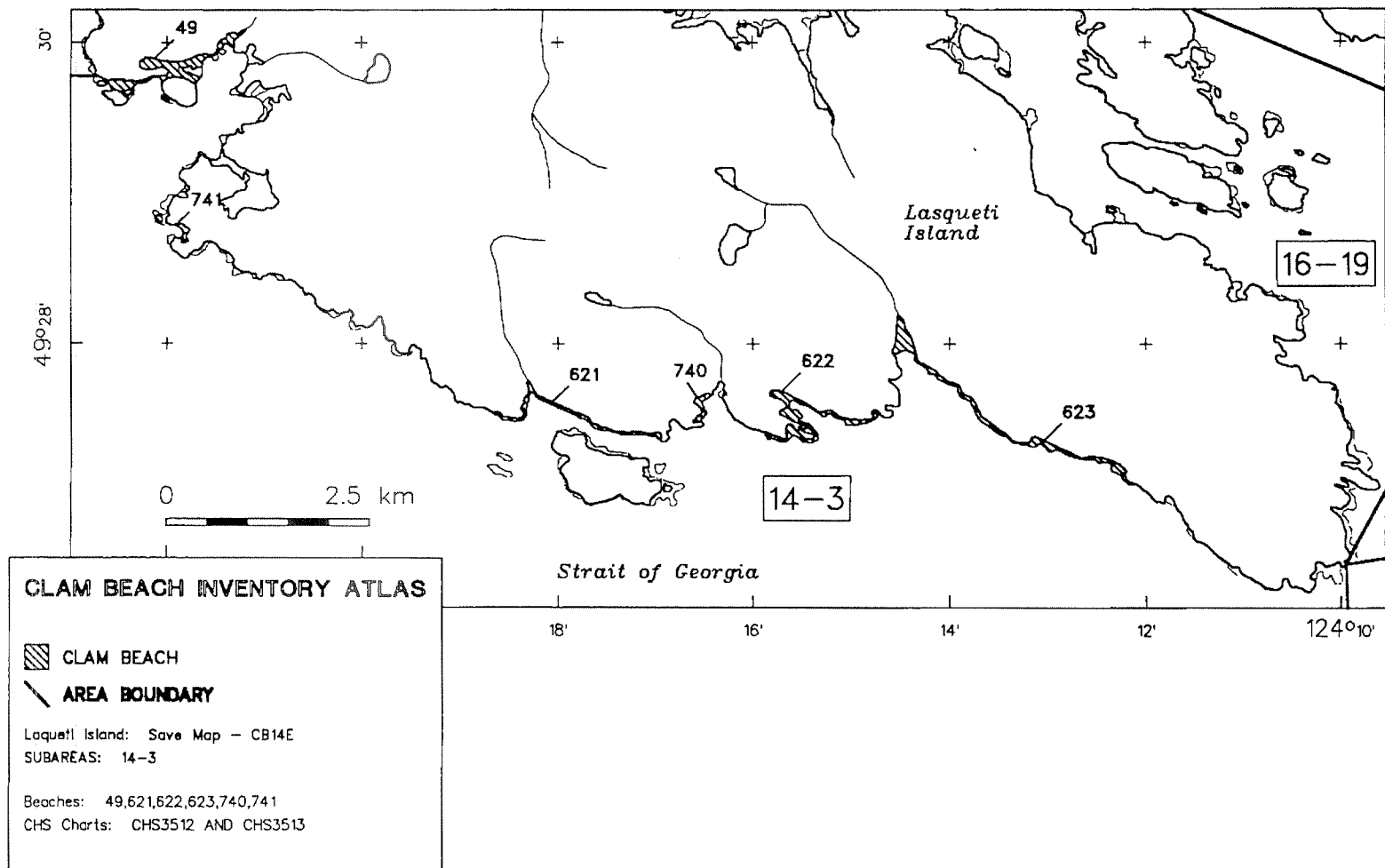


Appendix Figure 1.1.11.

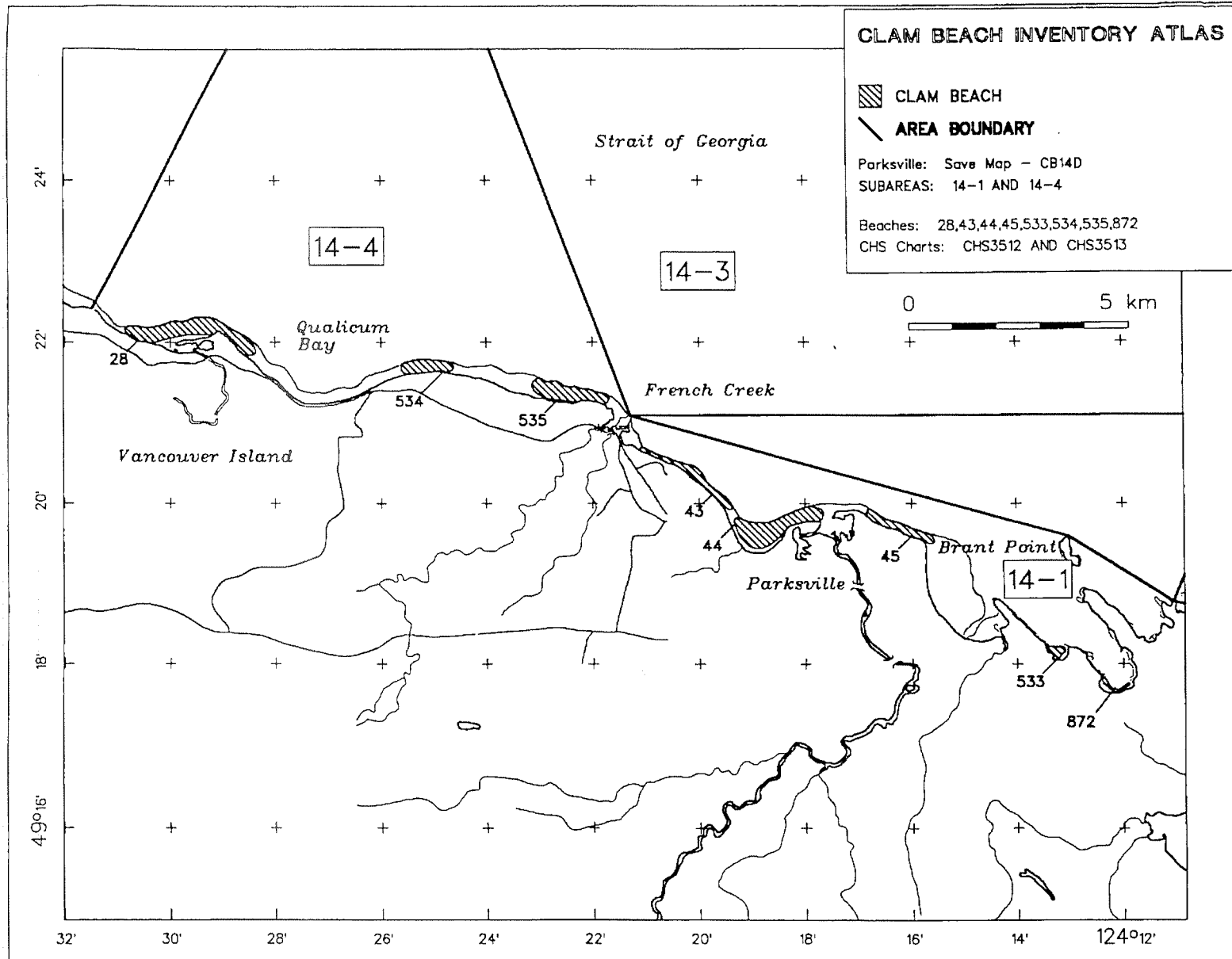
Appendix Table 1.2. British Columbia Clam Beach Inventory, sorted by Subarea for Management Area 14.

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
14	1	44	Parksville Bay	83.78	
14	1	45	Brant Point	29.60	
14	1	533	Wall Beach	8.03	
14	1	872	Northwest Bay	4.36	
14	3	49	False Bay	21.02	
14	3	621	Lasqueti Island (S)	10.24	
14	3	622	Lasqueti Island (S)	17.44	
14	3	623	Lasqueti Island (S)	23.07	
14	3	740	Richardson Cove	2.86	
14	3	741	Prowse Point Area	1.74	
14	4	28	Little Qualicum River	100.64	
14	4	43	French Creek	34.03	
14	4	534	Columbia Beach	31.26	
14	4	535	Columbia Beach	56.04	
14	5	2	Mapleguard Point	62.36	
14	5	19	Thames Creek	52.55	
14	5	20	Qualicum Bay	83.26	
14	7	3	Phipps Point to Hornby Island	26.84	
14	8	4	Repulse Point to Boyle Point	9.59	
14	8	5	Metcalf Bay to Repulse Point	40.42	
14	8	6	Ship Peninsula	43.61	
14	8	7	Fanny Bay	46.87	
14	8	8	Mud Bay to Deep Bay	215.64	
14	8	9	Hindoo Creek	31.56	
14	8	91	Denman Island to Metcalf Bay	53.47	
14	8	96	Buckley Bay	33.40	
14	9	10	Shields Point to Tralee Point	23.43	
14	10	11	Fillongley Park	81.40	
14	10	90	Komas Bluff	74.00	
14	11	12	Cape Lazo	41.82	
14	11	636	Willemar Bluff	40.24	
14	11	637	Boat Ramp	42.14	
14	13	13	Kye Bay (N)	5.45	
14	13	14	Kye Bay	15.78	
14	13	23	Shelter Point	17.39	
14	13	25	Oyster River to Black Creek	37.31	
14	13	26	Little River (N)	12.09	
14	13	27	Little River (S)	16.16	
14	13	42	Oyster Pond (S)	27.88	
14	13	97	Miracle Beach Rd (S)	11.13	
14	13	639	Kitty Coleman to Little River	102.44	

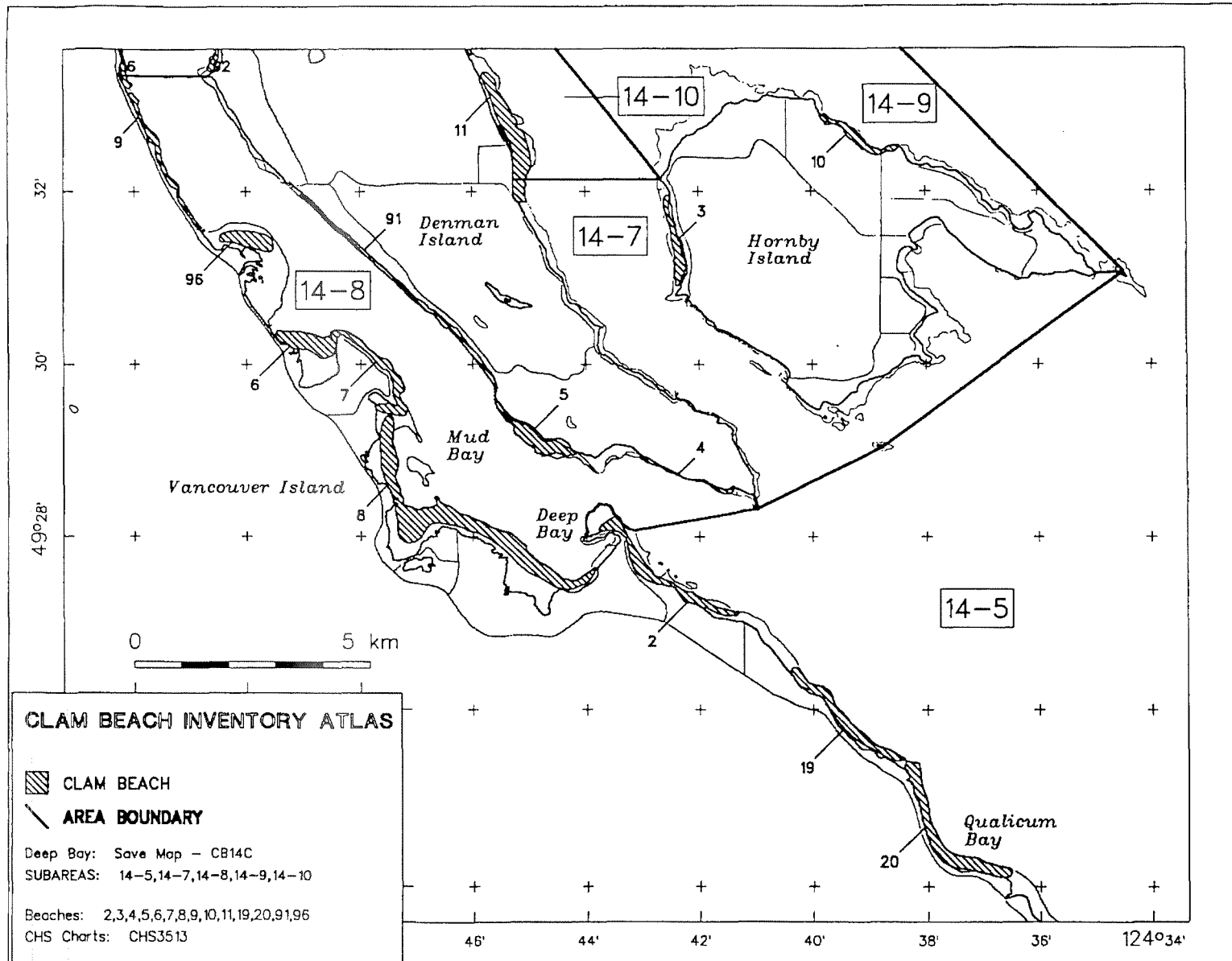
Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
14	13	640	Miracle Beach Rd (S) to Kitty Coleman	95.44	
14	14	995	Royston	37.07	
14	15	1	Tree Island	280.88	
14	15	15	Union Point	32.27	
14	15	16	Opposite Denman Point	9.52	
14	15	17	Gartley Point	59.12	
14	15	18	Union Bay (S)	3.57	
14	15	92	Longbeak Point to Denman Island	42.14	
14	15	93	Gartley to Booms	36.68	
14	15	638	Union Bay (S)	5.28	
Total		51	Total Beach Area:	2274.31	
Beaches:					



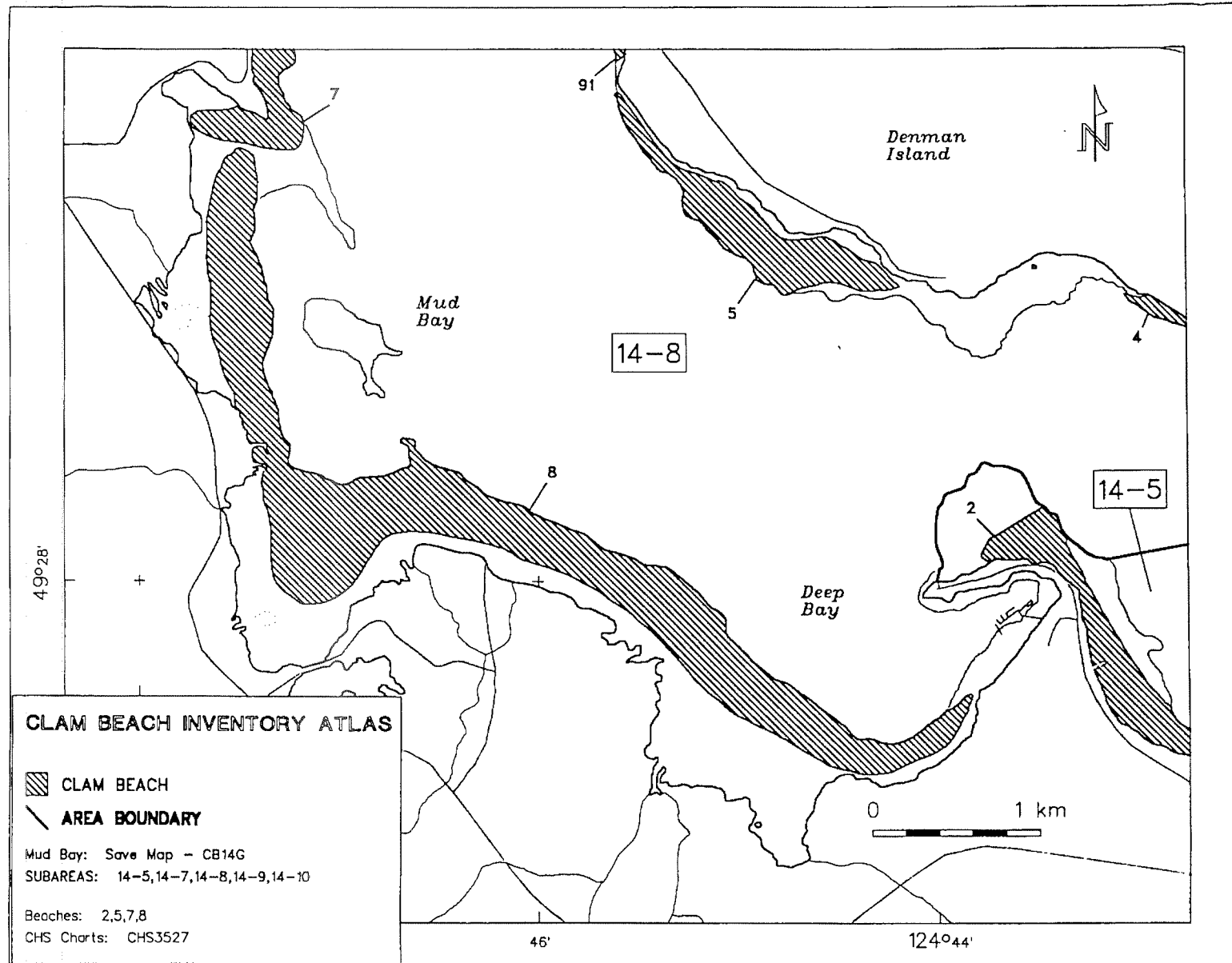
Appendix Figure 1.2.1.



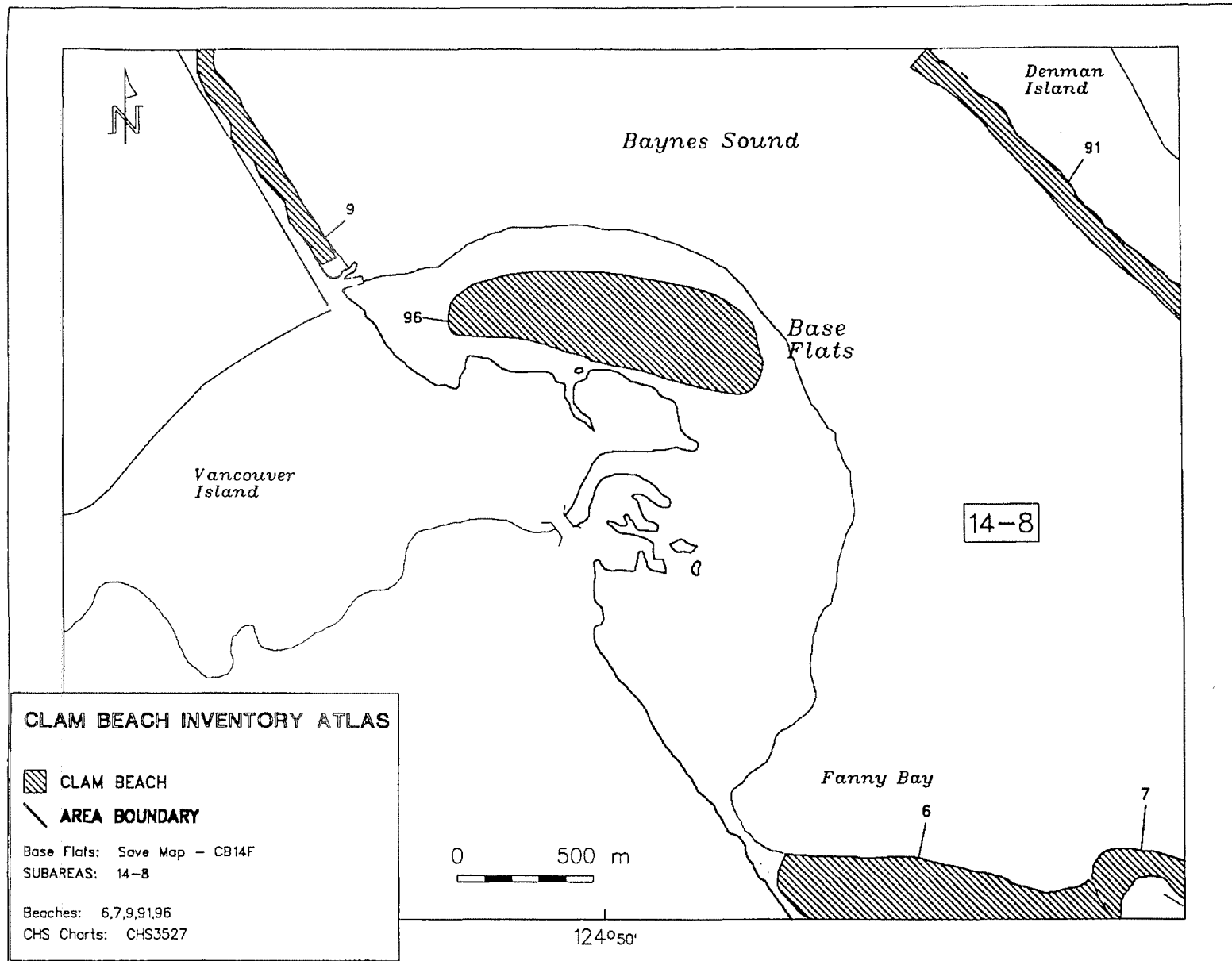
Appendix Figure 1.2.2



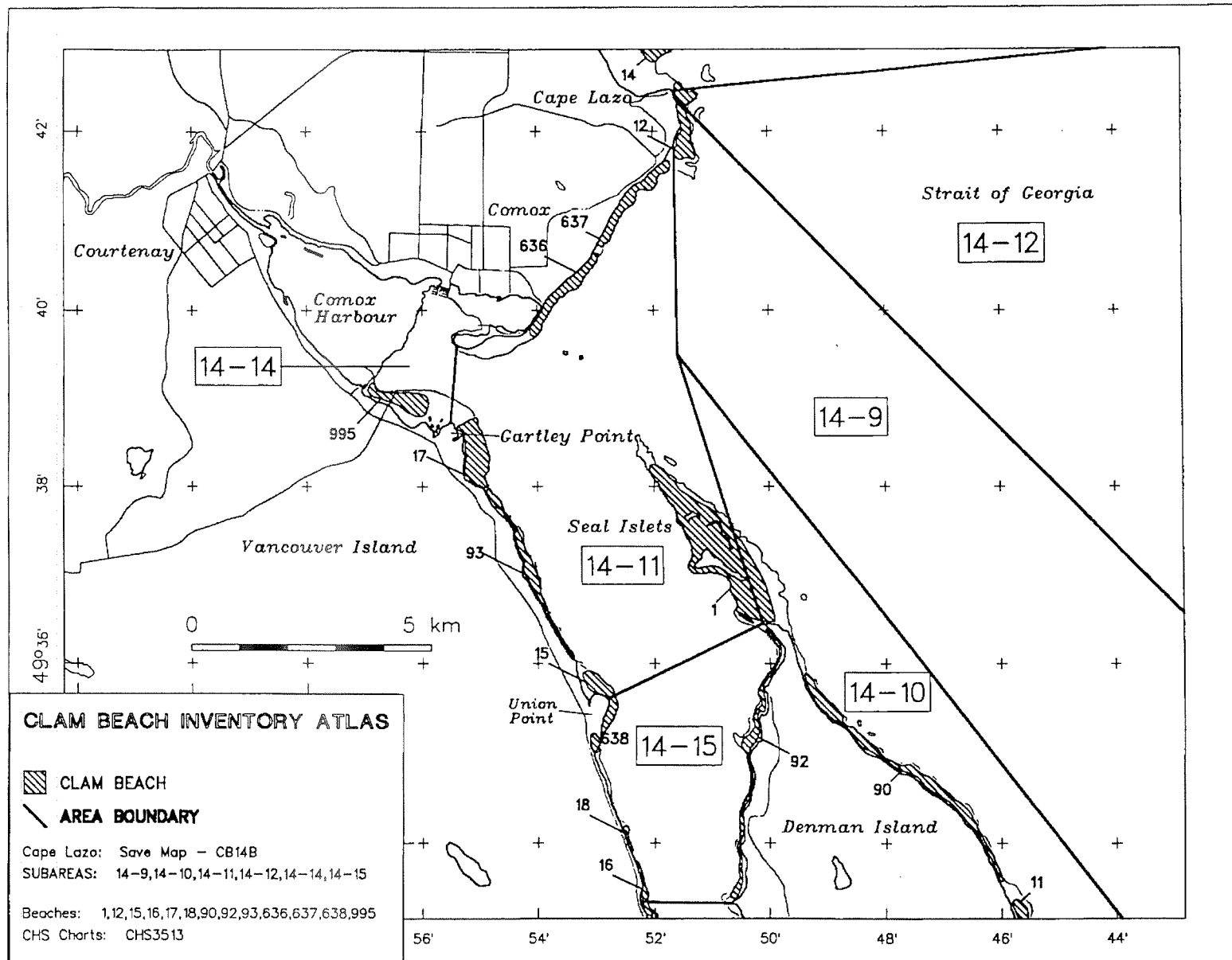
Appendix Figure 1.2.3.



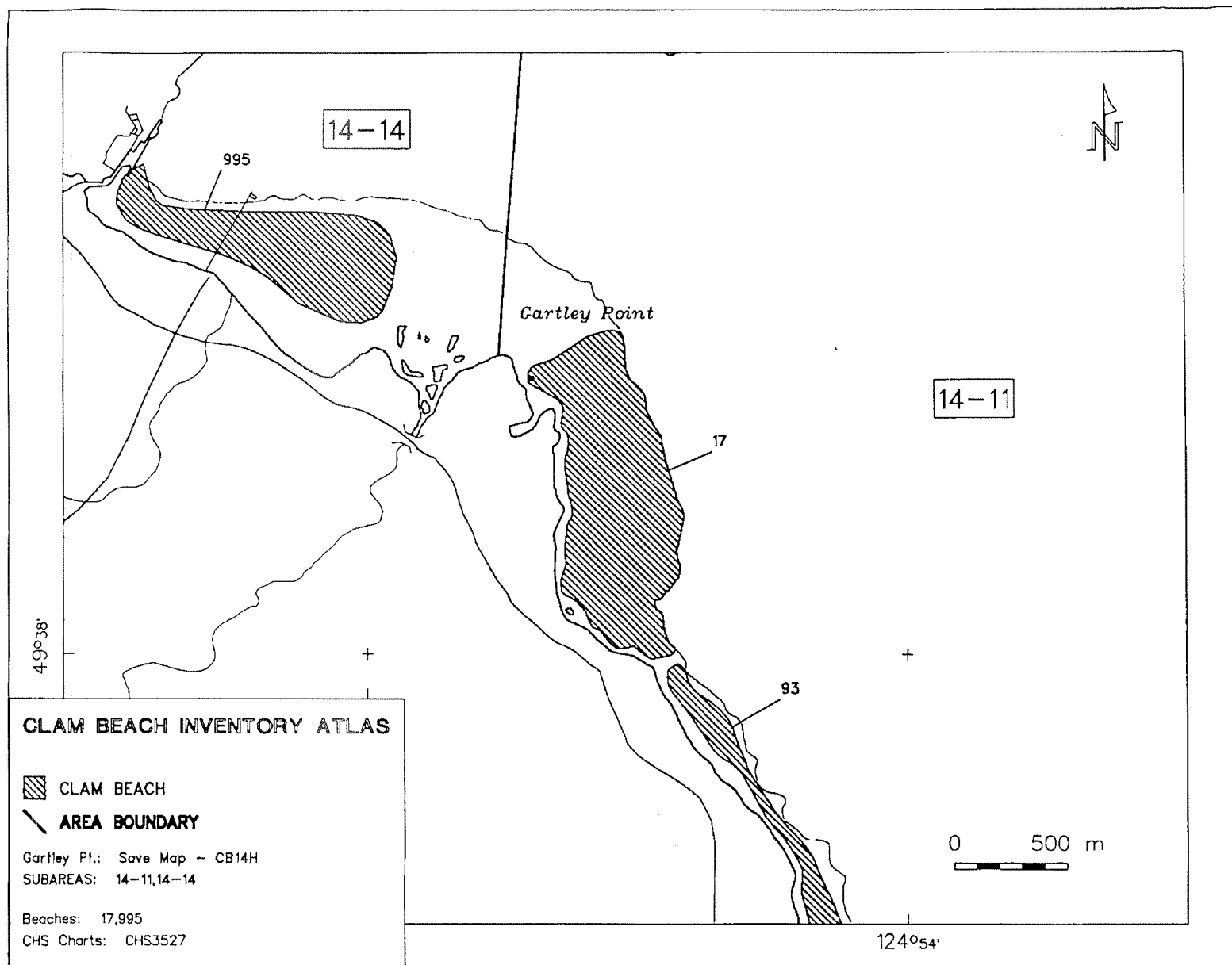
Appendix Figure 1.2.4.



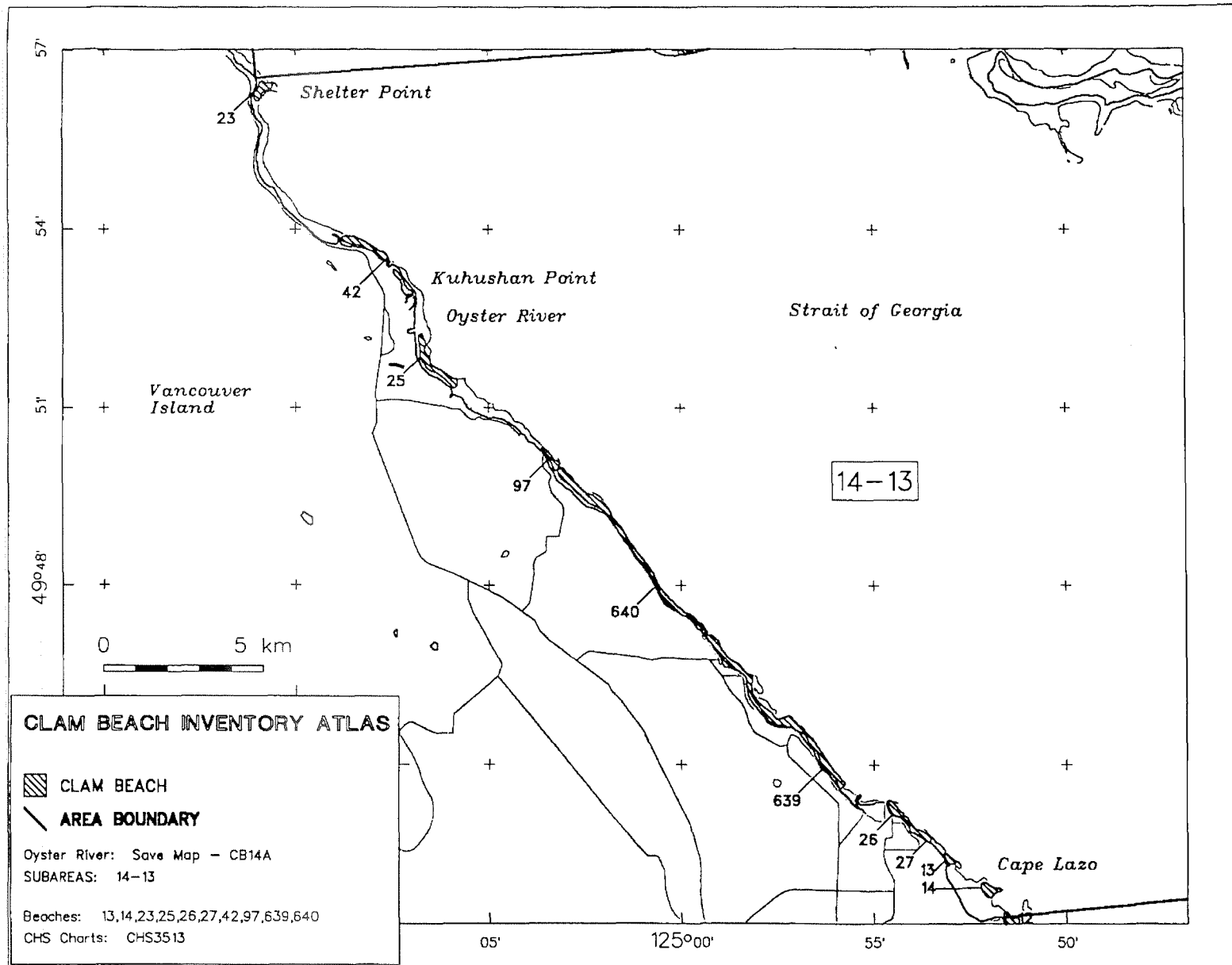
Appendix Figure 1.2.5.



Appendix Figure 1.2.6.



Appendix Figure 1.2.7.

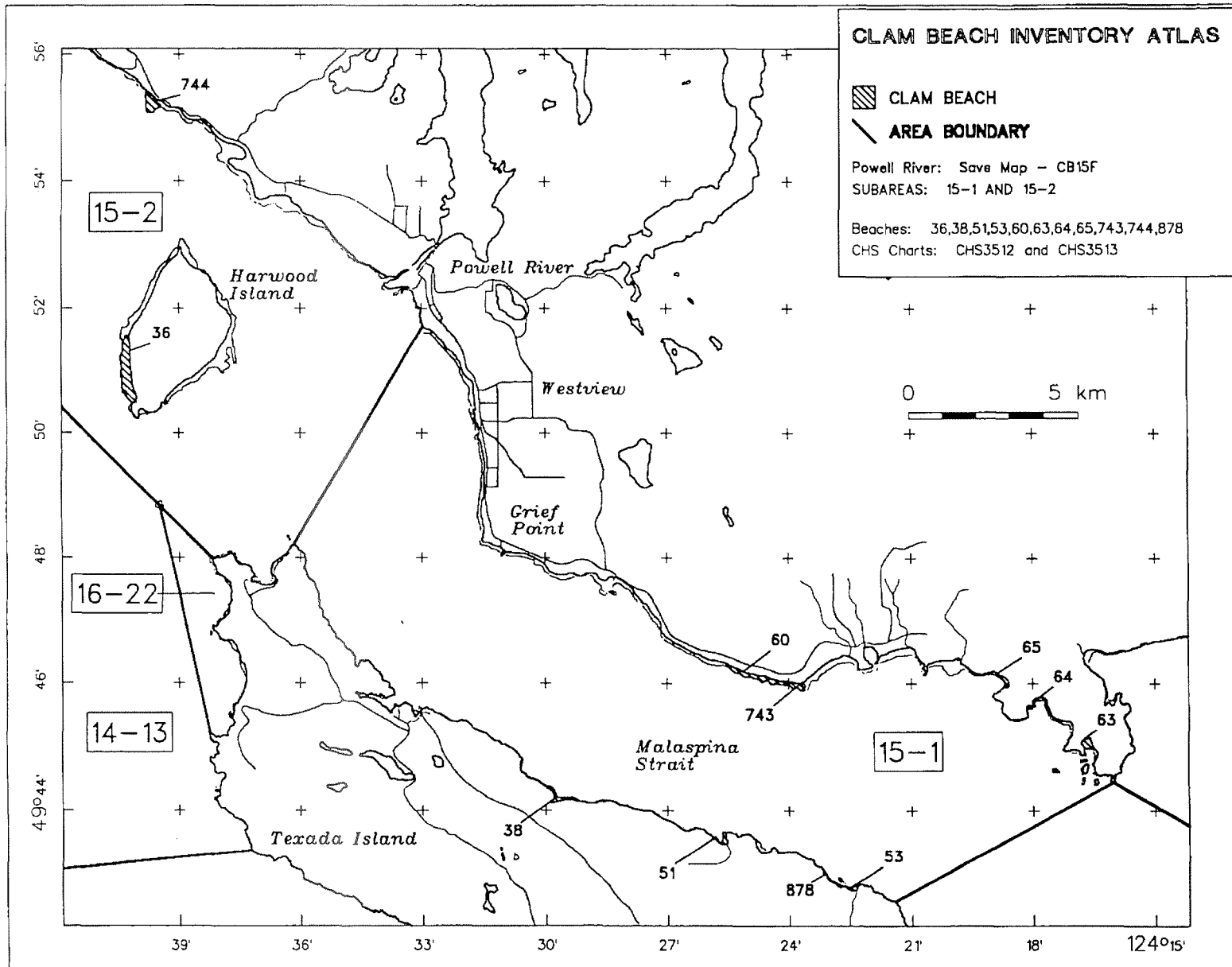


Appendix Figure 1.2.8.

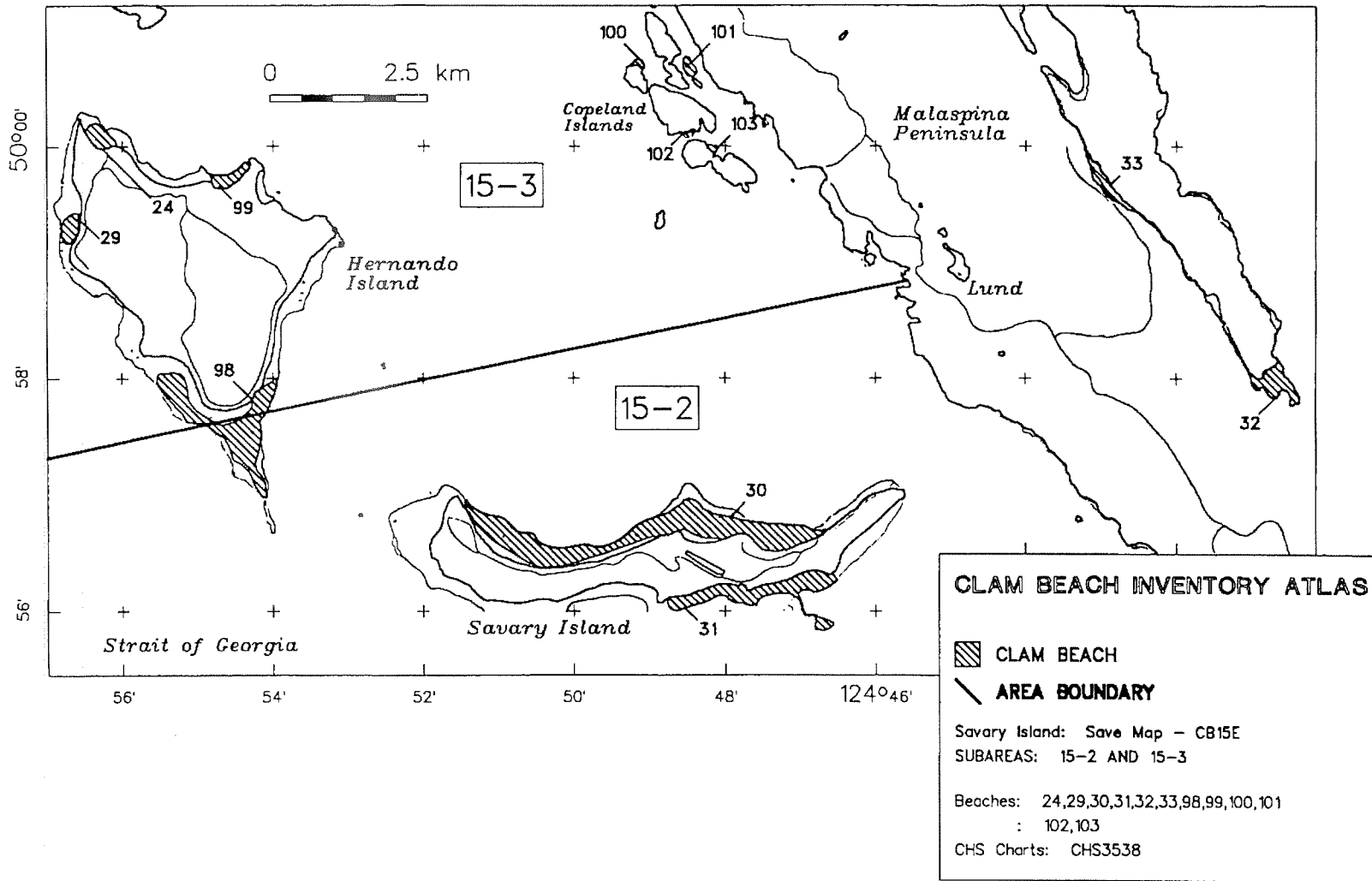
Appendix Table 1.3. British Columbia Clam Beach Inventory, sorted by Subarea for Management Area 15.

Area	Subare	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
	a				
15	1	38	Raven Bay	8.40	
15	1	51	Pocahontas Bay	4.97	
15	1	53	Northeast Bay	2.72	
15	1	60	Albion Point	28.64	
15	1	63	Mcrae Cove	8.44	
15	1	64	Frolander Bay	8.46	
15	1	65	Stillwater Bay	9.15	
15	1	743	Albion Point	15.76	
15	1	878	North East Bay	2.68	
15	2	30	Savary Island (N)	179.16	
15	2	31	Savary Island (S)	63.26	
15	2	36	Harwood Island	52.43	
15	2	744	Atrevida Reef (Near)	15.75	
15	3	24	Spilsbury Point	11.66	
15	3	29	Hernando Island (E)	10.20	
15	3	98	Hernando Island (N)	89.36	
15	3	99	Hernando Island (S)	10.77	
15	3	100	Copeland Island	1.80	
15	3	101	Copeland Island	4.29	
15	3	102	Copeland Island	1.28	
15	3	103	Copeland Island	1.02	
15	3	874	Cortes Island (E)	2.22	
15	3	879	Redonda Bay (SW)	0.78	
15	4	32	Freke Anchorage	23.27	
15	4	33	Okeover Inlet	10.58	
15	4	34	Theodosia Inlet	16.75	
15	4	35	Bastion Point	6.88	
15	4	82	Grace Harbour	1.49	
15	4	83	Stopford Point	0.68	
15	4	143	Wooton Bay	3.21	
15	4	144	Hare Point	0.88	
15	4	598	Scott Point	0.41	
15	4	599	Scott Point	1.45	
15	4	600	Scott Point	0.80	
15	4	601	Isabel Bay	0.56	
15	4	602	Moss Point	0.49	
15	4	700	Tenedos Bay	0.47	
15	4	875A	Hare Point (S)	1.50	
15	4	875B	Kakaekae Point (N)	1.37	
15	4	875C	Kakaekae Point (S)	1.72	
15	5	94	Junction Point (N)	3.99	

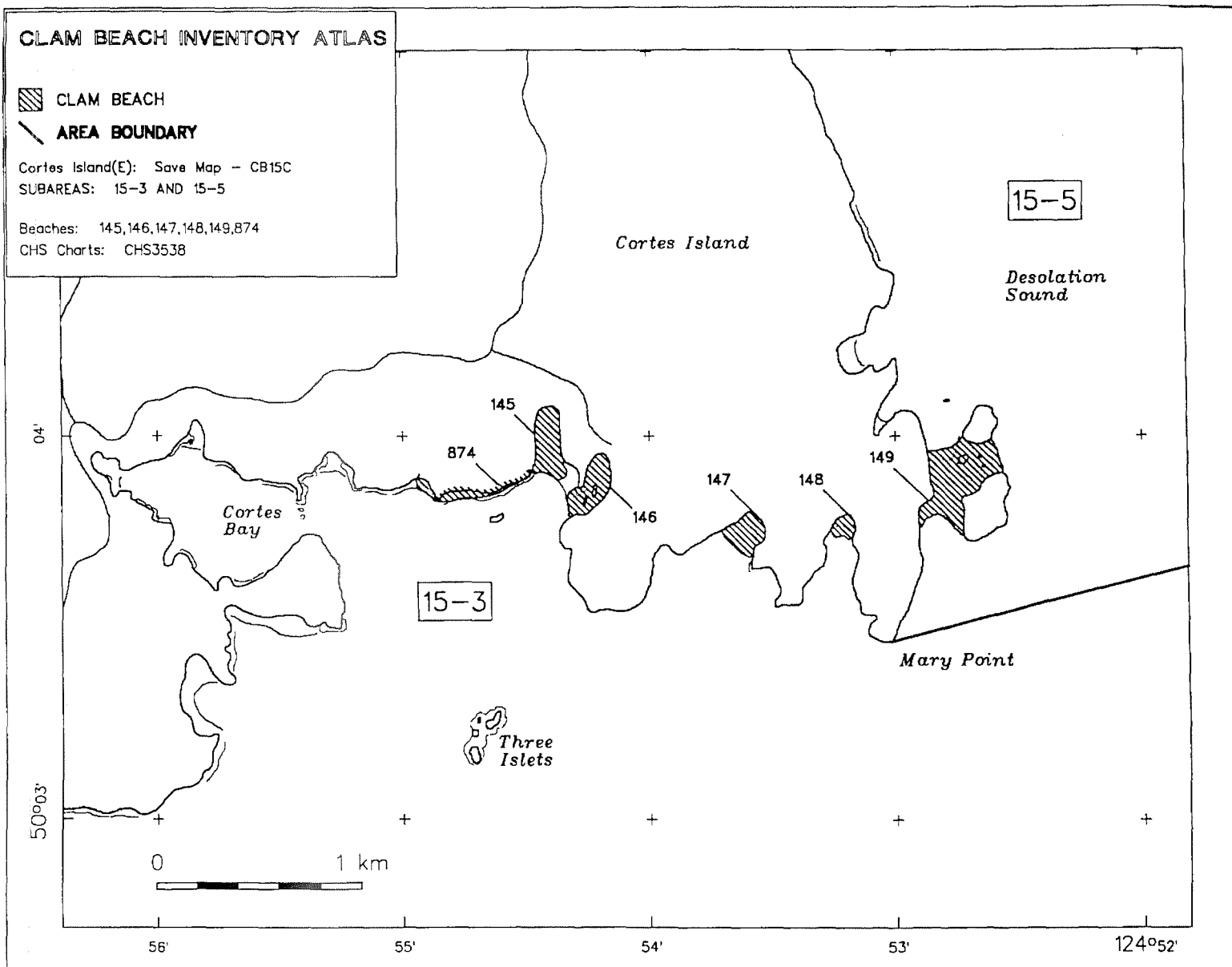
Area	Subare	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
	a				
15	5	95A	Squirrel Cove	0.62	
15	5	95	Squirrel Cove	19.95	
15	5	145	Mary Point	4.20	
15	5	146	Mary Point	3.79	
15	5	147	Mary Point	2.85	
15	5	148	Mary Point	1.03	
15	5	149	Mary Point	9.97	
15	5	582	Gloucester Point	1.73	
15	5	594	Junction Point (S)	2.05	
15	5	595	Junction Point (S)	1.02	
15	5	596	Boulder Point	2.25	
15	5	597	Boulder Point	0.98	
15	5	603	Lewis Channel	13.46	
15	5	690	Melanie Cove	2.23	
15	5	691	Copplestone Point	0.46	
15	5	692	Prideaux Haven	3.04	
15	5	693	Eveleigh Island	0.60	
15	5	960A	Squirrel Cove #1	0.08	
15	5	960B	Squirrel Cove #2	0.14	
15	5	960C	Squirrel Cove #3	0.85	
15	5	960D	Squirrel Cove #4	0.12	
Total		62	Total Beach Area:	681.12	
Beaches:					



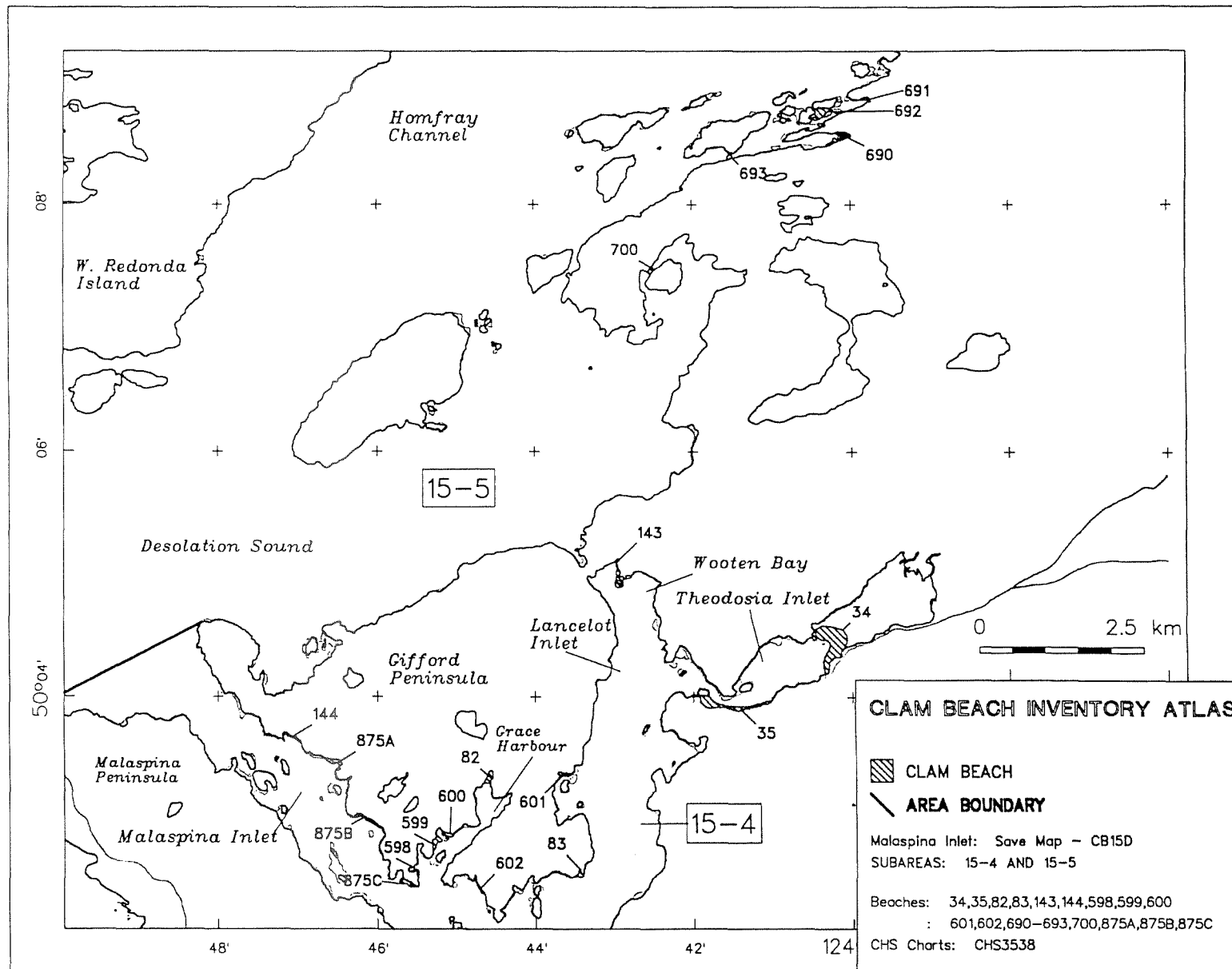
Appendix Figure 1.3.1.



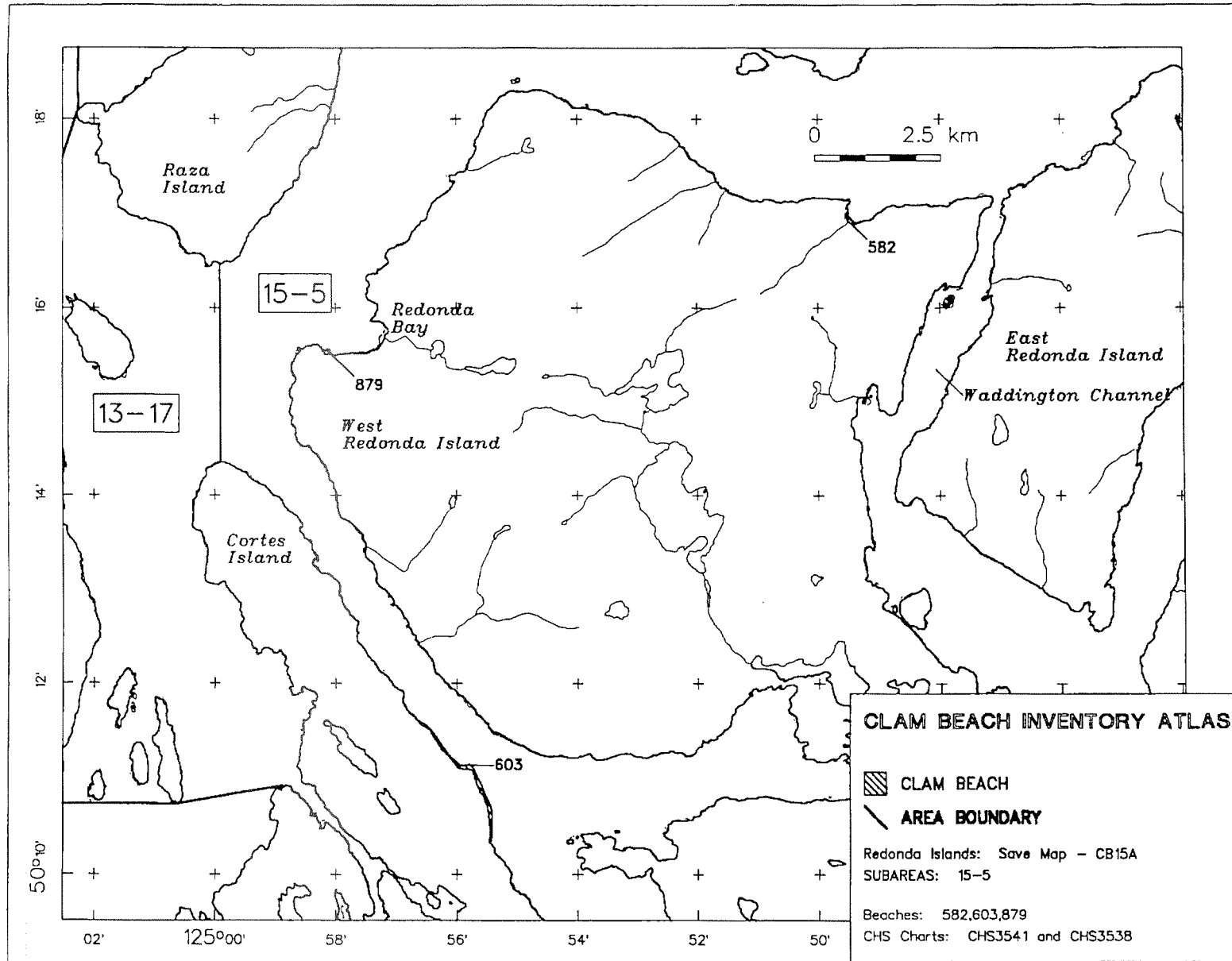
Appendix Figure 1.3.2.



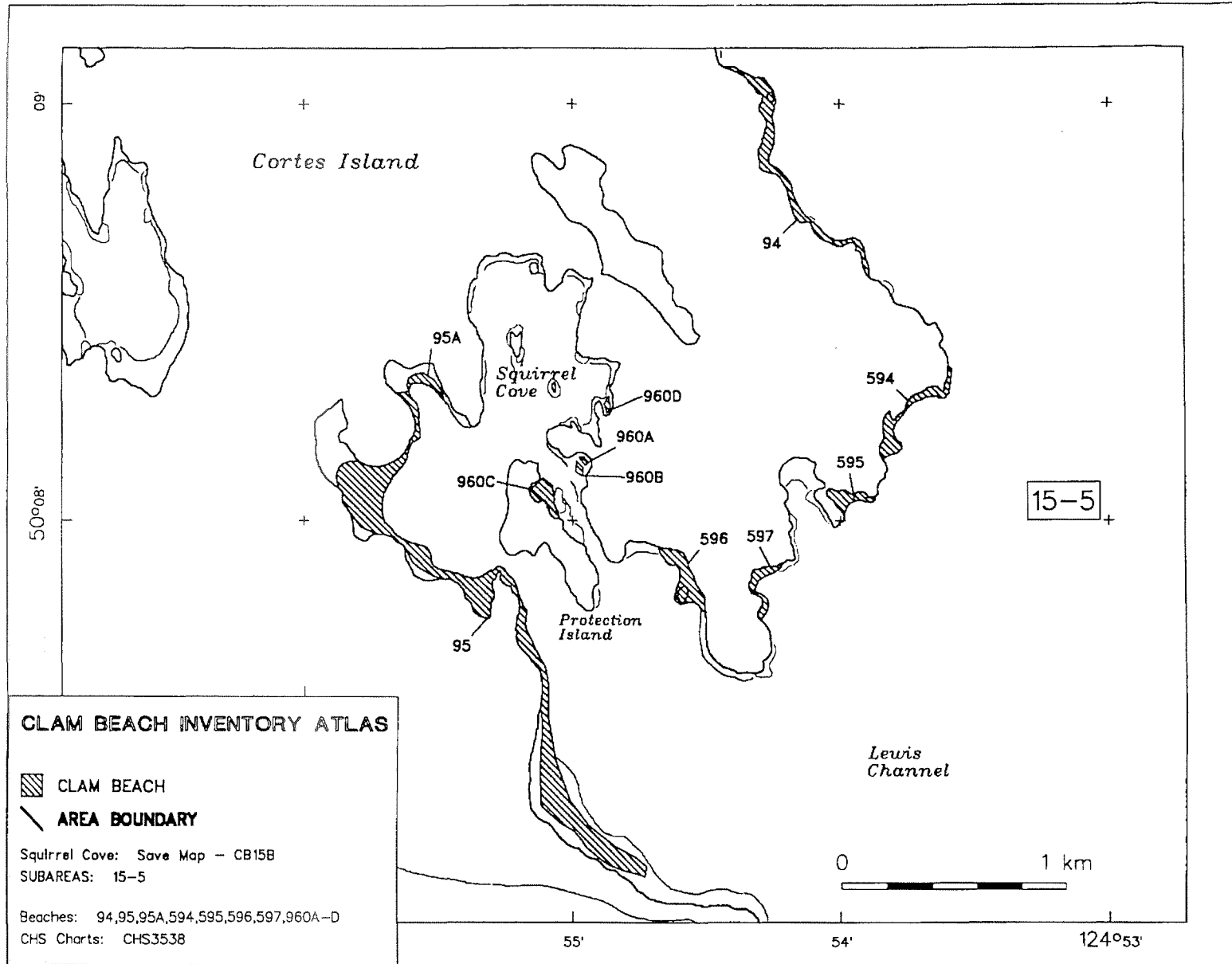
Appendix Figure 1.3.3.



Appendix Figure 1.3.4.



Appendix Figure 1.3.5.



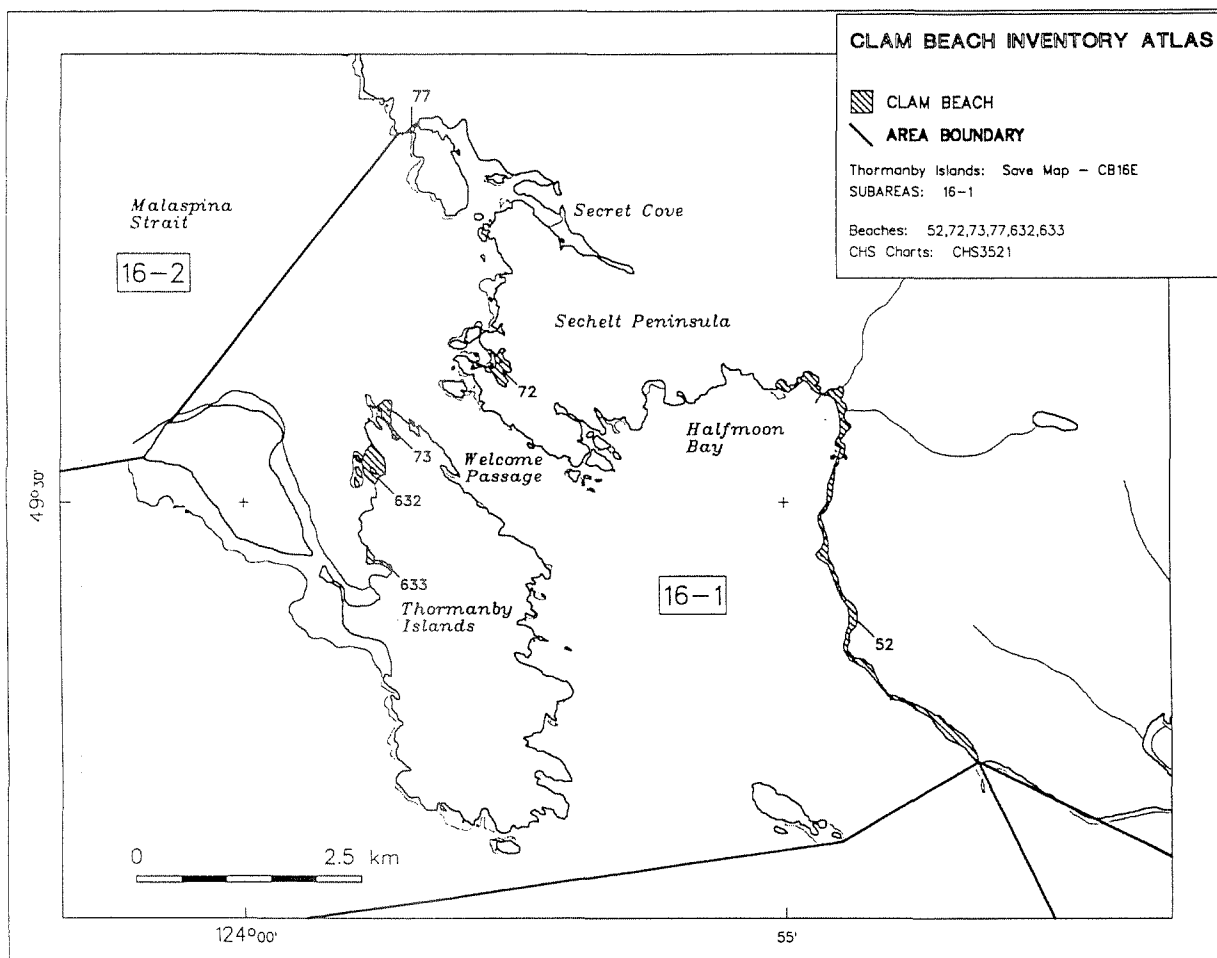
Appendix Figure 1.3.6.

Appendix Table 1.4. British Columbia Clam Beach Inventory, sorted by Subarea for Management Area 16.

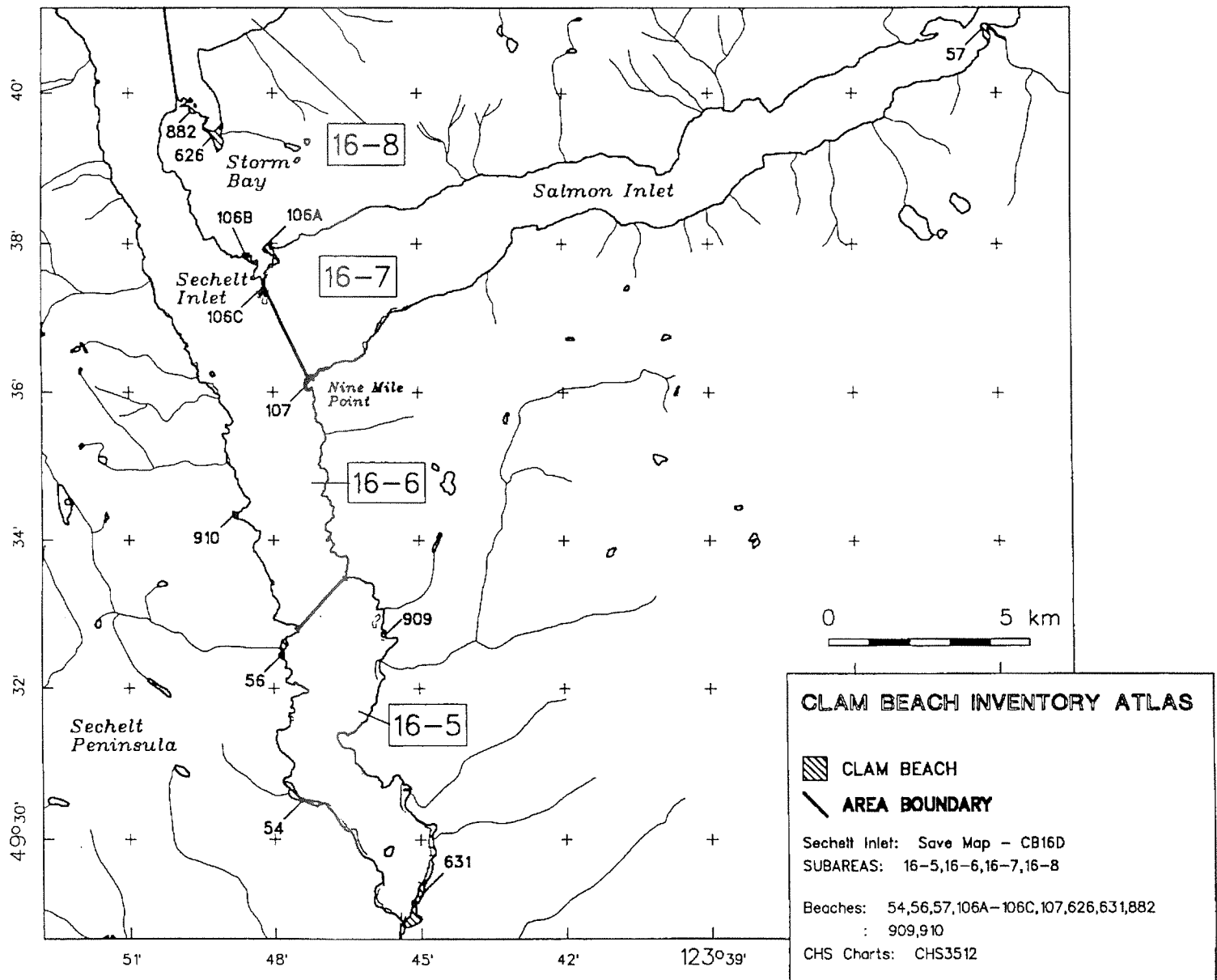
Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
16	1	52	Welcome Beach	37.08	
16	1	72	Smuggler Cove	6.04	
16	1	73	Thormanby Island (N)	3.83	
16	1	77	Turnagain Island	0.60	
16	1	632	Thormanby Island	7.99	
16	1	633	Thormanby Island	2.22	
16	2	71	Edgecombe Island (NE)	6.84	
16	2	104	Harness Island	1.92	
16	2	105	Harness Island	1.01	
16	3	905	Pender Harbour	12.27	
16	4	880	Francis Point	4.13	
16	4	882	Storm Bay, B	1.37	
16	5	54	Snake Bay	11.48	
16	5	56	Carlson Creek	4.98	
16	5	631	Porpoise Bay	19.41	
16	5	909	Tuwanek Point	1.56	
16	6	81	Dorston (S)	3.95	
16	6	106A	Kunechin Point	7.47	
16	6	106B	Kunechin Point	2.71	
16	6	626	Storm Bay, A	13.17	
16	6	910	West Sechelt Inlet	1.76	
16	6	912	North Highland Point	2.09	
16	7	106C	Kunechin Islets	2.02	
16	7	107	Nine Mile Point	5.38	
16	8	911	West Highland Point	7.66	
16	8	919	Highland Point	0.77	
16	9	58	Skookum Island (E)	3.04	
16	9	59	Skookumchuk Narrows (C)	0.76	
16	9	78	Skookumchuck Narrows	0.96	
16	9	108	Secret Bay	0.76	
16	9	109	Skookumchuk Narrows, A	1.36	
16	9	110	Skookumchuk Narrows, B	1.22	
16	9	634	Skookumchuk Narrows (NW)	1.61	
16	9	916	Skookumchuk Narrows, D	2.35	
16	9	917	Sechelt Rapids, B	5.06	
16	9	918	Rapid Inlet	0.95	
16	10	536	Green Bay	2.09	
16	10	537	Green Bay	3.75	
16	10	635	Agamemnon Channel	5.33	
16	10	714	Anis Bay	0.98	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
16	11	61	Thunder Bay	13.59	
16	11	62	Thunder Point	6.26	
16	11	66	Saltery Bay	11.73	
16	11	111	Ball Point, A	0.36	
16	11	112	Ball Point, B	0.65	
16	11	113	Nelson Island (S)	1.08	
16	11	114	Agnew Passage	1.45	
16	11	121	Fair View Bay	1.36	
16	11	122	Culloden Point	3.74	
16	11	742	Hardy Island	3.73	
16	11	883B	Sykes Island, B	2.55	
16	11	883C	Sykes Island, C	0.77	
16	11	920	East Vanguard Bay	4.14	
16	11	921	Alexander Point	1.91	
16	11	923	St. Vincent Bay	3.60	
16	11	924	Nelson Island (N)	1.97	
16	12	123	Harmony Island	0.51	
16	12	124	Harmony Island	0.57	
16	12	125	Harmony Island	0.82	
16	12	126	Harmony Island	0.22	
16	12	127	Harmony Island	0.54	
16	12	128	Granville Bay	2.39	
16	12	129	Baker Bay	2.45	
16	12	130	Hotham Sound	1.16	
16	12	715	Elephant Point (N)	0.87	
16	12	716	Elephant Point (N)	0.32	
16	12	883A	Sykes Island, A	1.02	
16	12	925	Hotham Sound (E)	1.22	
16	13	131	Brittain Bay	10.07	
16	13	132	Killam Bay	1.56	
16	13	134	Vancouver Bay	12.30	
16	13	926	Samarez Bluff (S)	1.34	
16	13	927	Trear Creek (S)	1.87	
16	14	133	Vancouver Bay (S)	2.53	
16	14	139	Deserted Bay	5.67	
16	14	140	Deserted Bay	8.36	
16	15	135	Potato Creek	1.89	
16	15	136	Princess Louisa , A	2.94	
16	15	137	Princess Louisa, B	1.40	
16	15	138	Princess Louisa, C	4.32	
16	15	141	Queens Reach (Head)	14.10	
16	15	142	Queens Reach (Head)	6.16	
16	15	928	Chatterbox Falls	1.85	
16	16	68	Blind Bay	8.99	

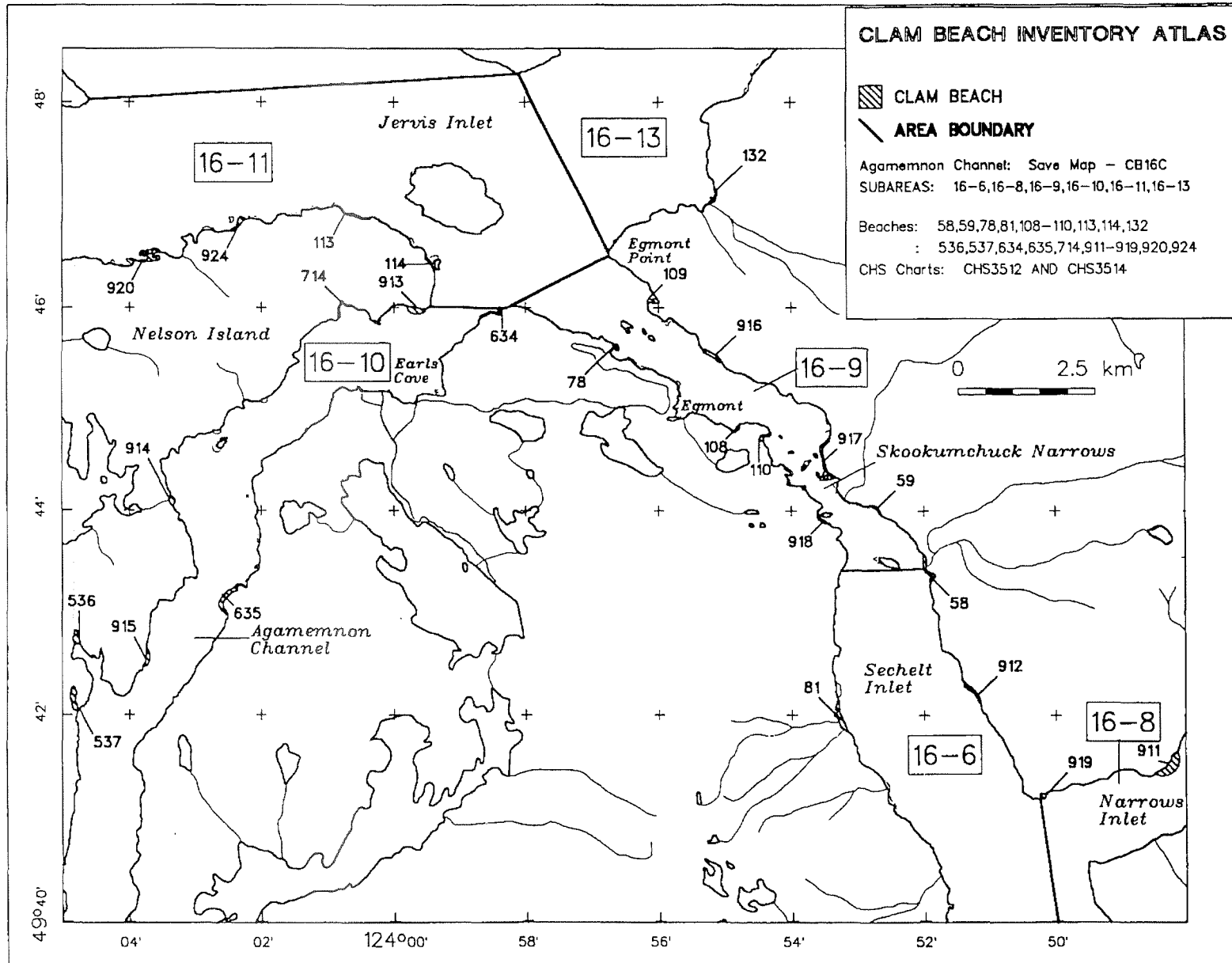
Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
16	16	69	Telescope Passage (E)	2.89	
16	16	70	Telescope Passage (W)	4.05	
16	16	115	Clio Island	8.64	
16	16	116	Clio Island	4.23	
16	16	538	Alexander Point	2.52	
16	16	627	Hidden Basin	0.94	
16	16	913	Nile Point	3.23	
16	16	914	West Agamemnon #1	1.25	
16	16	915	West Agamemnon #2	1.88	
16	16	922	Clio Islands, C	1.23	
16	17	57	Sechelt Creek	6.53	
16	17	67	Cockburn Bay (S)	13.45	
16	17	117	Sakinaw Lake (Mouth)	2.03	
16	17	628	Quarry Bay	19.84	
16	18	55	Anderson Bay	1.75	
16	19	47	Scottie Bay	10.21	
16	19	48	West Point	2.68	
16	19	50	Wells Point	2.57	
16	19	118	Tucker Bay	1.93	
16	19	119	Tucker Bay	6.40	
16	19	120	Tucker Bay	6.06	
16	19	620	Jedediah Island	5.59	
16	19	624	Squitty Bay	2.96	
16	19	625	Clio Island (SE)	1.30	
16	19	929A	Jervis Island, A	2.34	
16	19	929B	Jervis Island, B	2.58	
16	19	930	North Long Bay	1.59	
16	19	931	Boho Bay	7.37	
16	19	932	Davie Bay (N)	10.44	
16	20	79	Mt. Shepard	4.18	
16	20	80	Cook Bay	4.20	
16	21	39	Harwood Point	18.10	
16	21	40	Mouatt Bay	29.53	
16	21	41	Davie Bay	9.70	
16	21	877	Davis Bay	6.10	
Total Beaches:		119	Total Beach Area:	566.55	



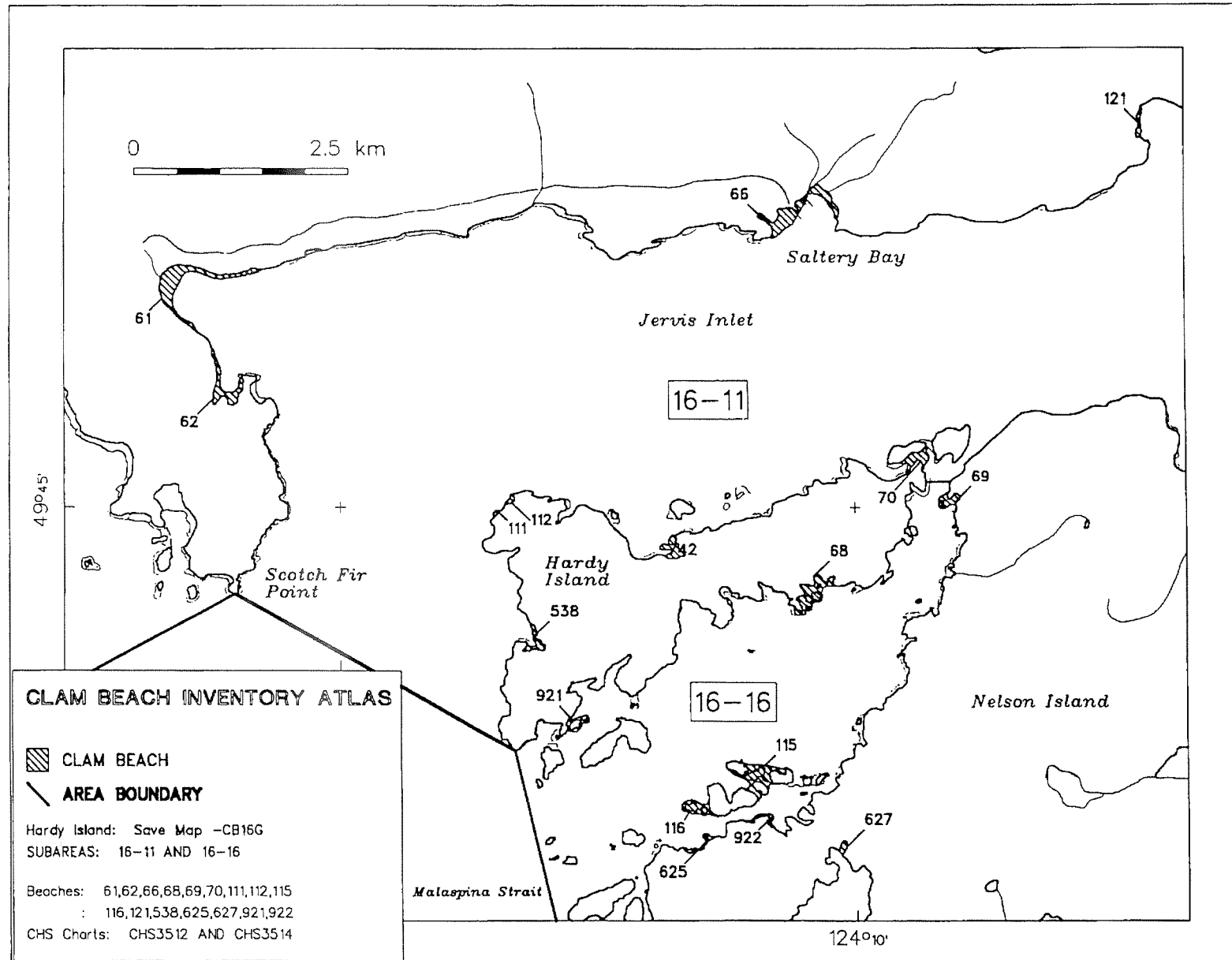
Appendix Figure 1.4.1.



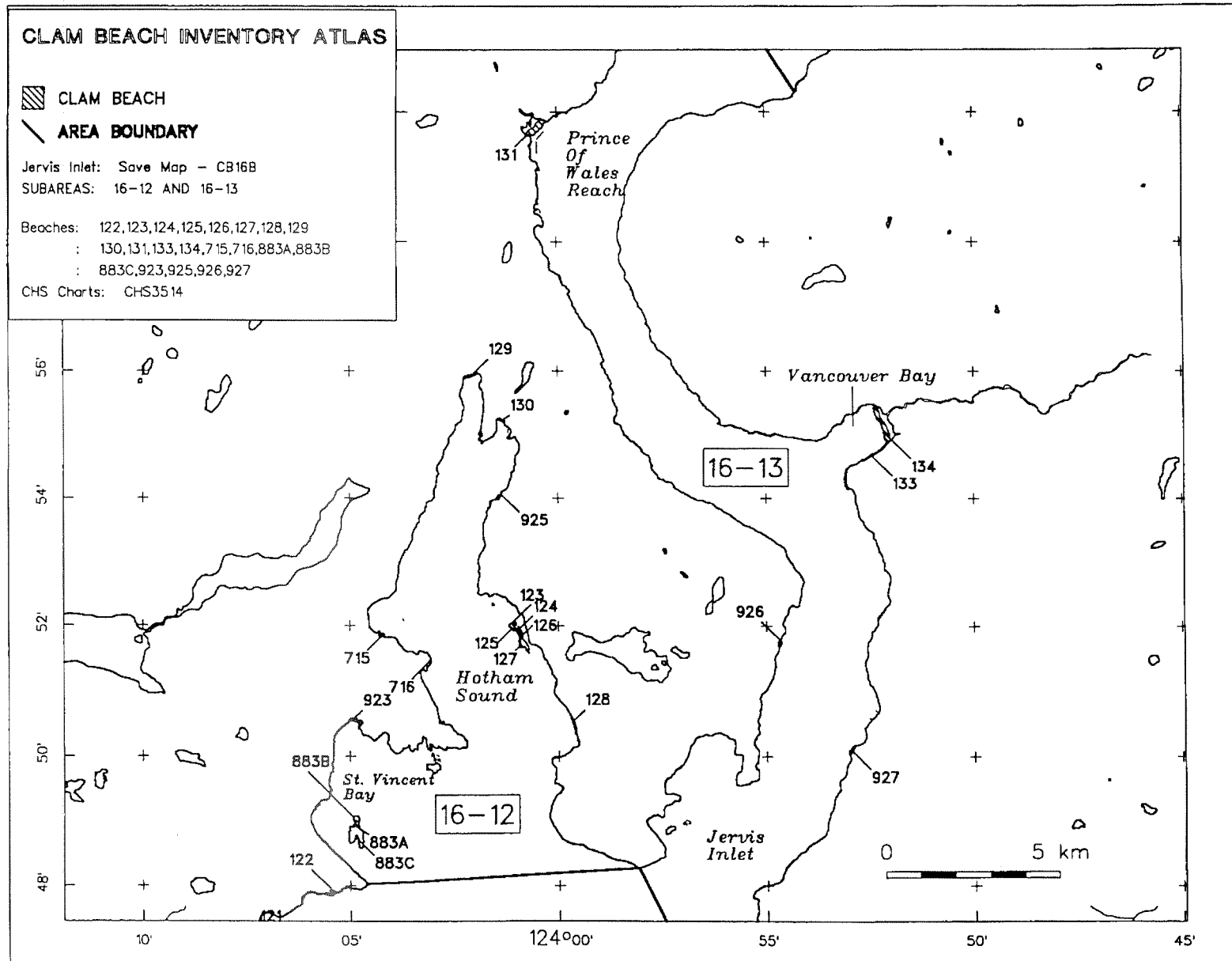
Appendix Figure 1.4.2.



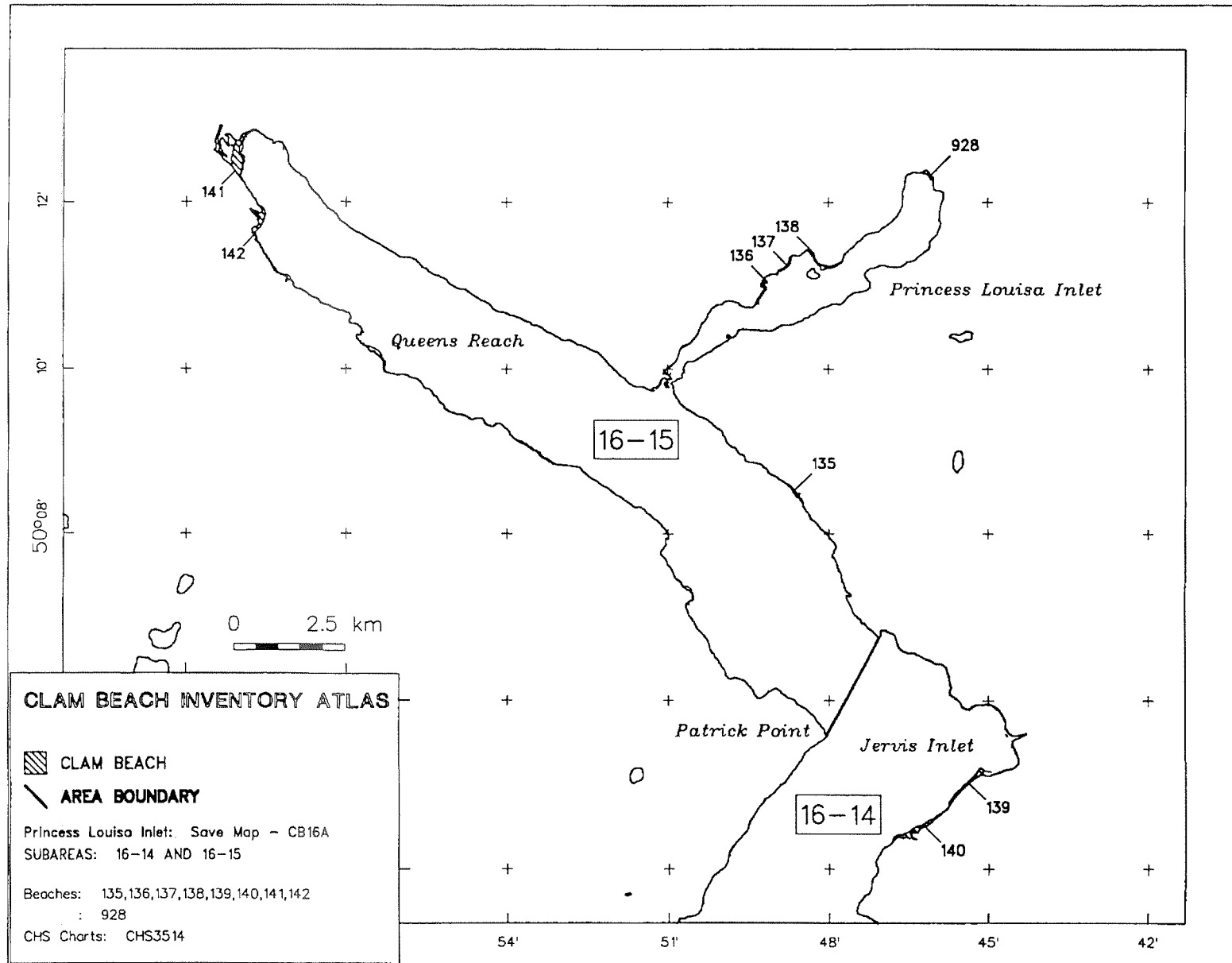
Appendix Figure 1.4.3.



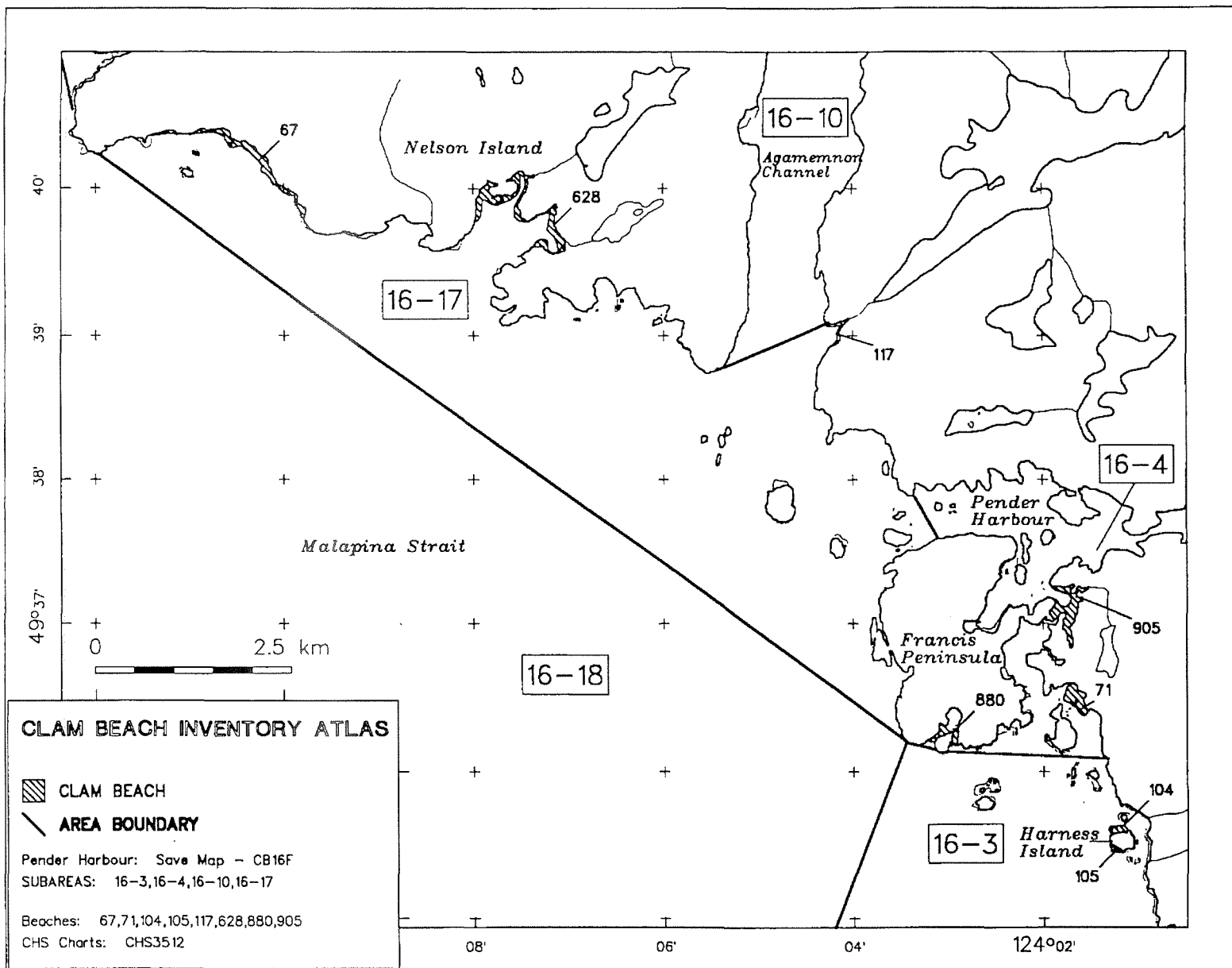
Appendix Figure 1.4.4.



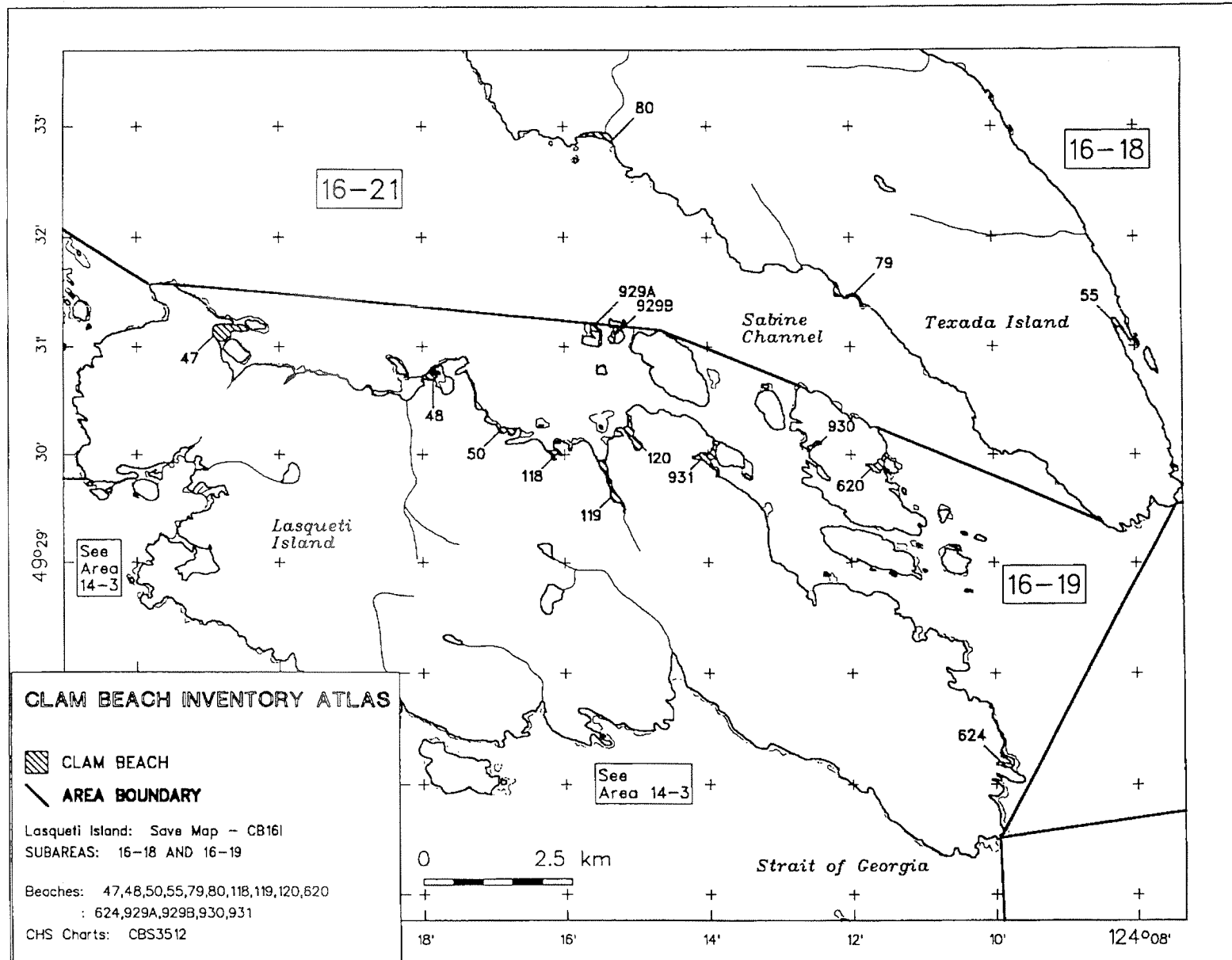
Appendix Figure 1.4.5.



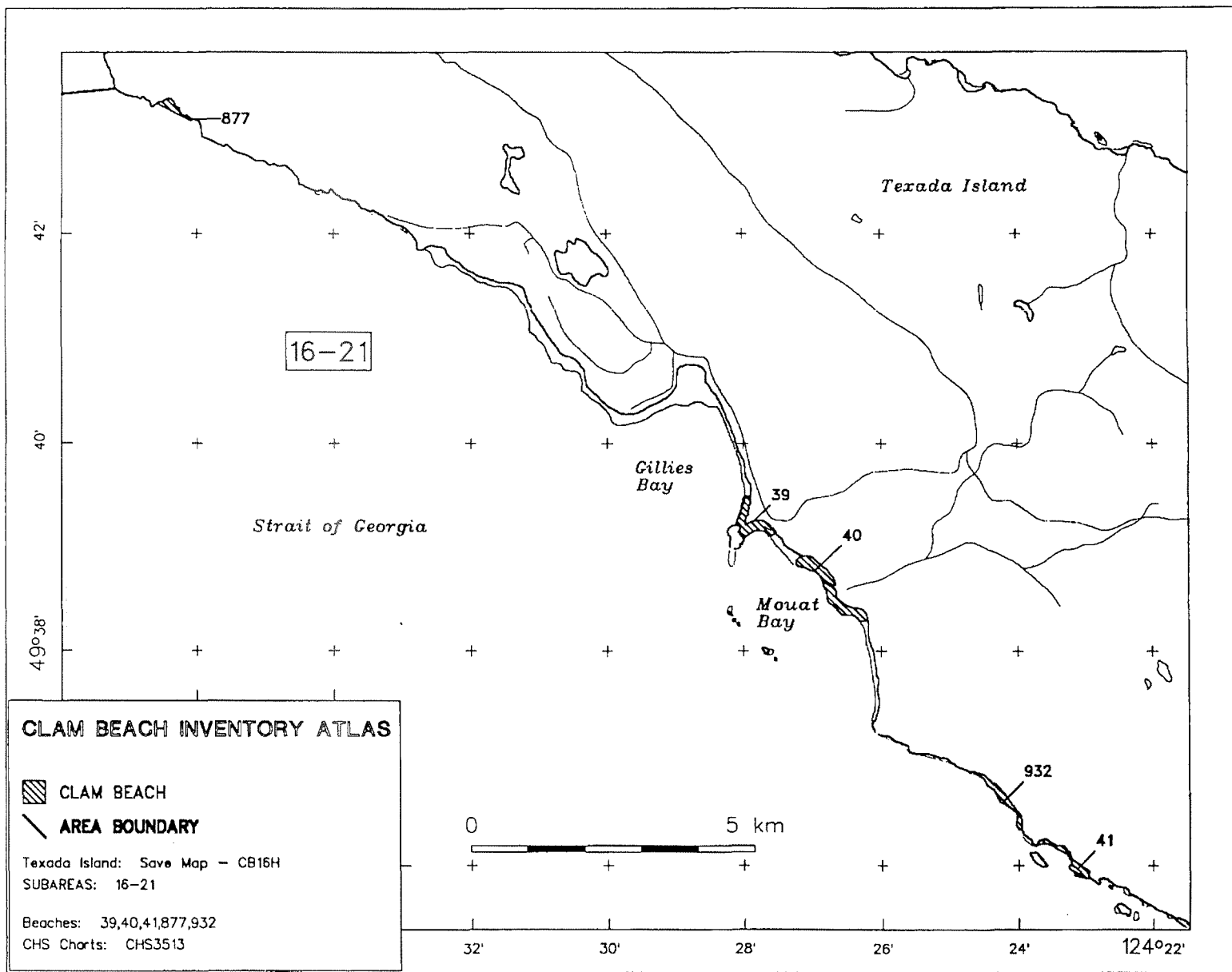
Appendix Figure 1.4.6.



Appendix Figure 1.4.7.



Appendix Figure 1.4.8.



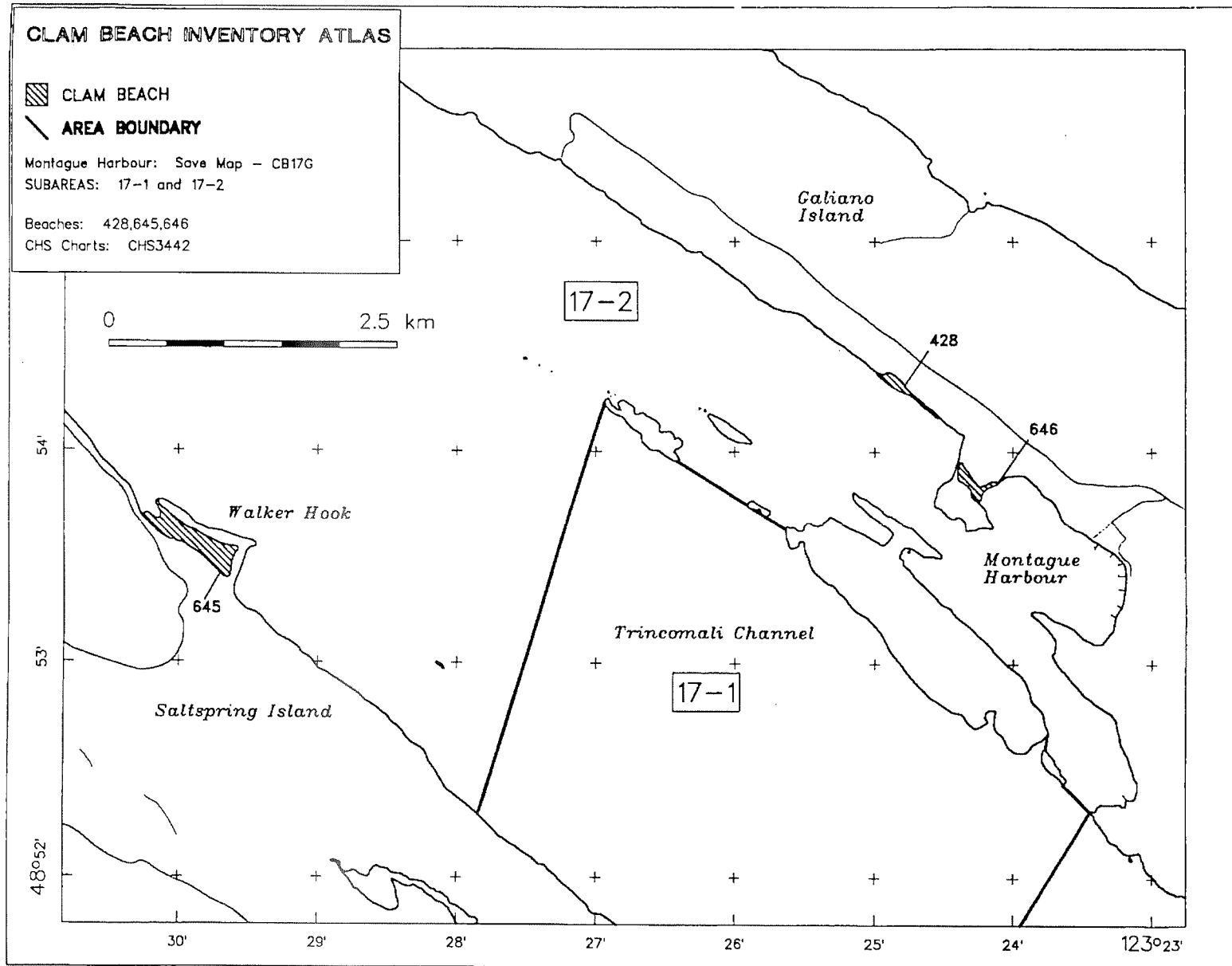
Appendix Figure 1.4.9.

Appendix Table 1.5. British Columbia Clam Beach Inventory, sorted by Subarea for Management Area 17.

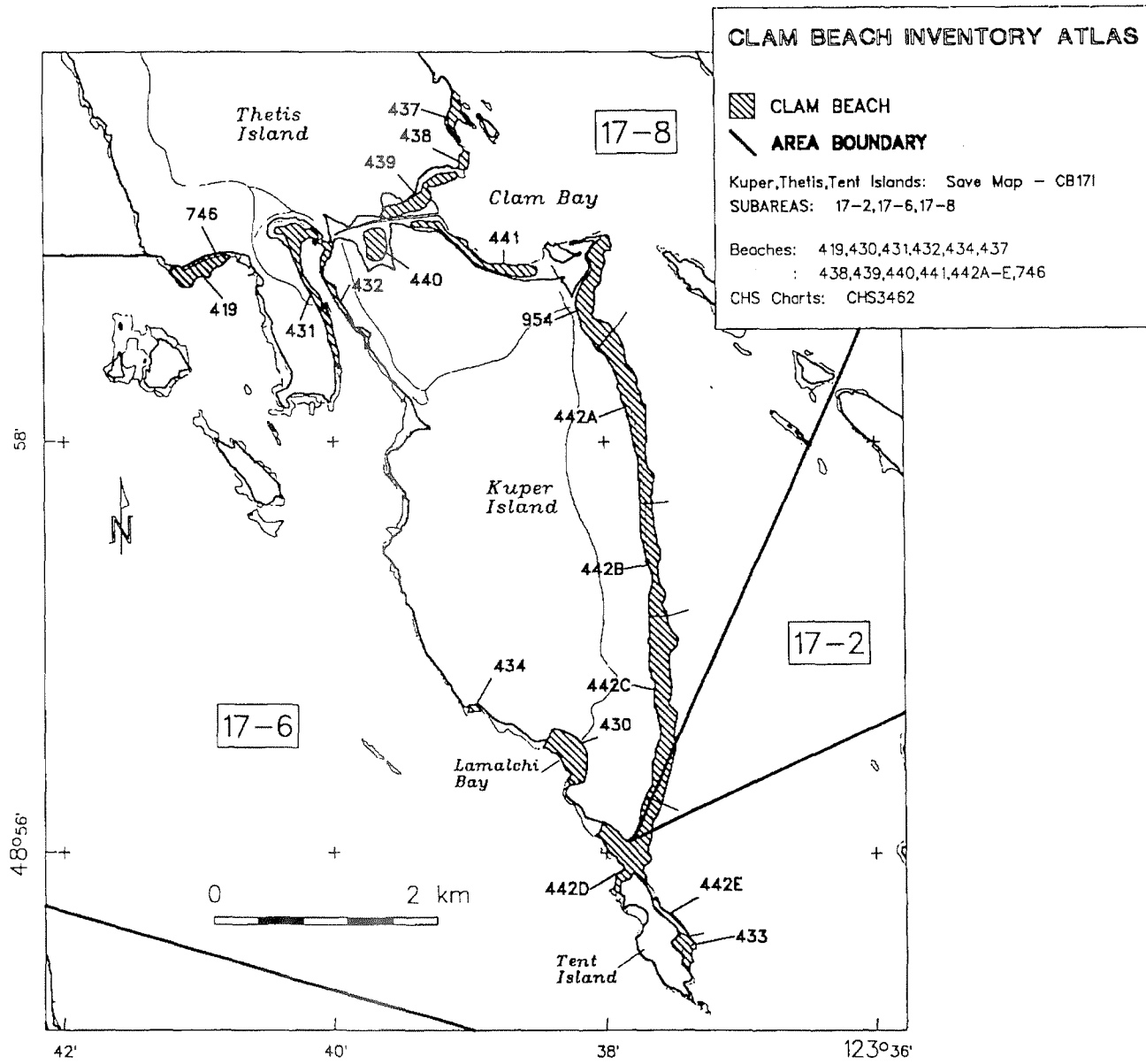
Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
17	2	428	Montague	3.07	
17	2	429	Fernwood	20.37	
17	2	645	Walker Hook	15.34	
17	2	646	Gray Pen	3.58	
17	2	896	Secretary Islands	1.76	
17	2	897	Southey Point	7.23	
17	2	994	Retreat Cove	3.16	
17	4	404	Shingle Point	17.10	
17	4	405	Blackberry Point	6.73	
17	4	408	Yellow Point (N)	2.84	
17	4	410	Boat Harbour	2.90	
17	4	411	Kulleet Bay (N)	1.17	
17	4	412	Kulleet Bay (N)	0.78	
17	4	413	Kulleet Bay (N)	1.49	
17	4	414	Kulleet Bay (N)	1.59	
17	5	406A	Kulleet Bay	18.25	
17	5	406B	Kulleet Bay	8.55	
17	5	406C	Kulleet Bay	13.28	
17	5	407C	Kulleet Bay	12.90	
17	5	407A	Kulleet Bay	23.59	
17	5	407B	Kulleet Bay	8.65	
17	5	409	Yellow Point (S)	1.23	
17	6	430	Lamalchi Bay	10.78	
17	6	431	Telegraph Harbour	10.74	
17	6	432	Telegraph Harbour	4.72	
17	6	433	Tent Island	3.81	
17	6	434	Augustus Point	0.65	
17	6	436	Boulder Point	24.32	
17	6	442E	Tent Island (E)	2.35	
17	6	442D	Tent Island (N)	18.21	
17	6	644	Willy Island	5.85	
17	6	746	Crescent Point	7.62	
17	7	416	Ladysmith (Head), A	7.29	
17	7	417	Ladysmith (Head), B	3.86	
17	7	418	Holland Bank	12.24	
17	7	945	Wedge Point to Page Point	5.01	
17	7	946	Dunsmuir Island	3.63	
17	7	947	Davis Lagoon	3.50	
17	8	419	Crescent Bay	6.46	
17	8	437	Clam Bay	3.13	
17	8	438	Clam Bay	1.28	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
17	8	439	Clam Bay	7.81	
17	8	440	Clam Bay	5.00	
17	8	441	Clam Bay	8.48	
17	8	442B	Kuper Island (E)	11.87	
17	8	442C	Kuper Island (E)	27.63	
17	8	442A	Kuper Island (E)	21.95	
17	8	954	Pennalukut Spit	14.63	
17	9	435	Booth Bay	19.16	
17	9	899	Grave Point (N)	7.57	
17	9	1000	Vesuvius Bay	1.12	
17	10	426	Lock Bay	4.18	
17	10	898	Degnen Bay	16.37	
17	12	401	Ada Island	2.11	
17	12	402	Winchelsea Islands	1.09	
17	12	403	Winchelsea Islands	1.39	
17	12	961	Page Lagoon	6.35	
17	12	962	Horsewell Bluff	2.18	
17	13	421	Protection Gap	9.60	
17	13	422	Descanso Bay	2.51	
17	13	544	Newcastle Island	1.42	
17	13	963	Pacific Biological Station	0.56	
17	13	964	Departure Bay	2.99	
17	13	965	Shaft Point to Tyne Point	2.23	
17	13	966	Millstone Estuary	3.16	
17	14	991B	Nanaimo River Estuary	22.78	
17	14	991C	Nanaimo River Estuary	5.11	
17	14	991A	Nanaimo River Estuary	65.09	
17	16	539A	Percy Anchorage to Ramp	19.14	
17	16	539B	Shaw River to Ramp	26.12	
17	16	540	Mudge Island (S)	6.28	
17	16	541	Mudge Island (E)	2.60	
17	16	542	Link Island	2.85	
17	16	543	Dodd Narrows - Round Island	11.13	
17	17	415	De Courcy Island	1.84	
17	17	942	Gabriola Island (S) 1	3.13	
17	17	943	Gabriola Island (S) 2	6.60	
17	19	397	Richard Point	0.94	
17	19	398	Nanoose Breakwater to Blunden Point	75.24	
17	19	399	Datum Rock Breakwater	6.24	
17	20	396	Nanoose Bay (Head)	56.28	
17	20	400	Arbutus Grove to Fleet Point	9.49	
17	20	641	Nanoose Harbour Creek Mouth	10.09	
17	20	642	Arbutus Grove	2.26	

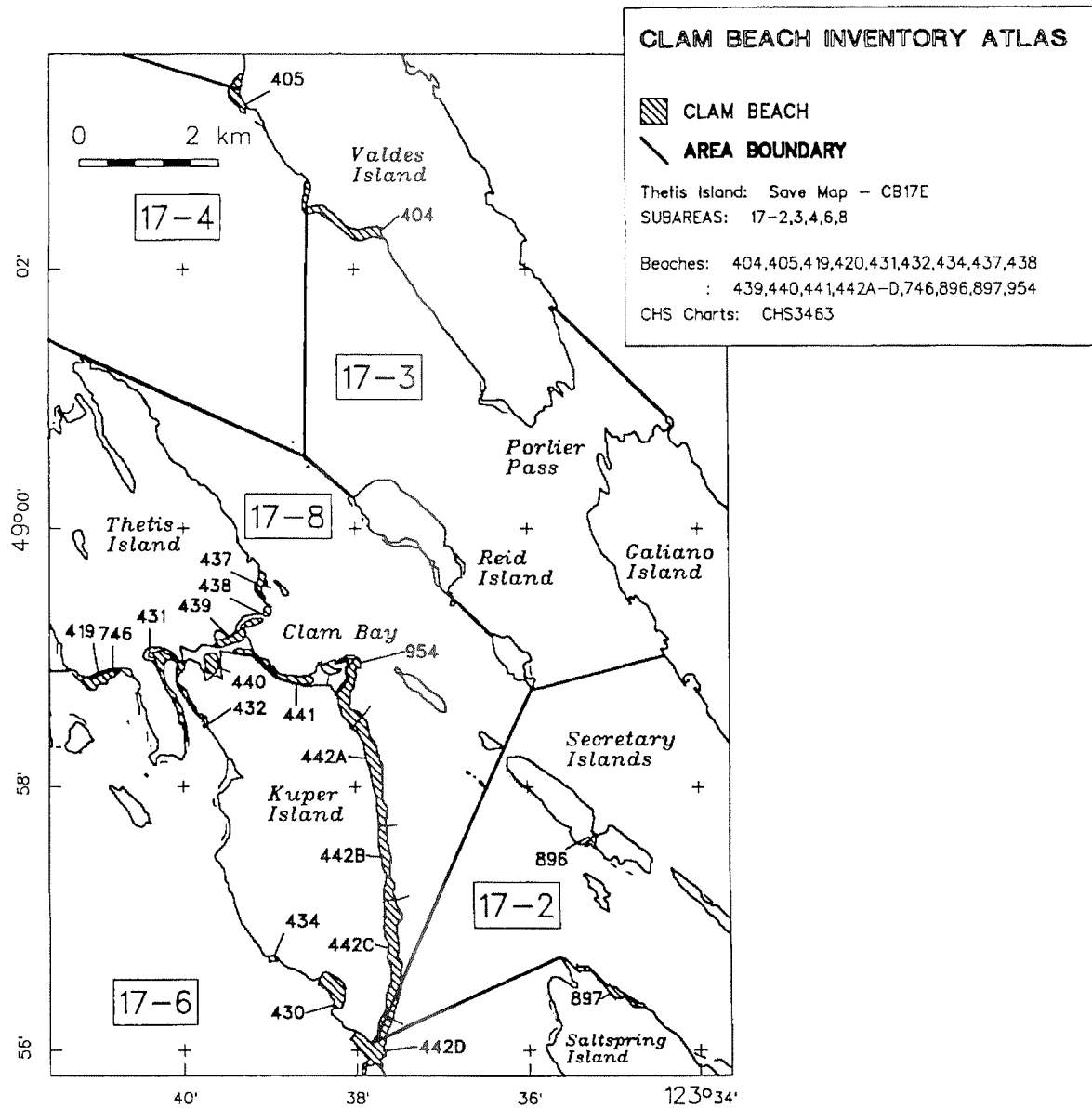
Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
17	20	643	Arbutus Grove (W)	12.18	
17	21	420	Lagoon Hd (S)	1.52	
17	21	423	Icarus Point	49.12	
17	21	424	Hammond Bay	1.58	
17	21	425	Hammond Bay	5.07	
<i>Total Beaches:</i>		89	<i>Total Beach Area:</i>	895.05	



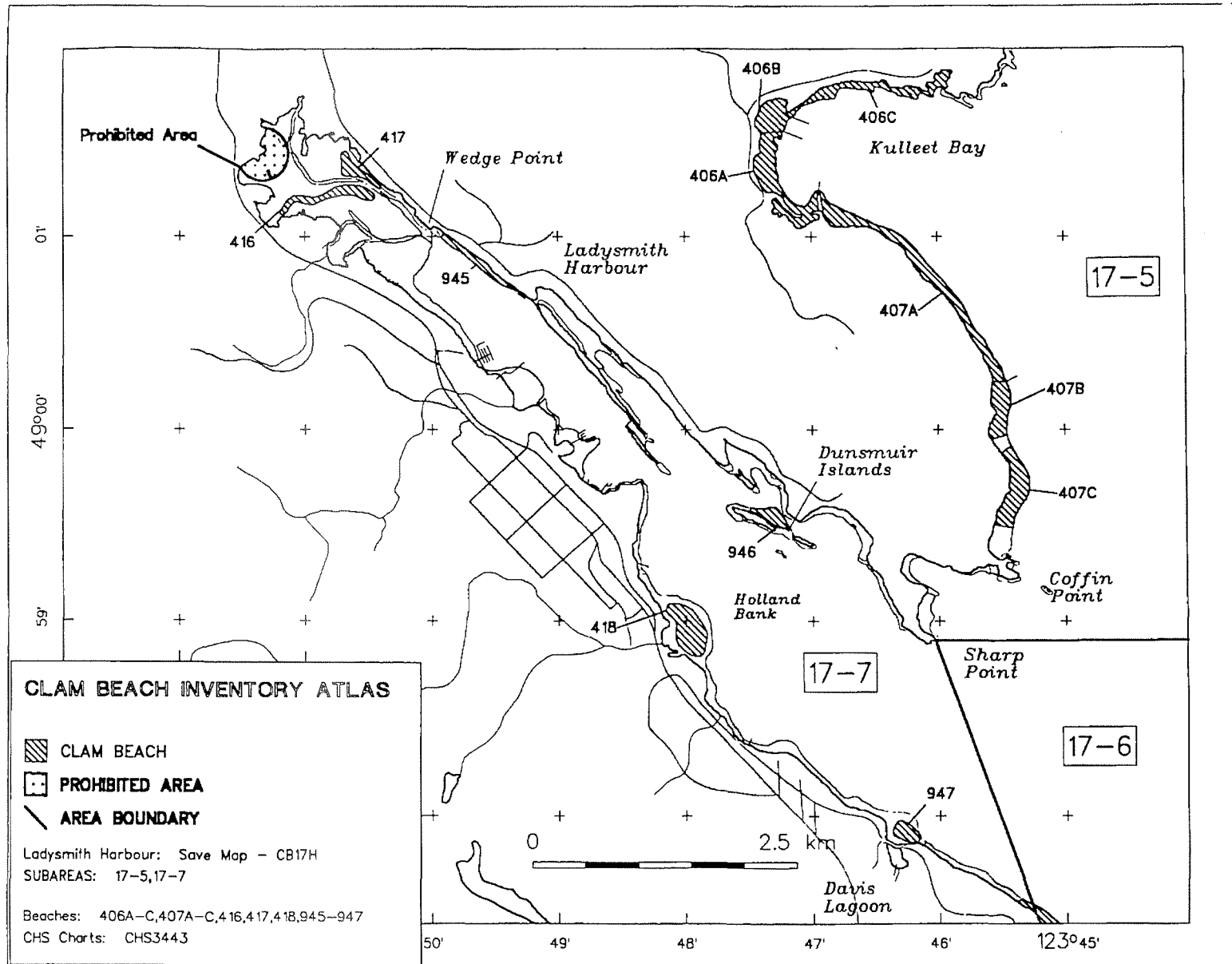
Appendix Figure 1.5.1.



Appendix Figure 1.5.2.






Appendix Figure 1.5.3.



Appendix Figure 1.5.4.

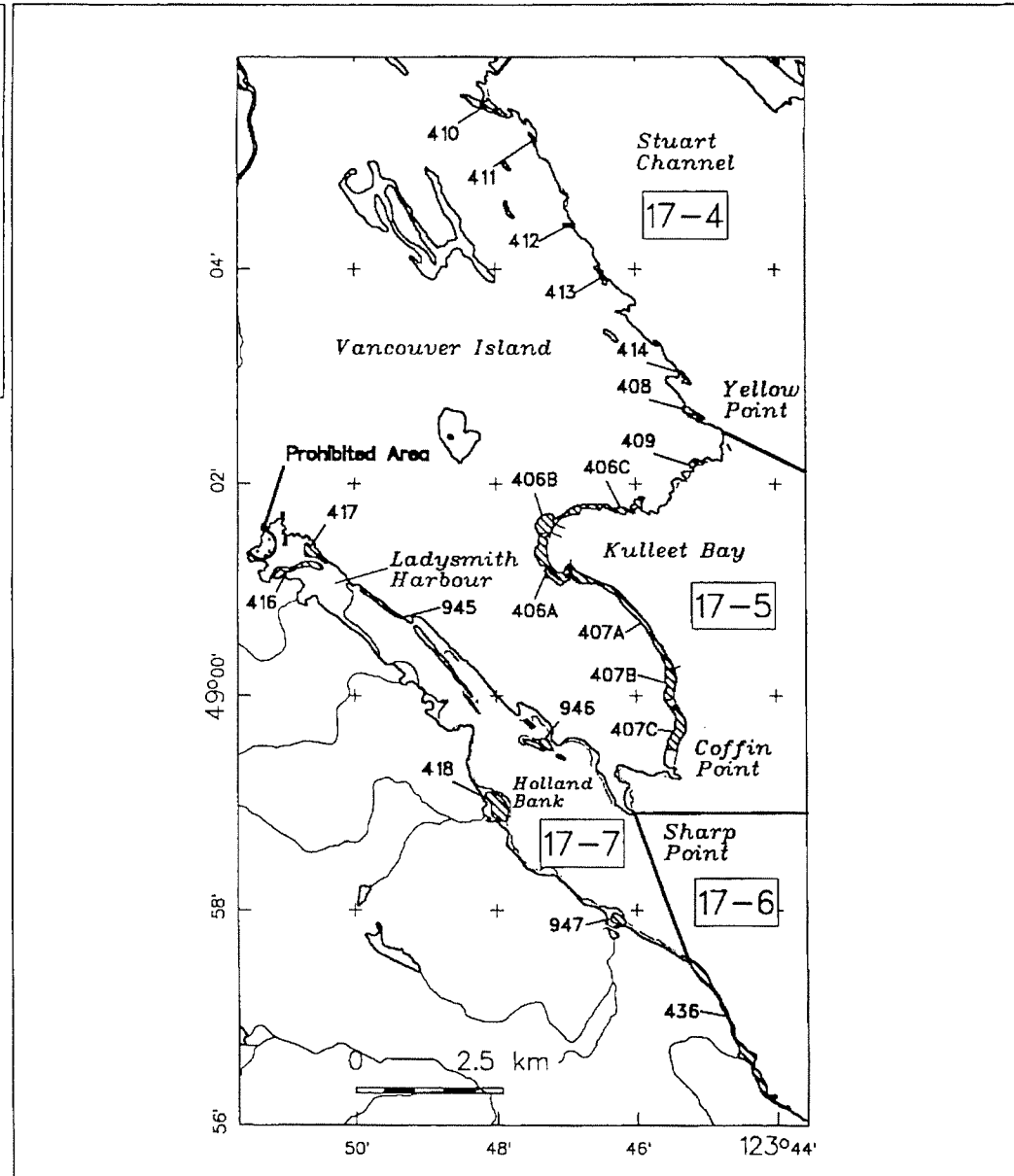
CLAM BEACH INVENTORY ATLAS

-  CLAM BEACH
-  PROHIBITED AREA
-  AREA BOUNDARY

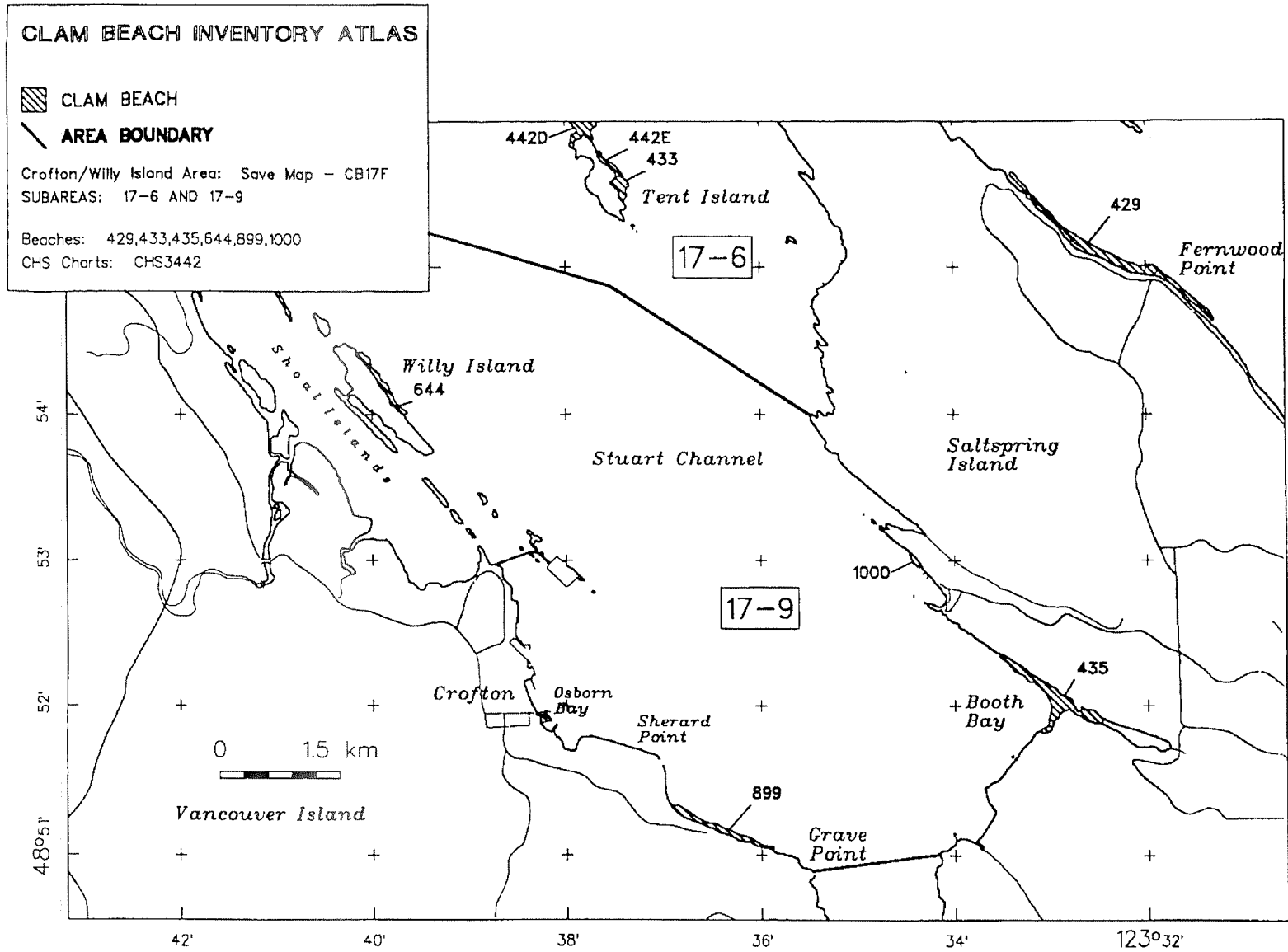
Ladysmith Harbour: Same Map - CB17D
SUBAREAS: 17-4, 17-5, 17-6, 17-7

Beaches: 406A-C, 407A-C, 408, 409, 410, 411
: 412, 413, 414, 416, 417, 418, 436

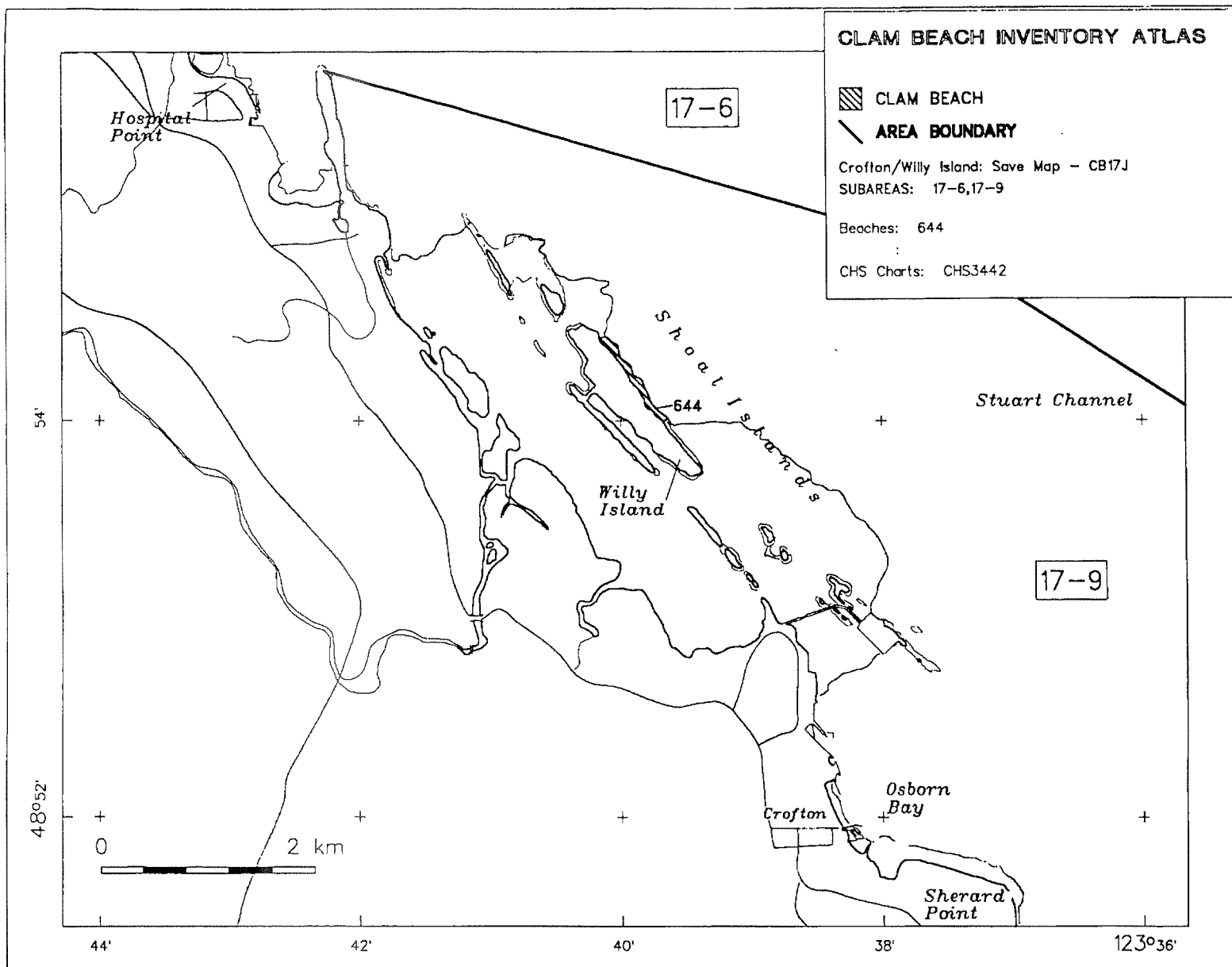
CHS Charts: CHS3463



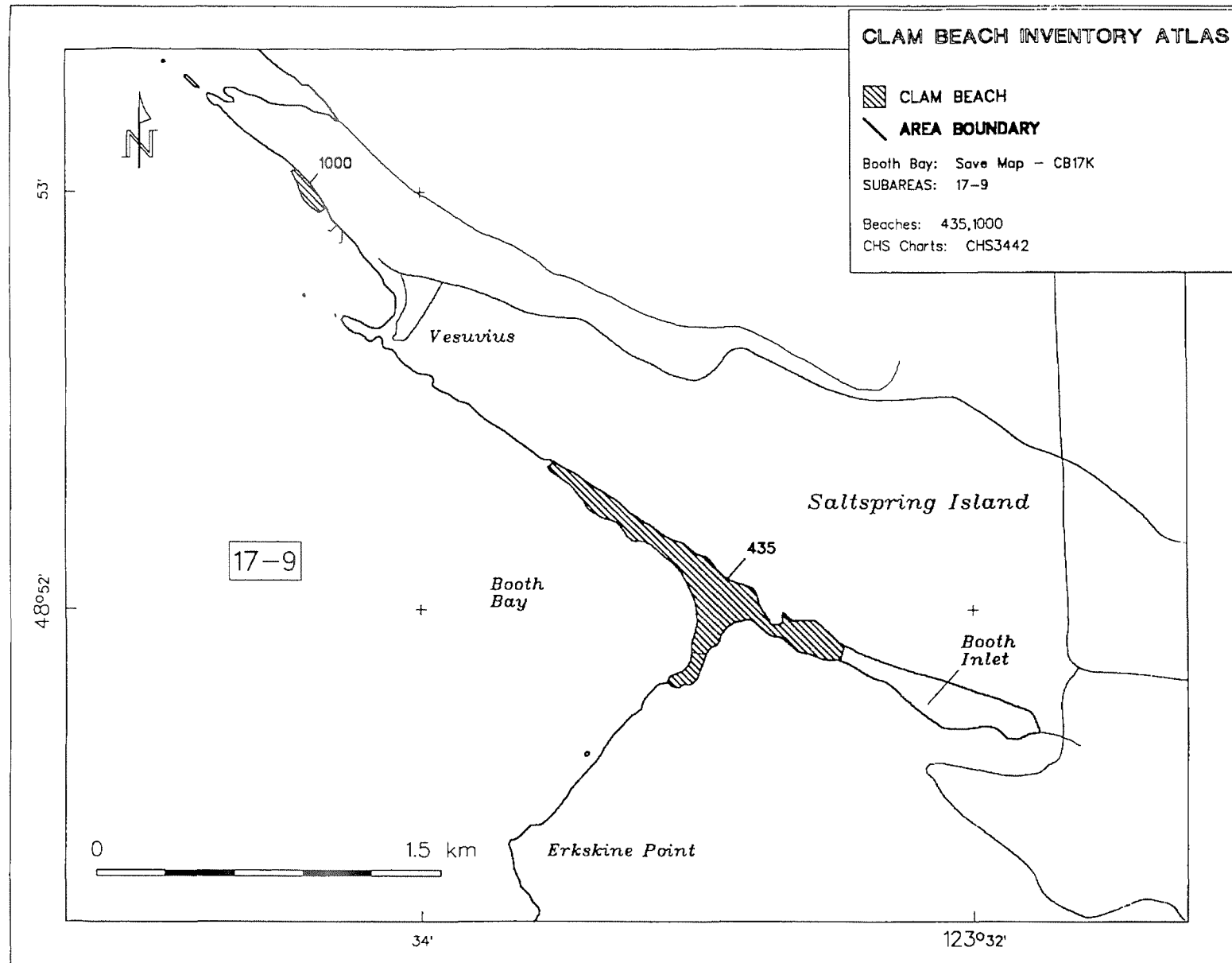
Appendix Figure 1.5.5.



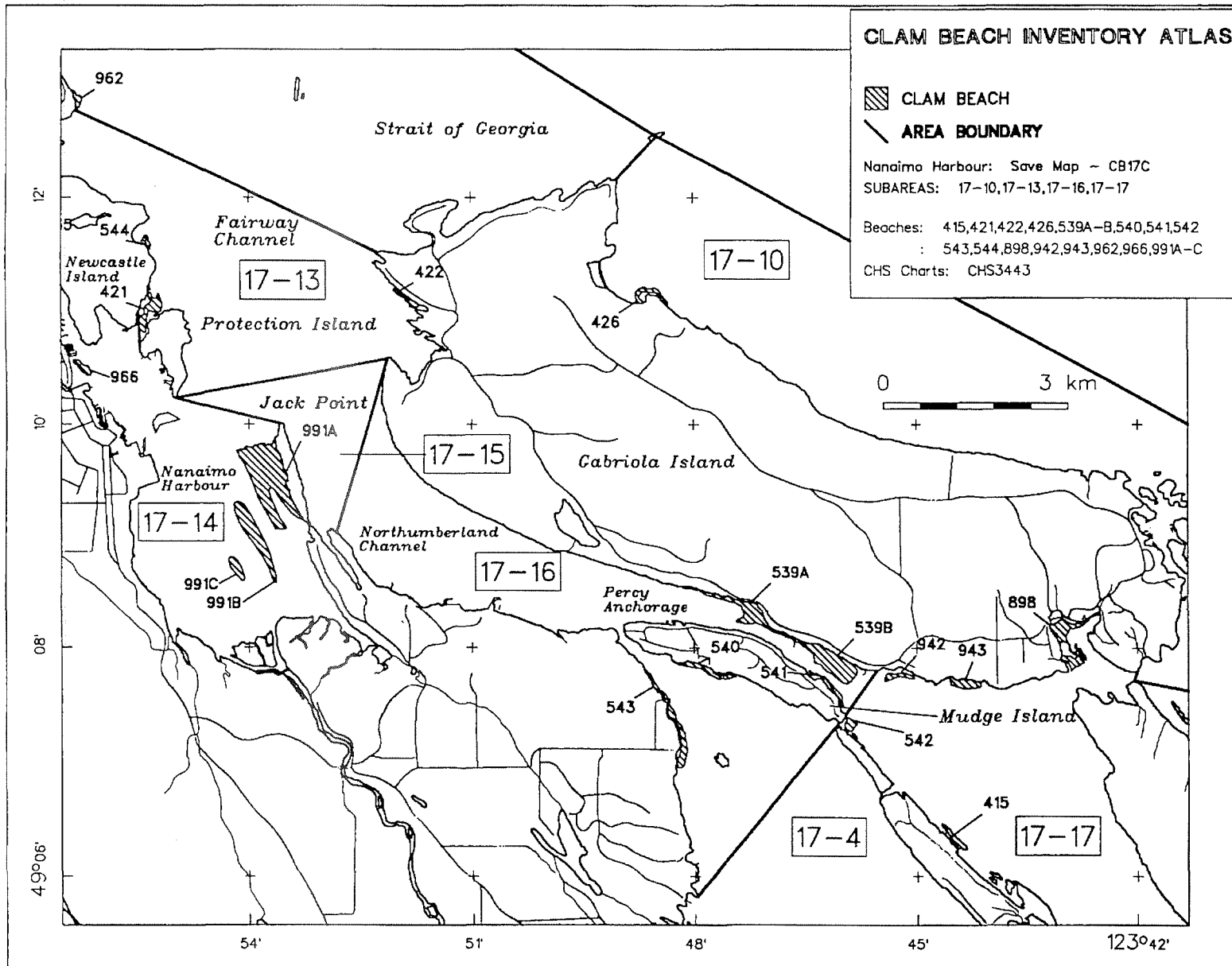
Appendix Figure 1.5.6.



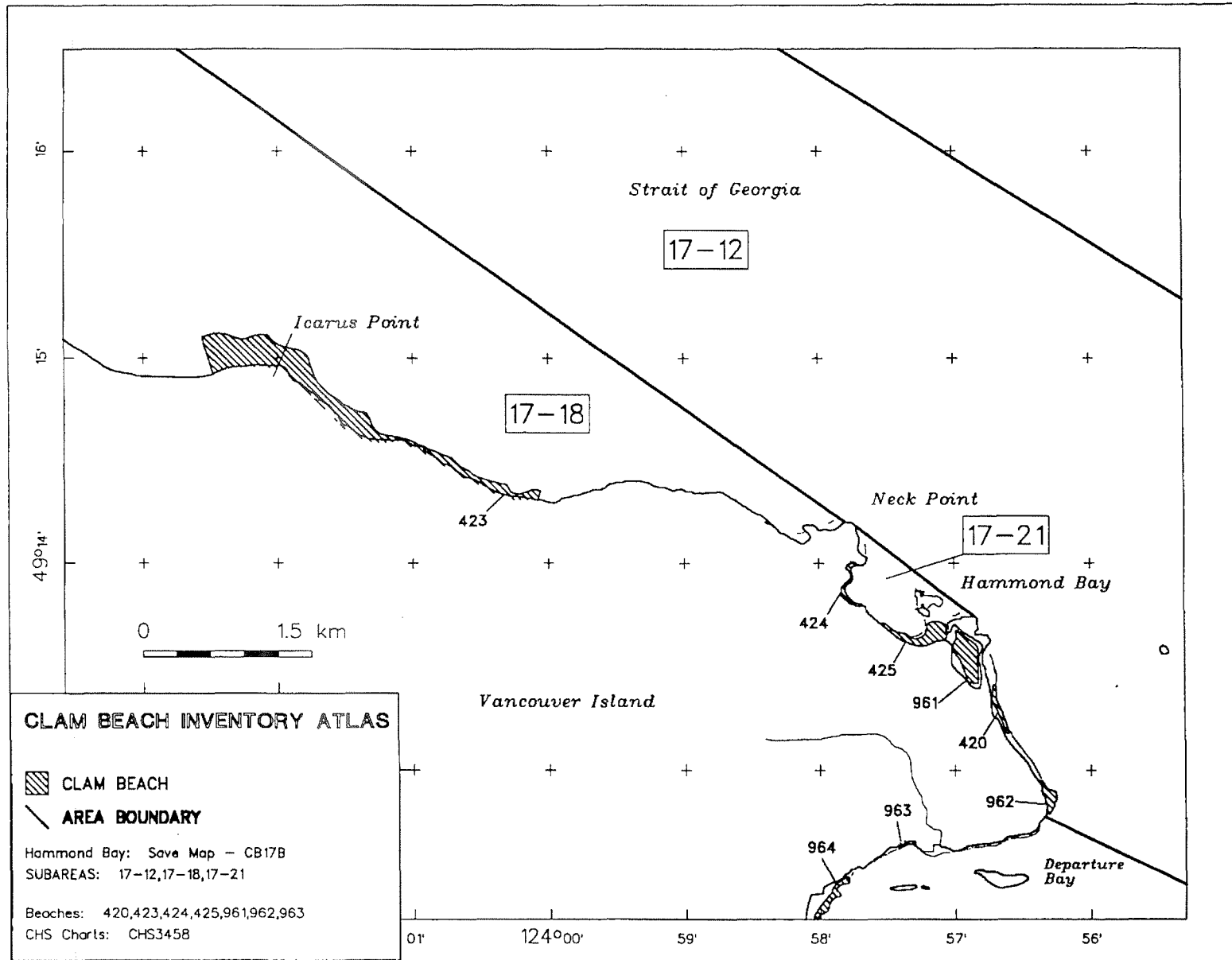
Appendix Figure 1.5.7.



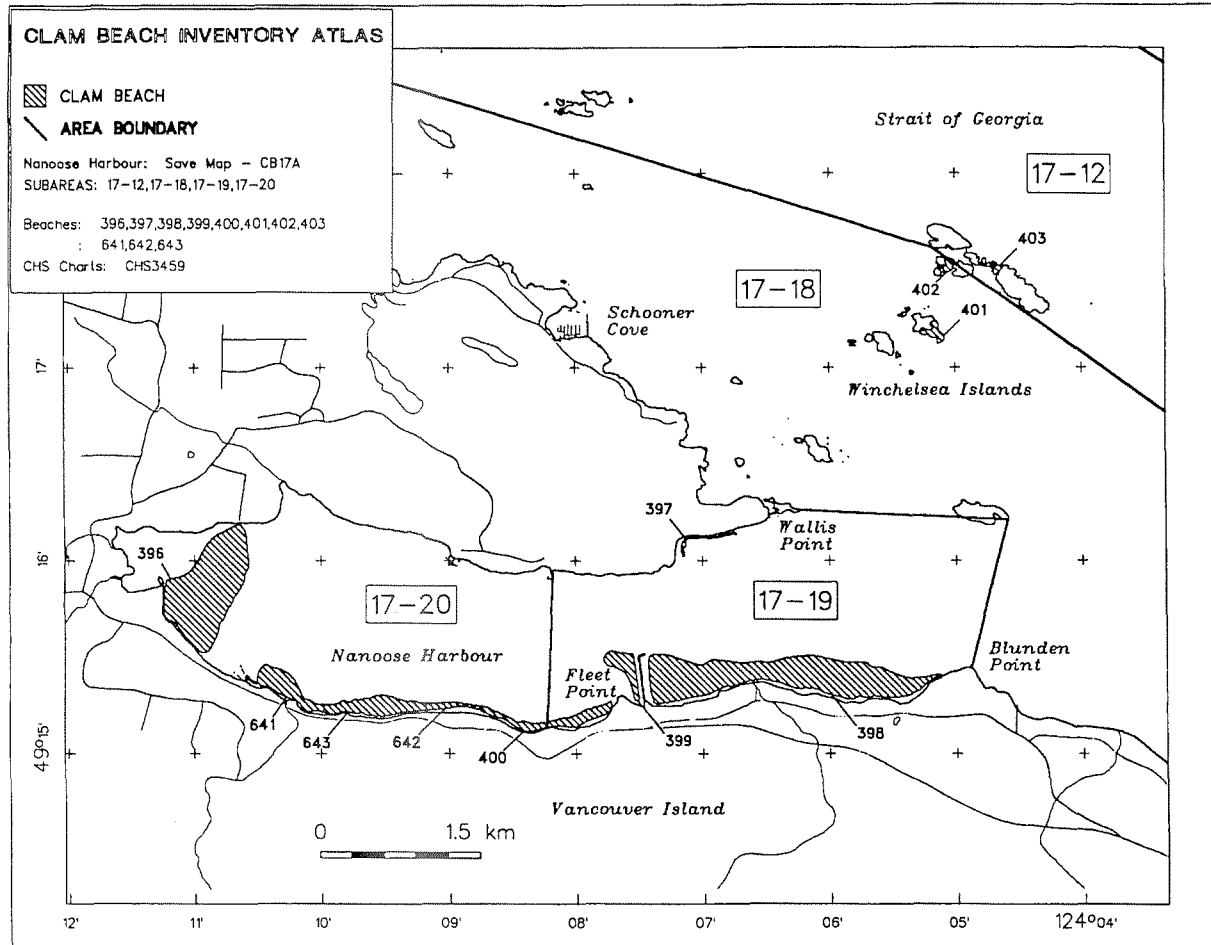
Appendix Figure 1.5.8.



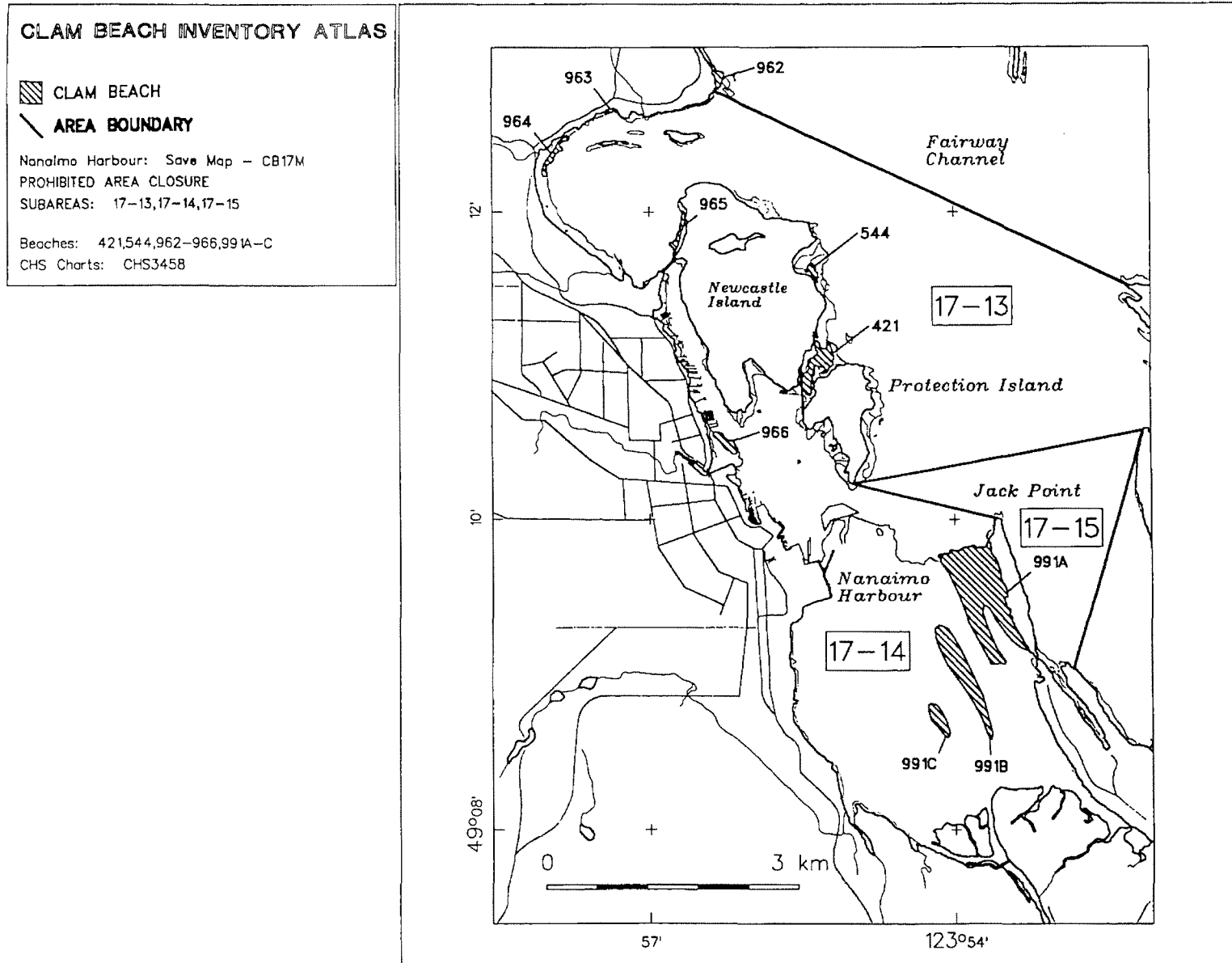
Appendix Figure 1.5.9.



Appendix Figure 1.5.10.





Appendix Figure 1.5.11.



Appendix Figure 1.5.12.

CLAM BEACH INVENTORY ATLAS

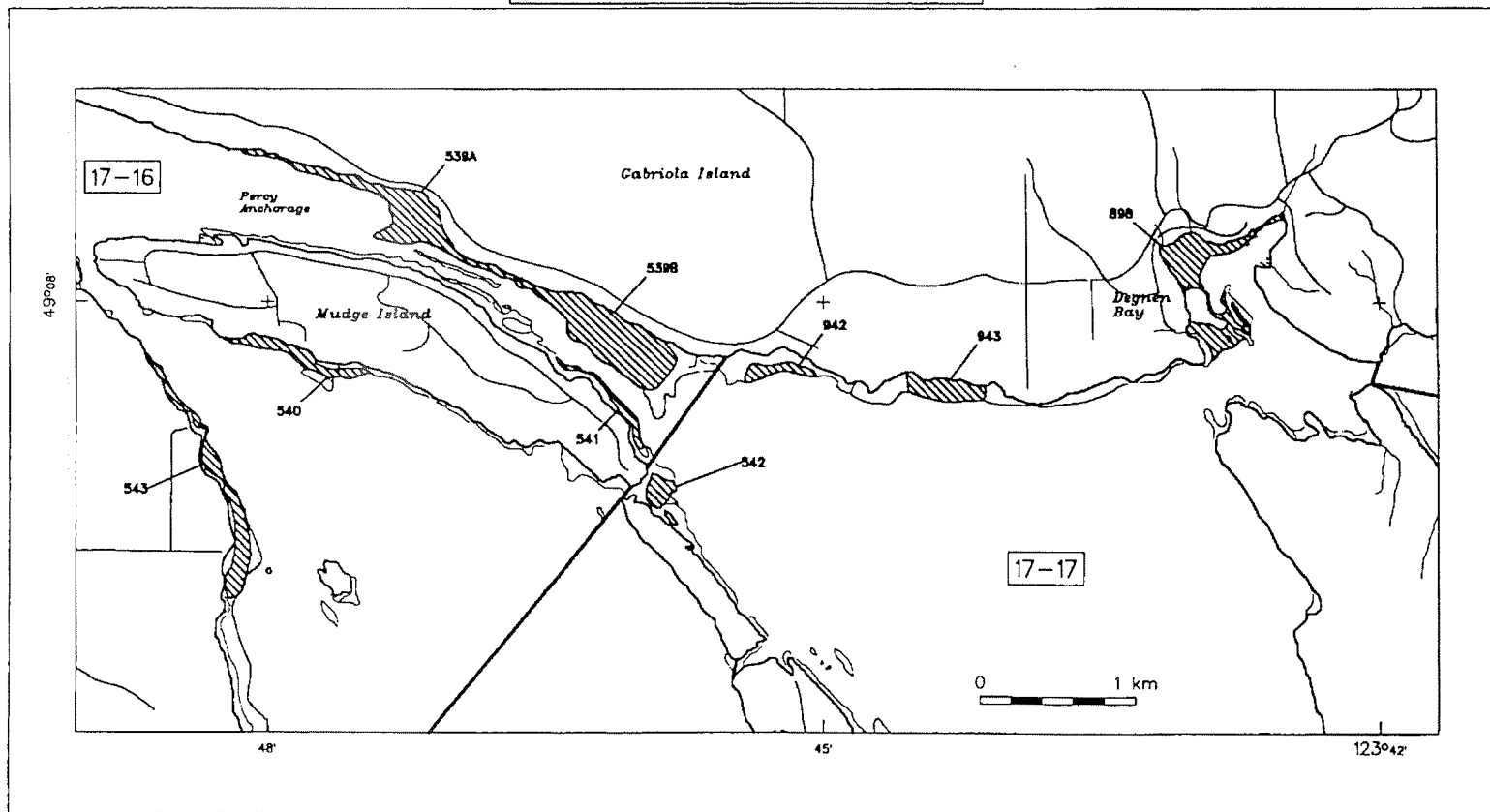
 CLAM BEACH

 AREA BOUNDARY

False Narrows to Degnen Bay: Save Map - CB17L
SUBAREAS: 17-16, 17-17

Beaches: 540, 541, 543, 898, 942, 943

:
CHS Charts: CHS3443

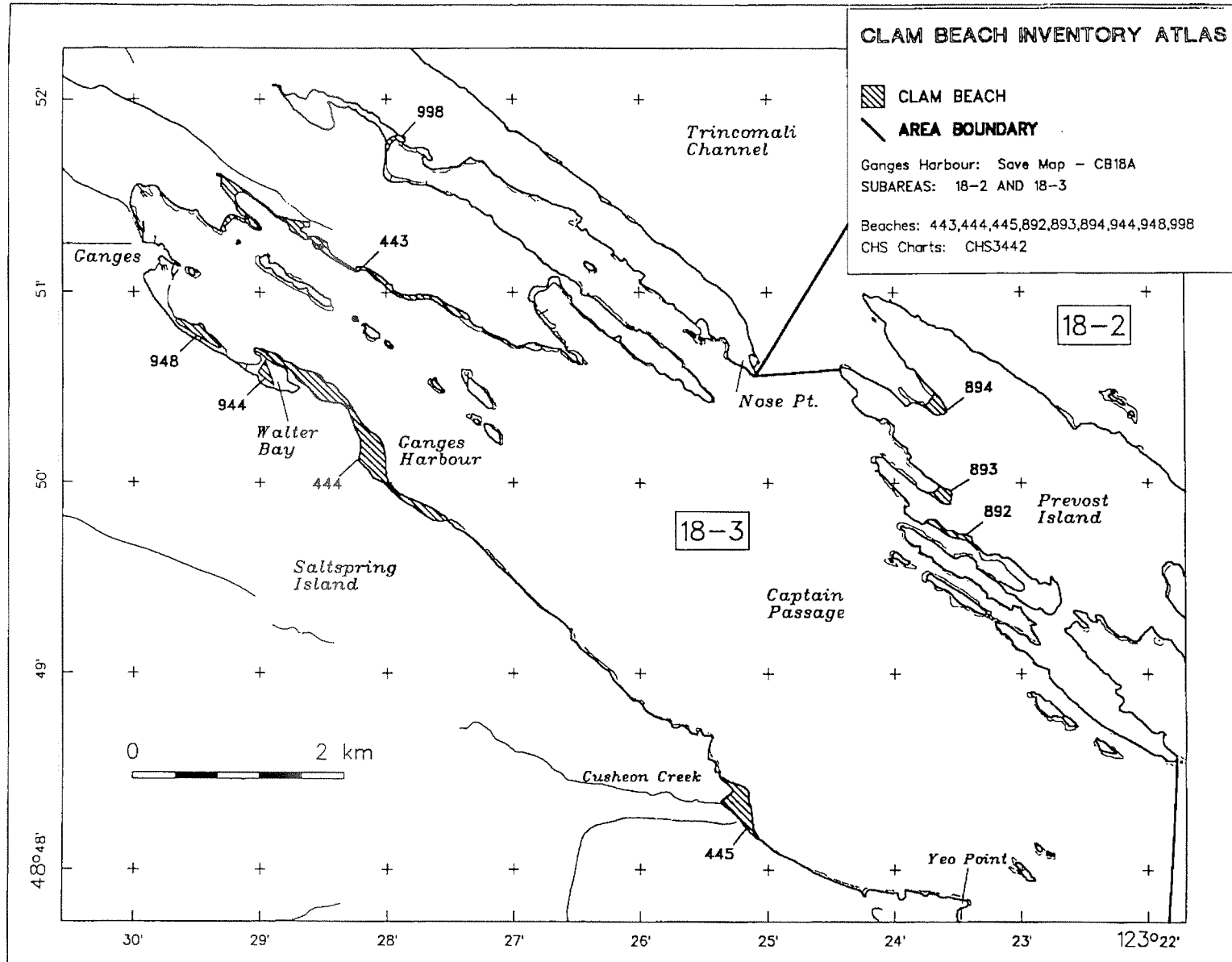


Appendix Figure 1.5.13.

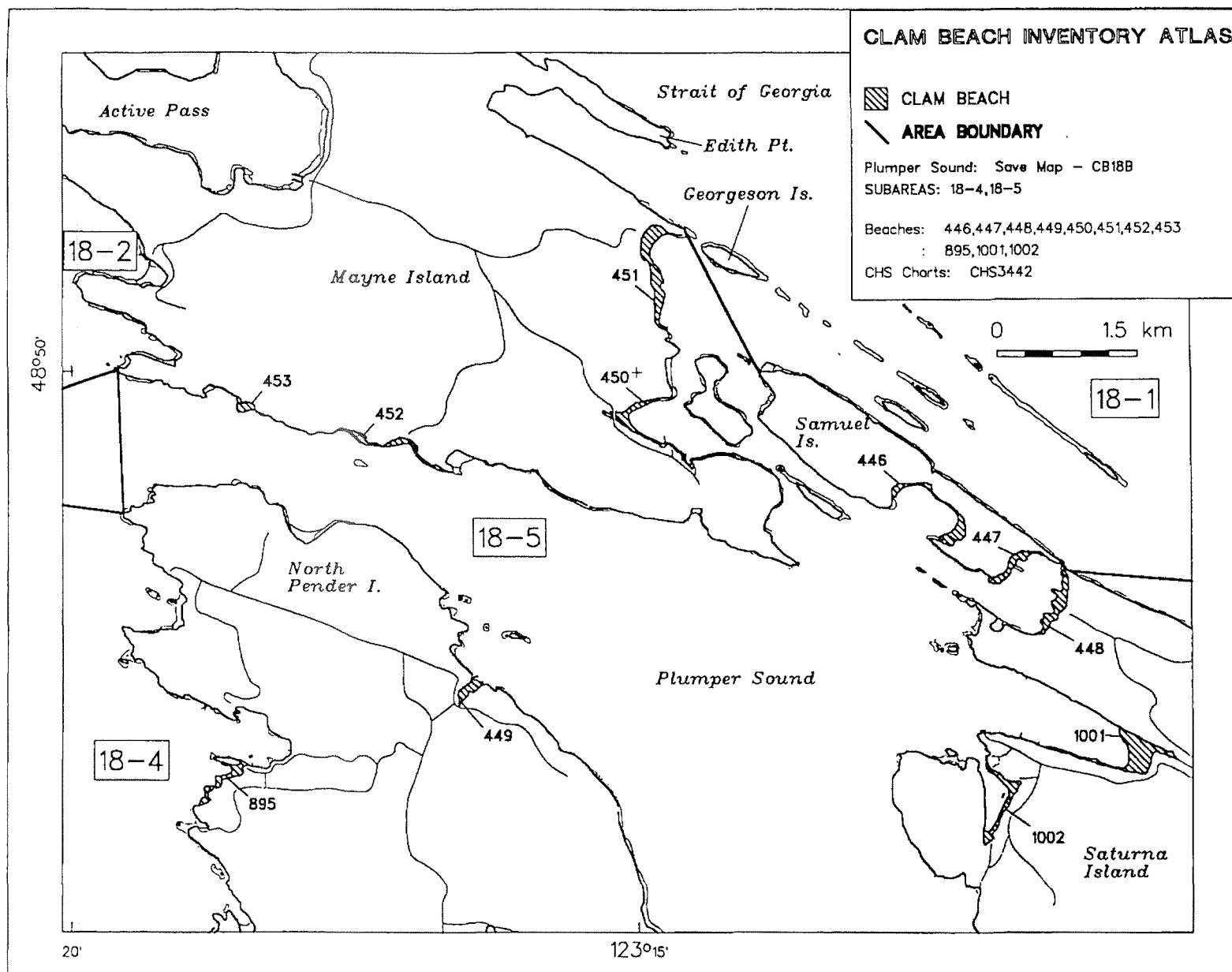
Appendix Table 1.6. British Columbia Clam Beach Inventory, sorted by Subarea for Management Area 18.

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
18	2	895	Otter Bay	4.54	
18	3	443	Ganges Harbour	16.57	
18	3	444	Ganges Harbour	25.83	
18	3	445	Cusheon Creek	7.55	
18	3	892	Annette Inlet (Outer Point)	2.66	
18	3	893	Selby Cove	2.32	
18	3	894	James Bay	2.59	
18	3	948	Sailing Club Beach	3.49	
18	3	998	Long Harbour	1.11	
18	4	480	Boat Nook	0.72	
18	4	658	Bedwell Harbour	6.96	
18	4	659	Bedwell Harbour	1.83	
18	4	660	Shark Cove	1.22	
18	4	661	Shark Cove	1.56	
18	5	446	Irish Bay	6.58	
18	5	447	Winter Cove	4.28	
18	5	448	Winter Cove	7.06	
18	5	449	Hope Bay	2.86	
18	5	450	Horton Bay	6.66	
18	5	451	Bennett Bay	11.57	
18	5	452	Navy Channel	4.92	
18	5	453	Navy Channel	1.96	
18	5	464	Port Browning	1.13	
18	5	477	Narvaez Bay	3.09	
18	5	481	South Pender Island	0.97	
18	5	482	South Pender Island	2.00	
18	5	483	South Pender Island	0.79	
18	5	484	South Pender Island	1.06	
18	5	647	Whaler Bay (Outer)	0.71	
18	5	1001	Lyall Harbour	13.16	
18	5	1002	Boot Cove	5.51	
18	6	465	Portland Island	5.63	
18	6	466	Portland Island	5.44	
18	6	467	Moresby Island	4.46	
18	6	468	Moresby Island	2.51	
18	6	469	Moresby Island	3.02	
18	6	471	Louisa Rock	8.66	
18	6	662	Saanich Inlet (N.Tip)	0.99	
18	6	663	Saanich Inlet (N.Tip)	0.58	
18	6	997A	Piers Island	0.74	
18	6	997B	Piers Island	1.52	

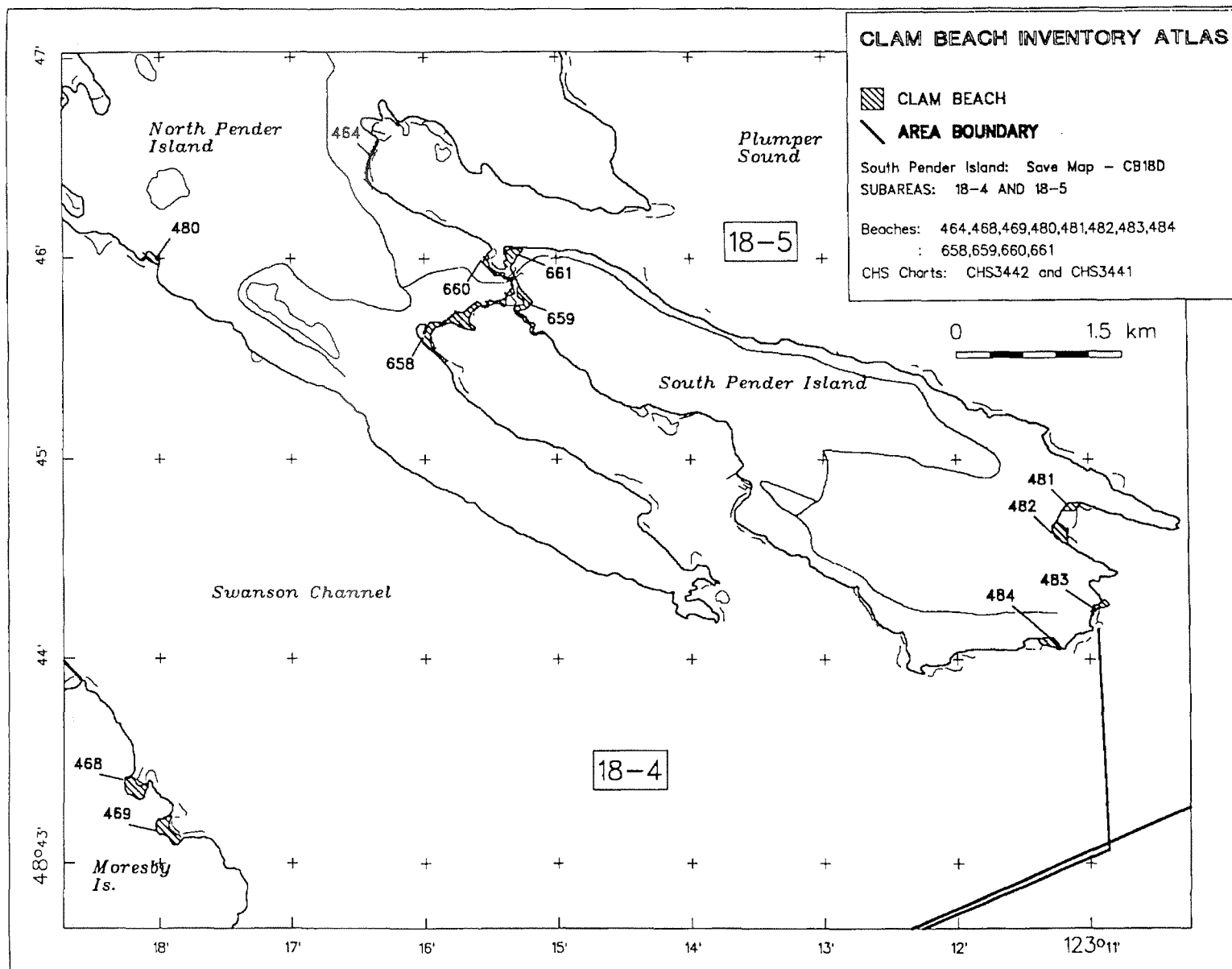
Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
18	6	997C	Piers Island	0.80	
18	6	1003	Isabella Island	1.79	
18	7	472	Boatswain Bank	21.16	
18	7	473	Musgrave Point	1.70	
18	7	474	Satellite Channel	3.95	
18	7	475	Satellite Channel	1.99	
18	7	476	Satellite Channel	9.46	
18	7	648	Paddy Mile Stone	2.02	
18	7	649	Burgoyne Bay	15.85	
18	7	650	Sansum Point (N)	1.99	
18	7	651	Sansum Narrows	0.49	
18	7	652	Sansum Narrows	0.29	
18	7	653	Sansum Narrows	0.32	
18	8	999	Cowichan Bay	15.02	
18	10	470	Fulford Harbour	12.15	
18	11	478	Cabbage Island	22.12	
18	11	479	Tumbo Island	4.19	
Total Beaches:		58	Total Beach Area:	302.10	



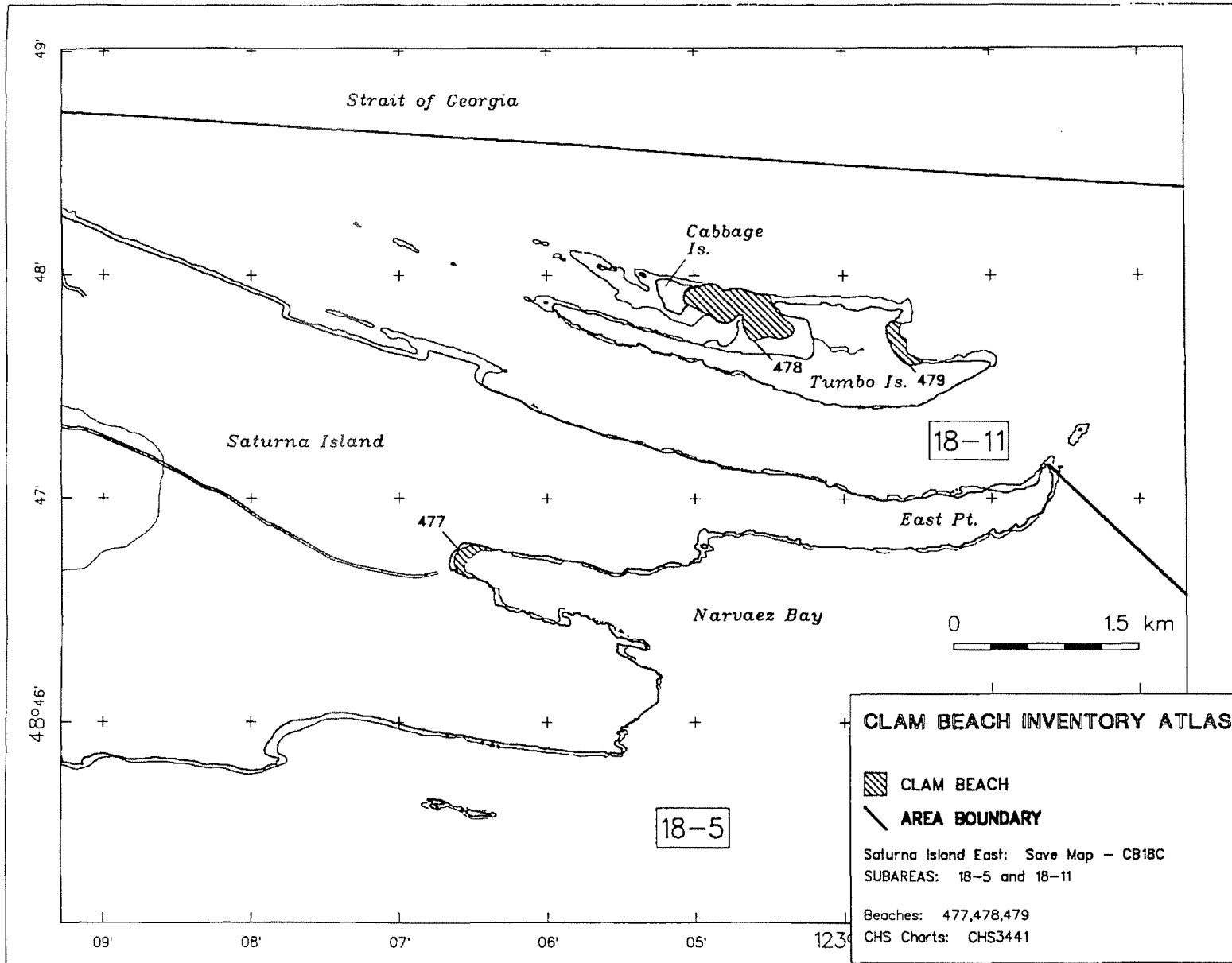
Appendix Figure 1.6.1.



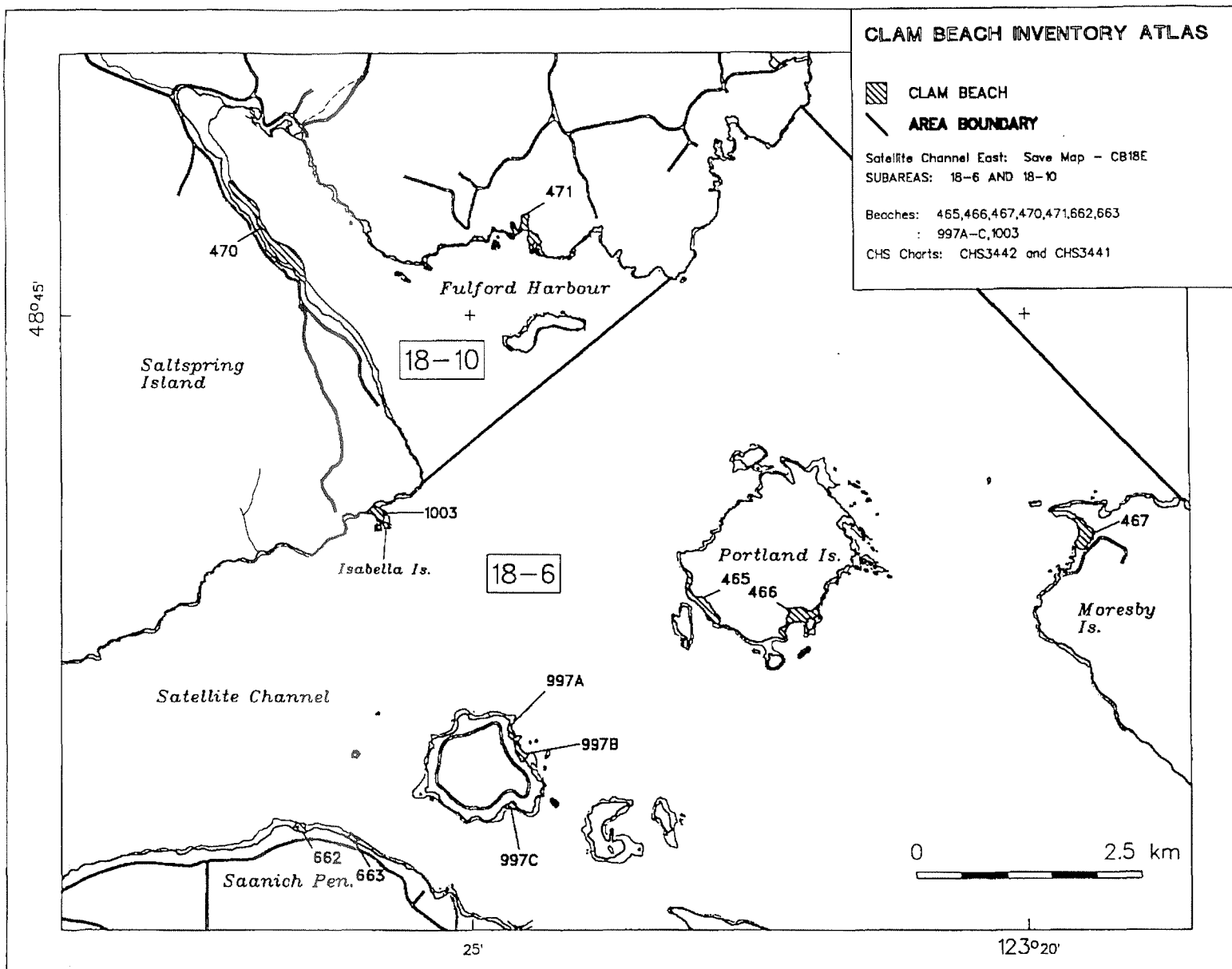
Appendix Figure 1.6.2.



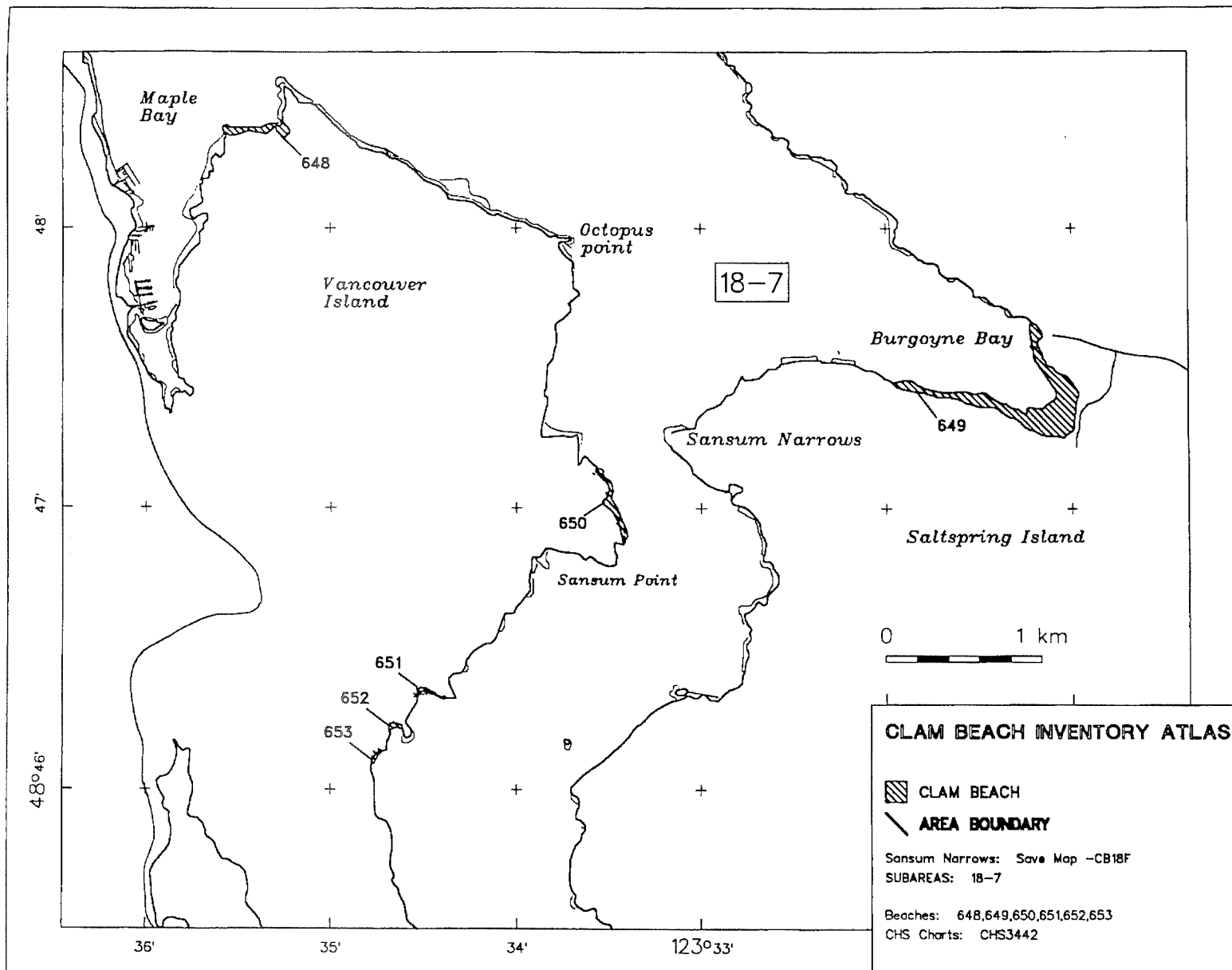
Appendix Figure 1.6.3.



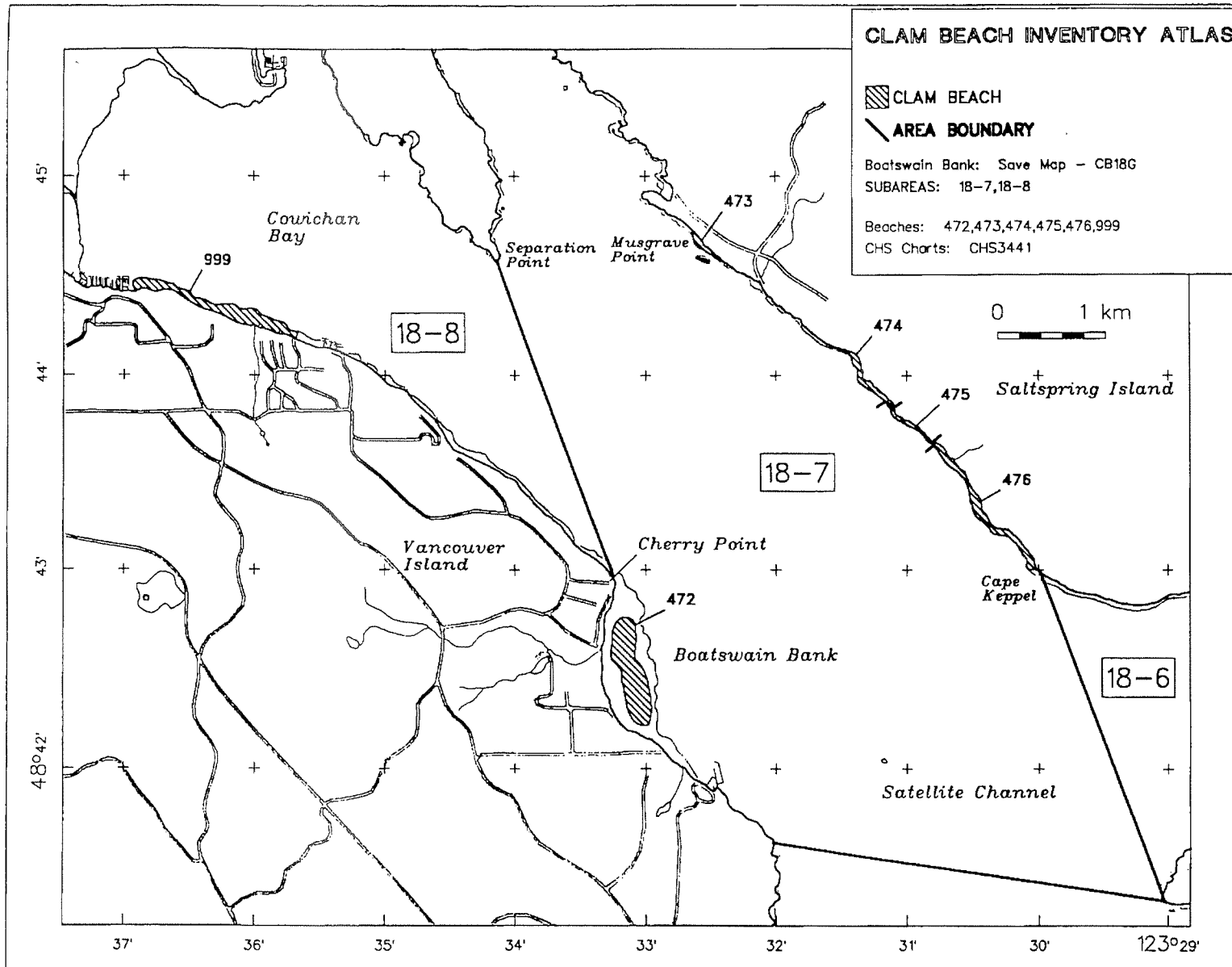
Appendix Figure 1.6.4.



Appendix Figure 1.6.5.



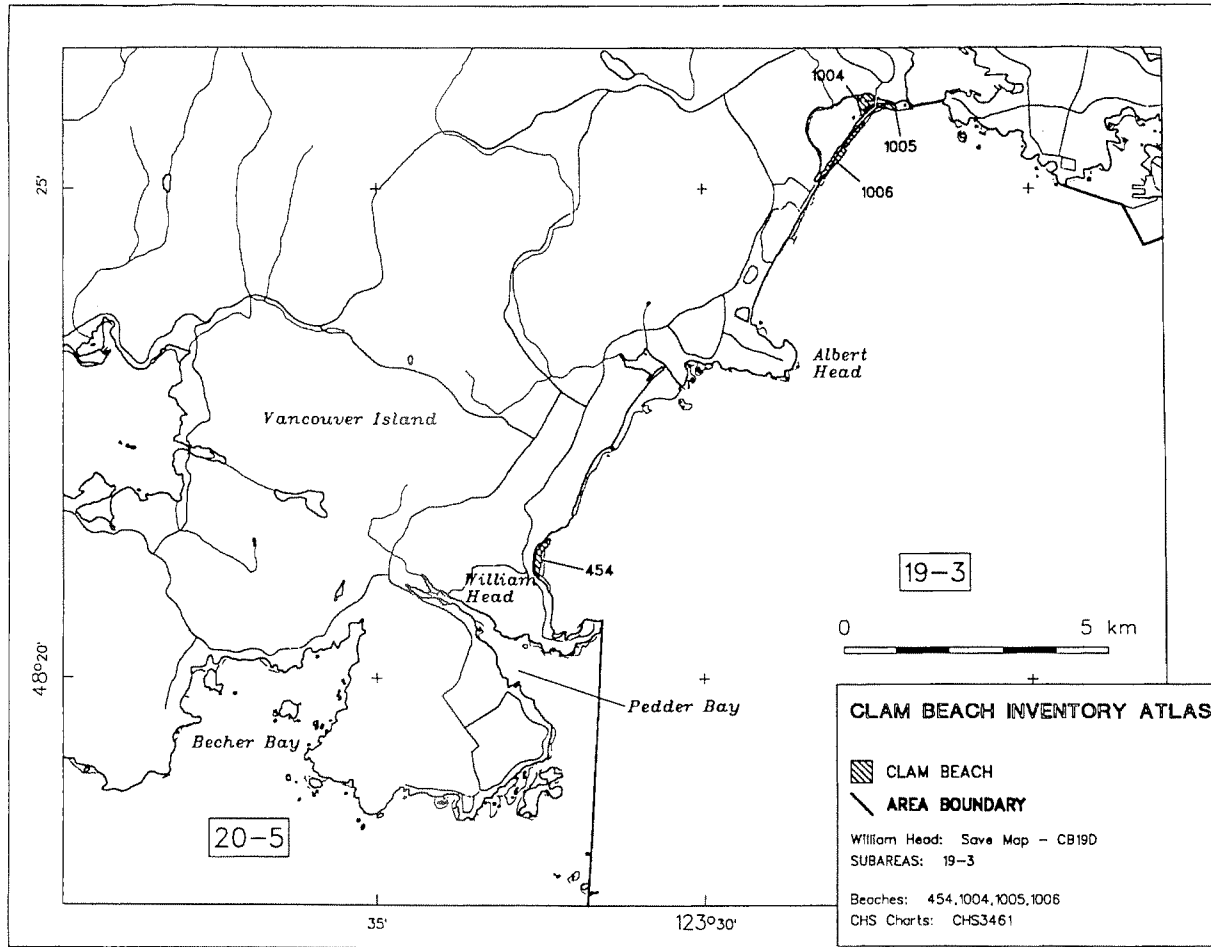
Appendix Figure 1.6.6.



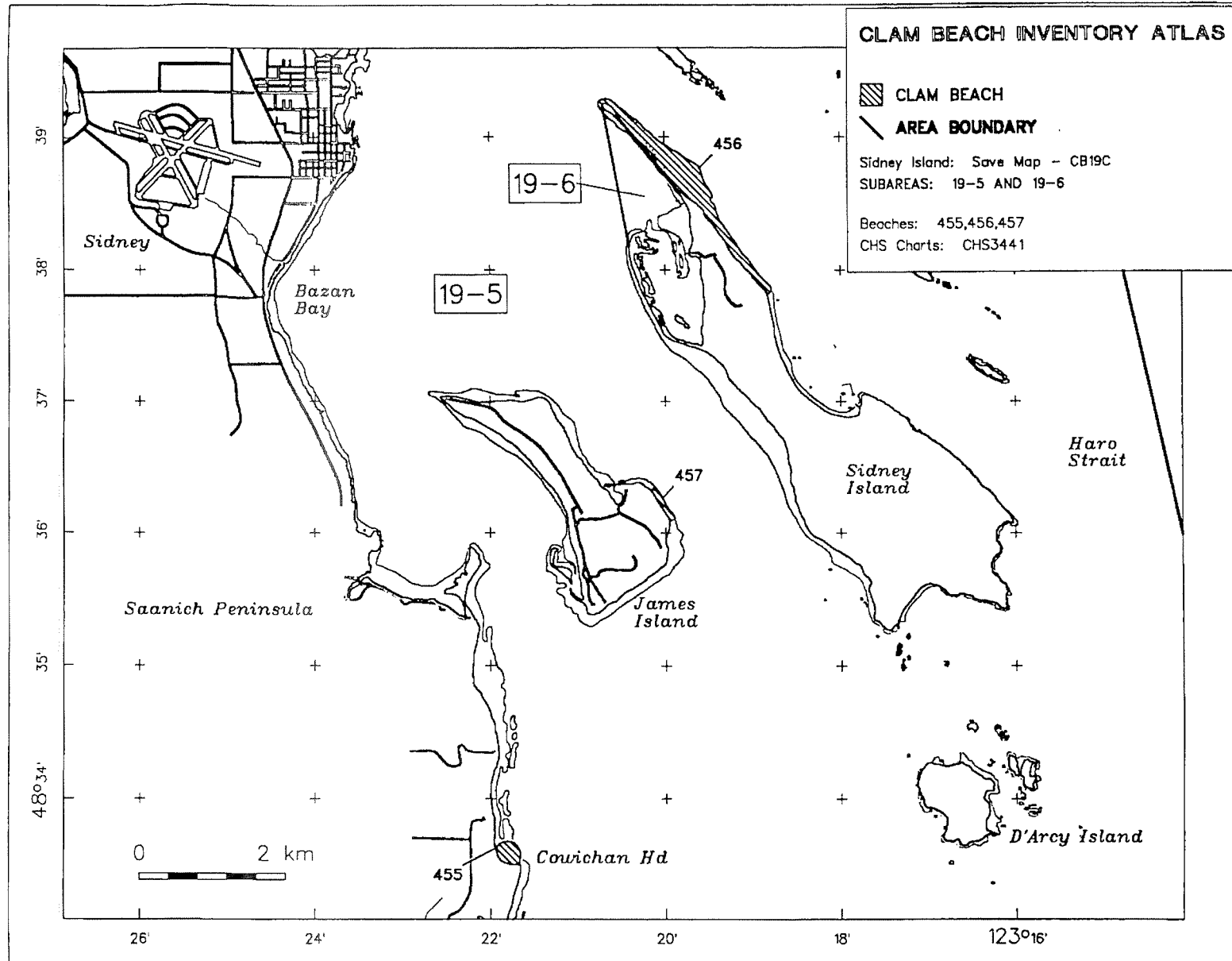
Appendix Figure 1.6.7.

Appendix Table 1.7. British Columbia Clam Beach Inventory, sorted by Subarea for Management Area 19.

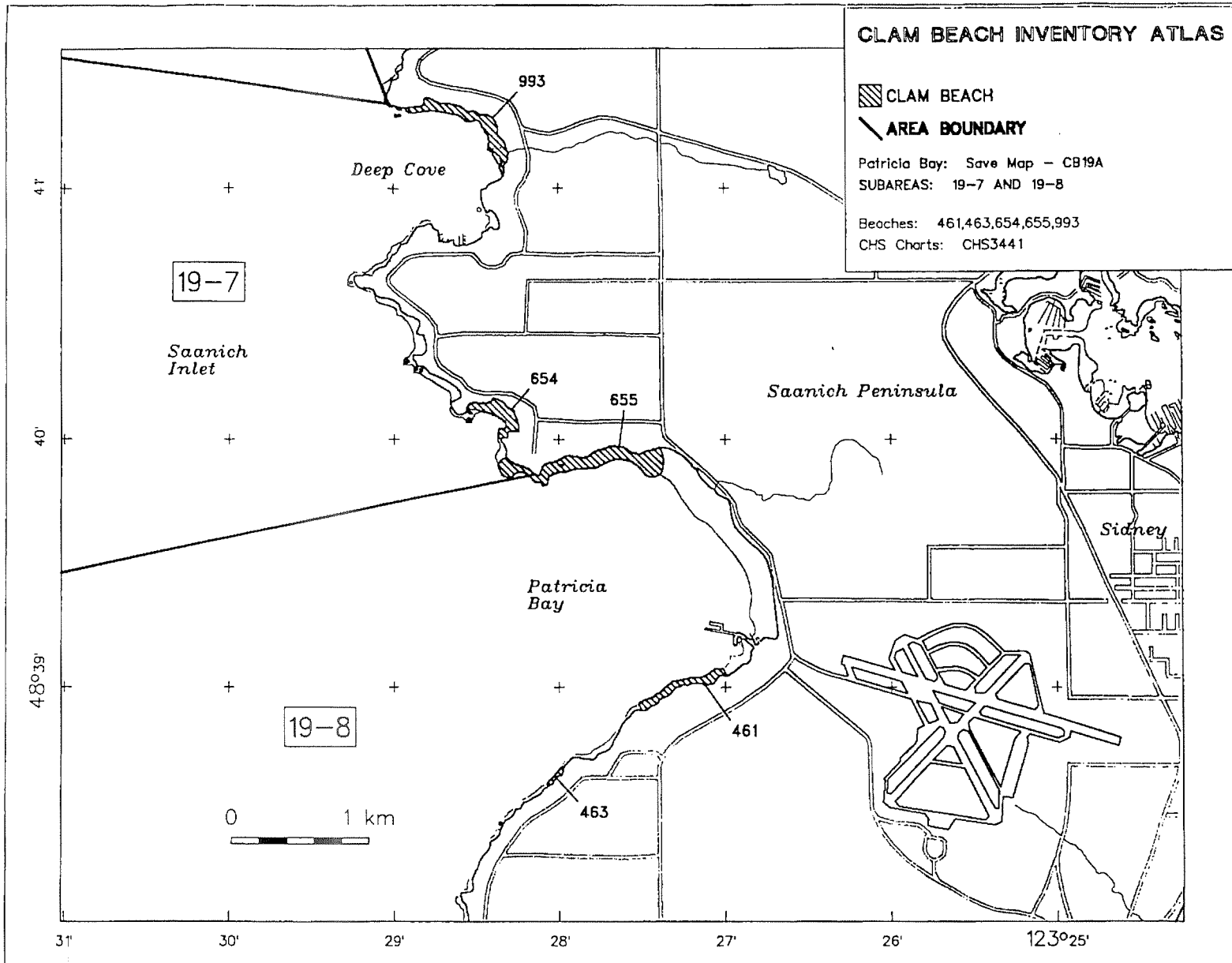
Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
19	3	454	Wier Beach	7.39	
19	3	1004	Esquimalt Lagoon	6.80	
19	3	1005	Esquimalt Lagoon	3.15	
19	3	1006	Esquimalt Lagoon	10.20	
19	5	455	Cowichan Head (N)	8.21	
19	6	456	Sidney Spit	76.86	
19	6	457	James Island	3.89	
19	7	654	Towner Bay	4.40	
19	7	993	Deep Cove	7.25	
19	8	458	Bamberton Park	15.37	
19	8	459	Mcphail to Verdier Point	6.88	
19	8	460	Coles Bay	3.67	
19	8	461	Patricia Bay	3.46	
19	8	462	Indian Bay	3.03	
19	8	463	Saanich Inlet (38'45")	0.43	
19	8	655	Patricia Bay (N)	13.33	
19	8	656	Verdier Point (N)	3.89	
19	8	657	Mcphail Point	2.98	
19	8	953	Mill Bay	1.83	
19	12	950	Goldstream Flats	14.70	
Total Beaches:		20	Total Beach Area:	197.72	



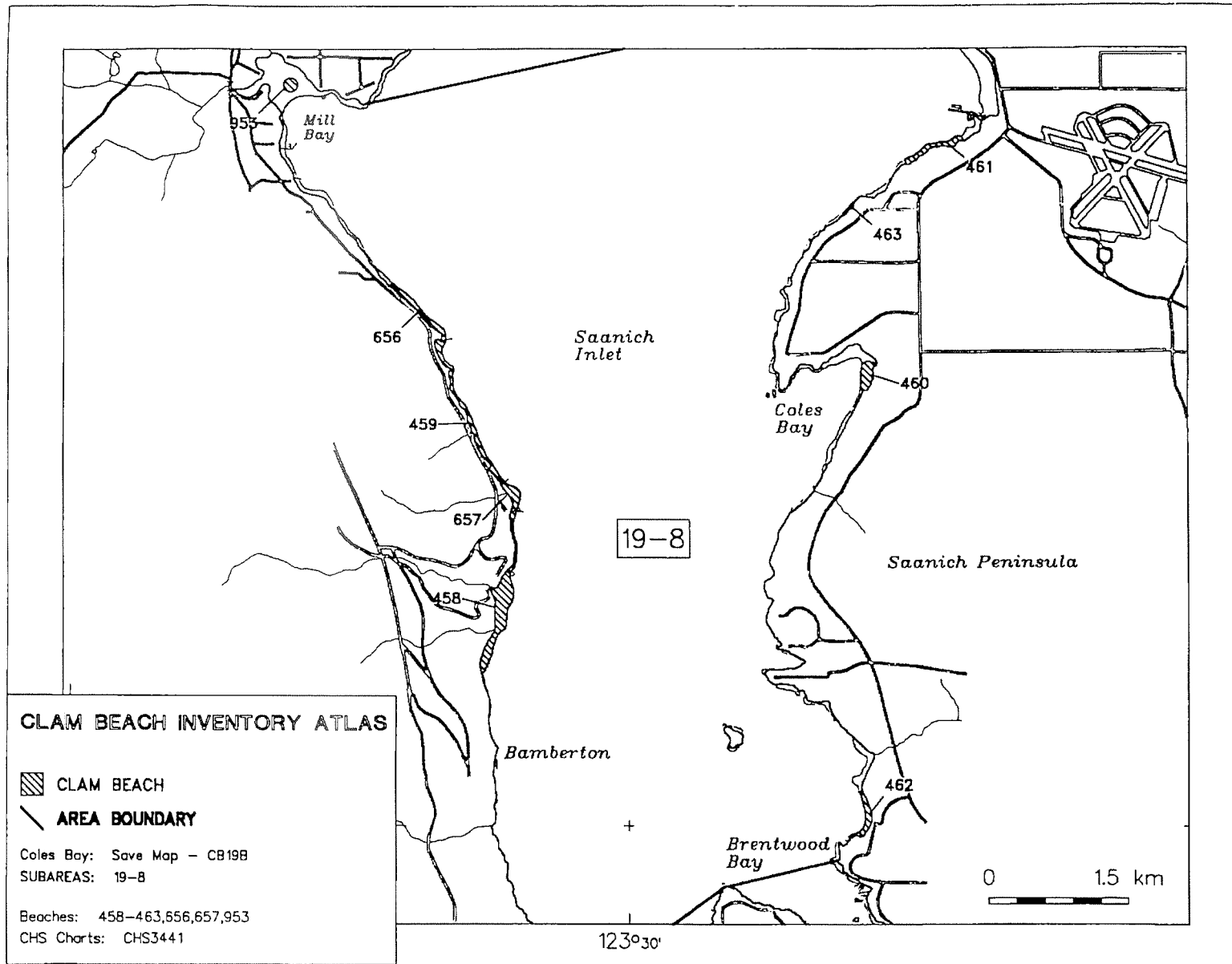
Appendix Figure 1.7.1.



Appendix Figure 1.7.2.





Appendix Figure 1.7.3.



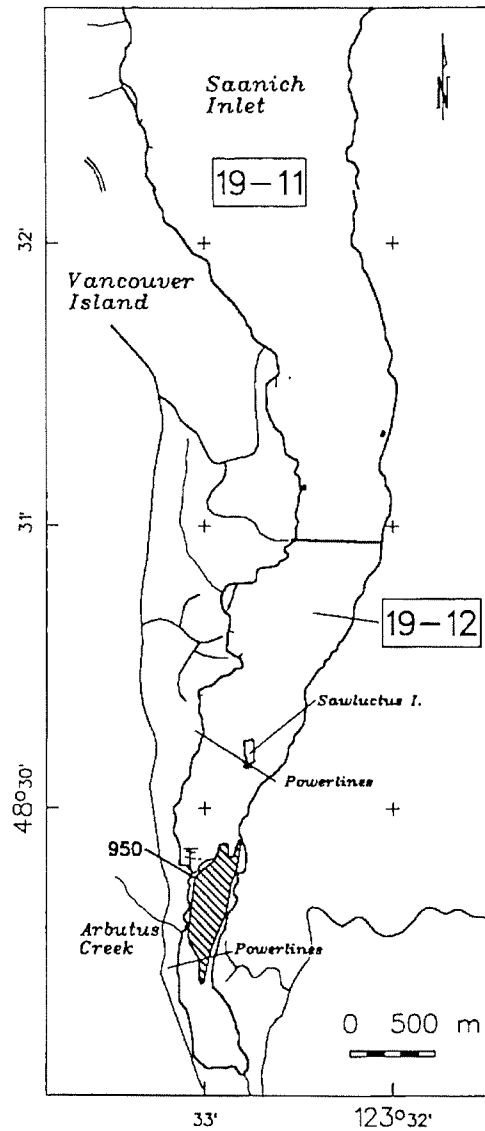
Appendix Figure 1.7.4.

CLAM BEACH INVENTORY ATLAS

-  CLAM BEACH
-  AREA BOUNDARY

Saanich Inlet: Save Map - CB19E
SUB-AREAS: 19-12 AND 19-11

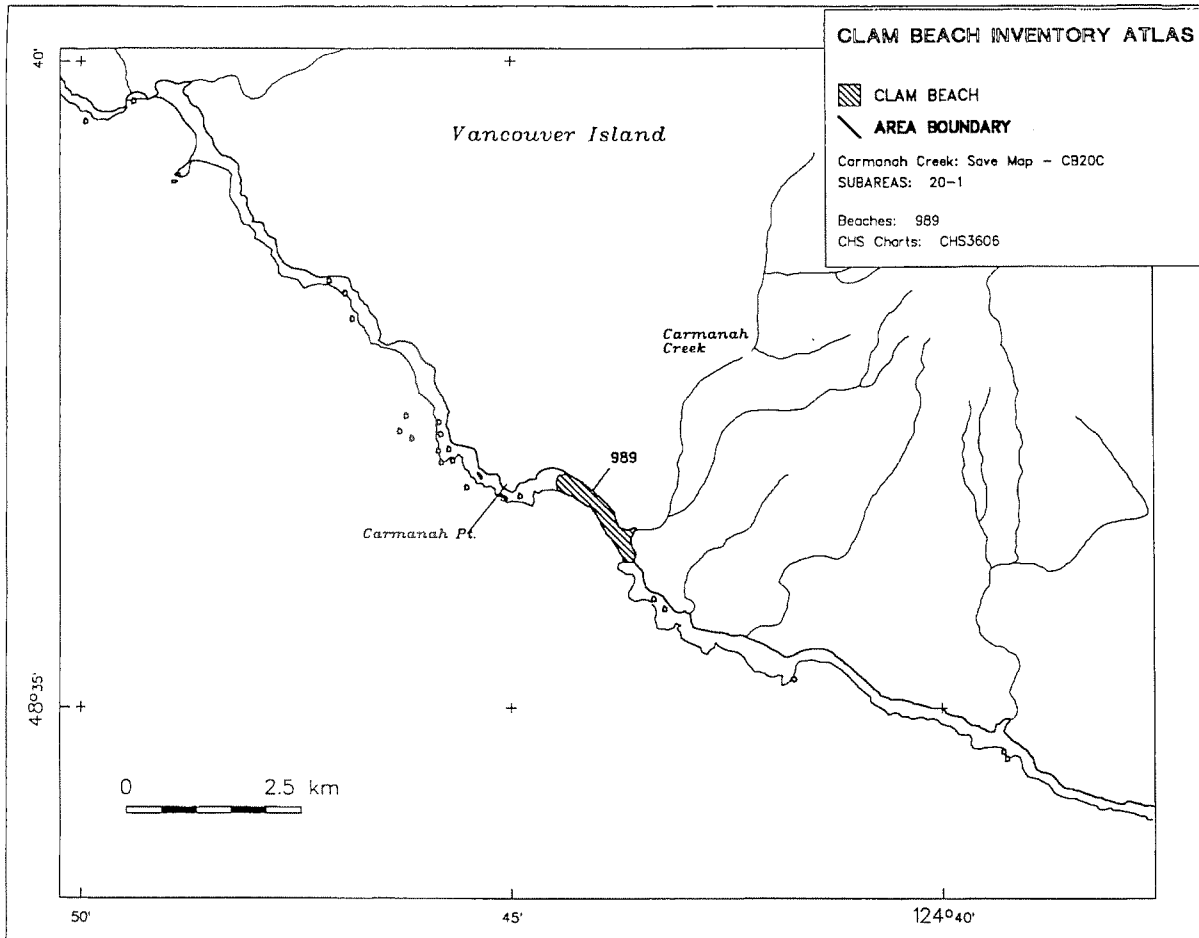
Beaches: 950
CHS Charts: CHS3441



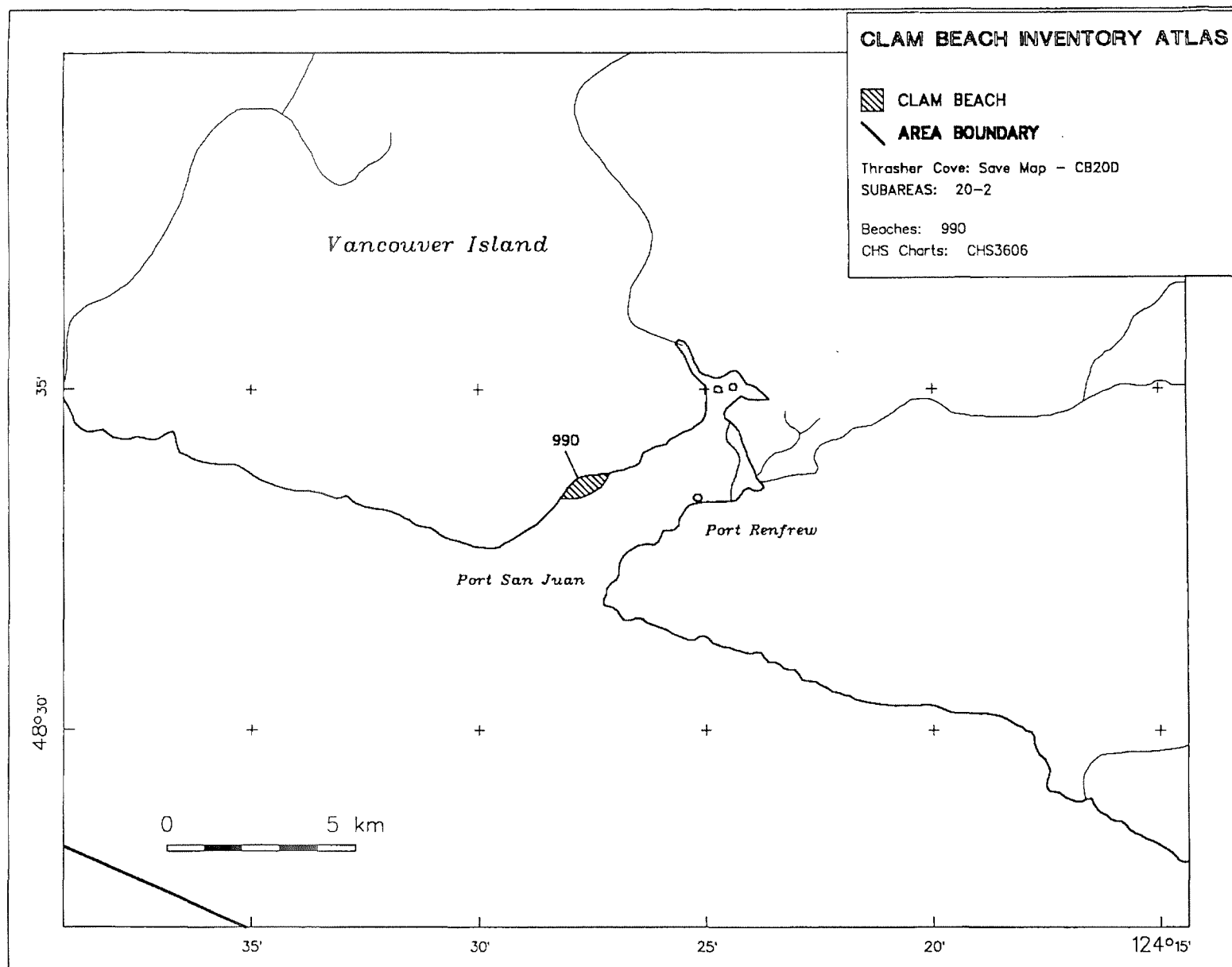
Appendix Figure 1.7.5.

Appendix Table 1.8. British Columbia Clam Beach Inventory, sorted by Subarea for Management Area 20.

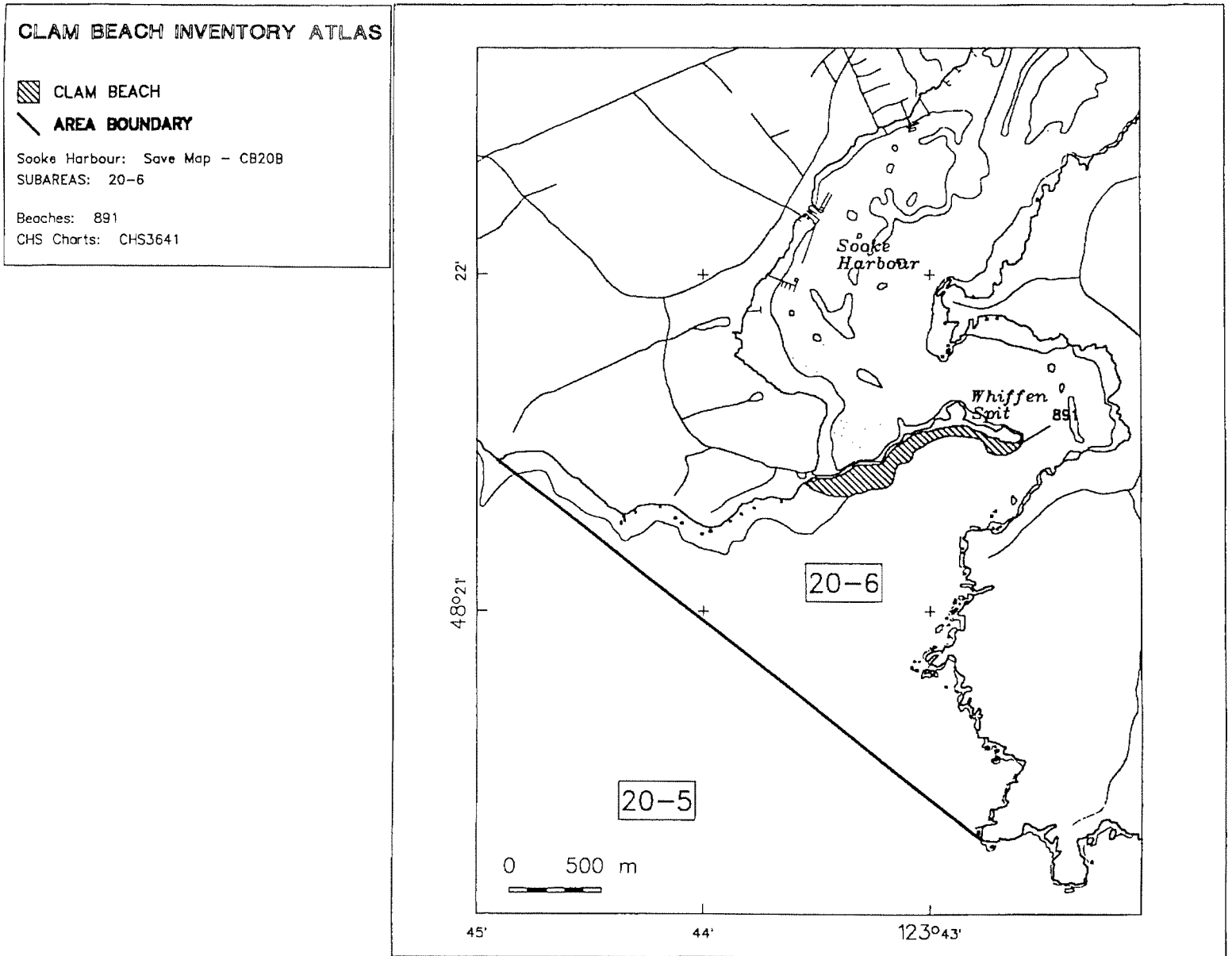
Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
20	1	989	Carmanah Creek	37.91	
20	2	990	Thrasher Cove	50.92	
20	6	891	Whiffin Spit	10.98	
20	6	951C	Sooke Harbour	1.64	
20	6	951B	Sooke Harbour	0.44	
20	6	951A	Sooke Harbour	30.19	
20	6	951D	Sooke Harbour	2.91	
20	7	664	Kellet Point (N)	0.37	
20	7	665	Roche Cove	1.35	
20	7	666	Anderson Cove	0.45	
20	7	667	48 22'06" (1) Sooke Basin	0.31	
20	7	668	48 22'21" (5) Sooke Basin	0.82	
20	7	669	123 38'40" (3) Sooke Basin	0.71	
20	7	670	123 40'30" (4) Sooke Basin	0.37	
20	7	671	48 21'48" (2) Sooke Basin	0.32	
20	7	717	Hutchinson Cove	0.72	
20	7	952G	Sooke Basin	2.67	
20	7	952B	Sooke Basin	7.84	
20	7	952D	Sooke Basin	1.33	
20	7	952A	Sooke Basin	1.56	
20	7	952F	Sooke Basin	1.73	
20	7	952H	Sooke Basin	2.53	
20	7	952I	Sooke Basin	0.43	
20	7	952J	Sooke Basin	0.24	
20	7	952C	Sooke Basin	4.96	
20	7	952N	Sooke Basin	0.30	
20	7	952Q	Sooke Basin	0.09	
20	7	952S	Sooke Basin	0.35	
20	7	952T	Sooke Basin	0.05	
20	7	952P	Sooke Basin	3.84	
20	7	952O	Sooke Basin	1.63	
20	7	952R	Sooke Basin	0.20	
20	7	952K	Sooke Basin	2.88	
20	7	952U	Sooke Basin	0.24	
20	7	952E	Sooke Basin	5.61	
20	7	952M	Sooke Basin	0.07	
20	7	952V	Sooke Basin	0.21	
20	7	952L	Sooke Basin	1.46	
Total Beaches:		38	Total Beach Area:	180.63	



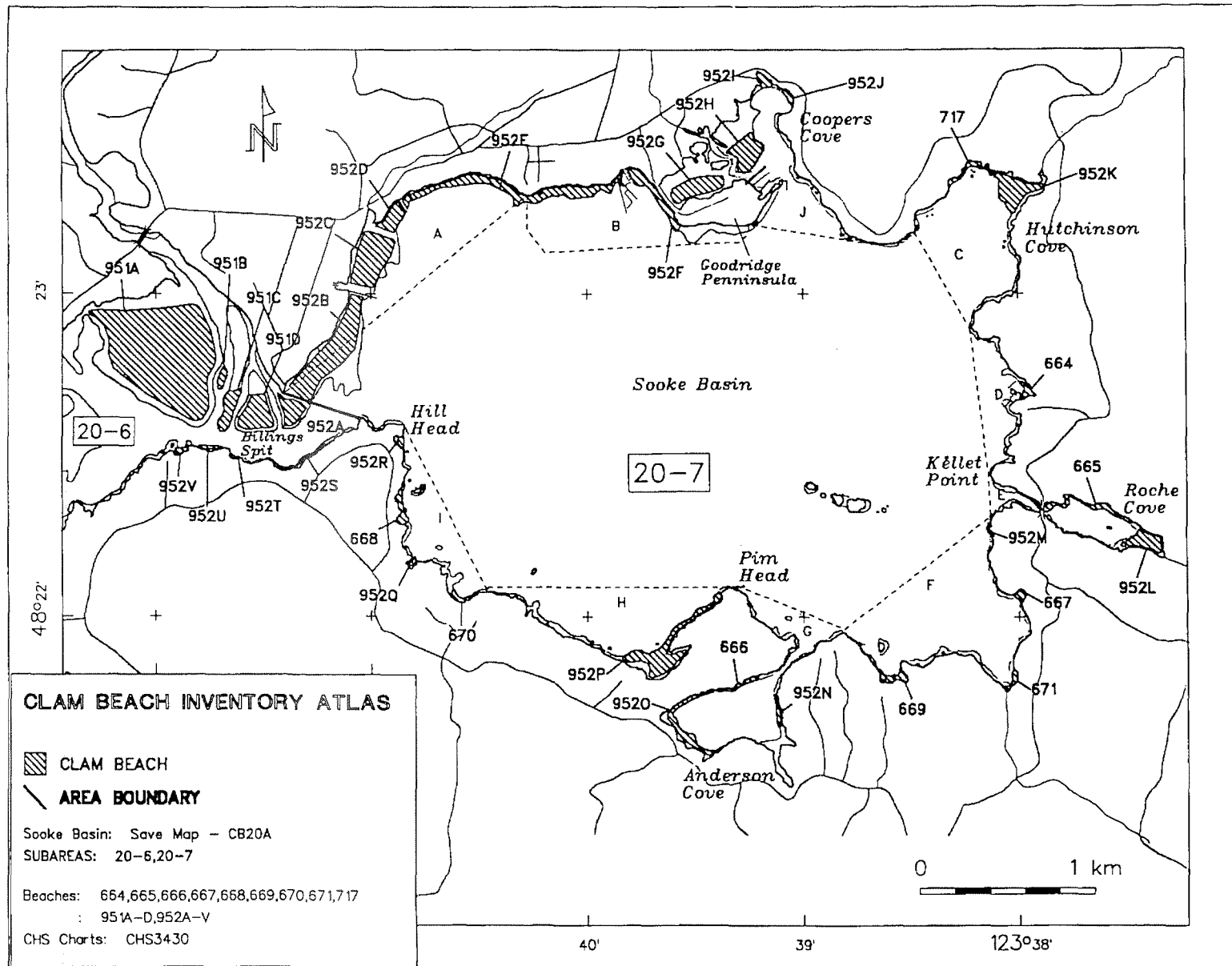
Appendix Figure 1.8.1.



Appendix Figure 1.8.2.



Appendix Figure 1.8.3.



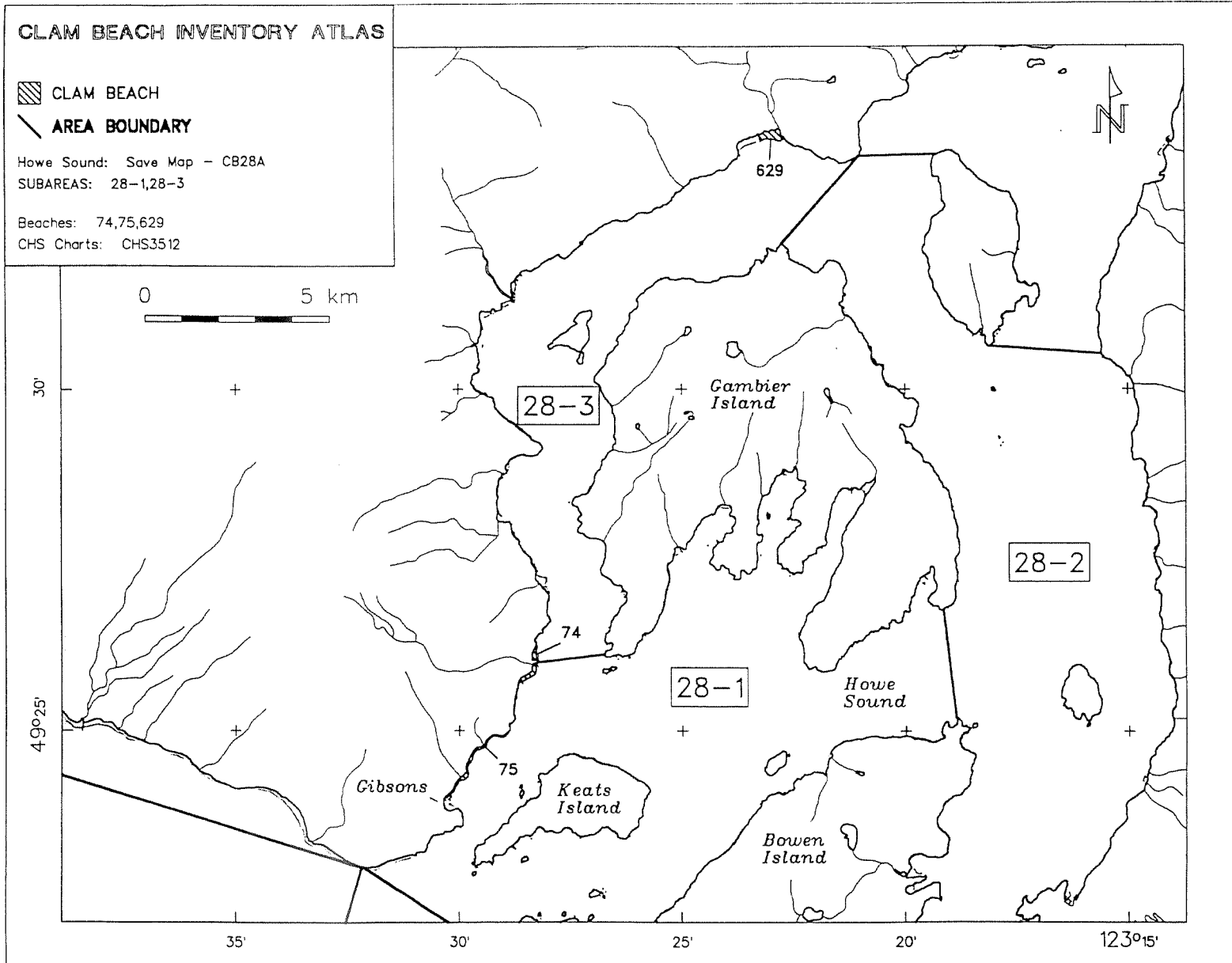
Appendix Figure 1.8.4.

Appendix Table 1.9. British Columbia Clam Beach Inventory, sorted by Subarea for Management Area 28.

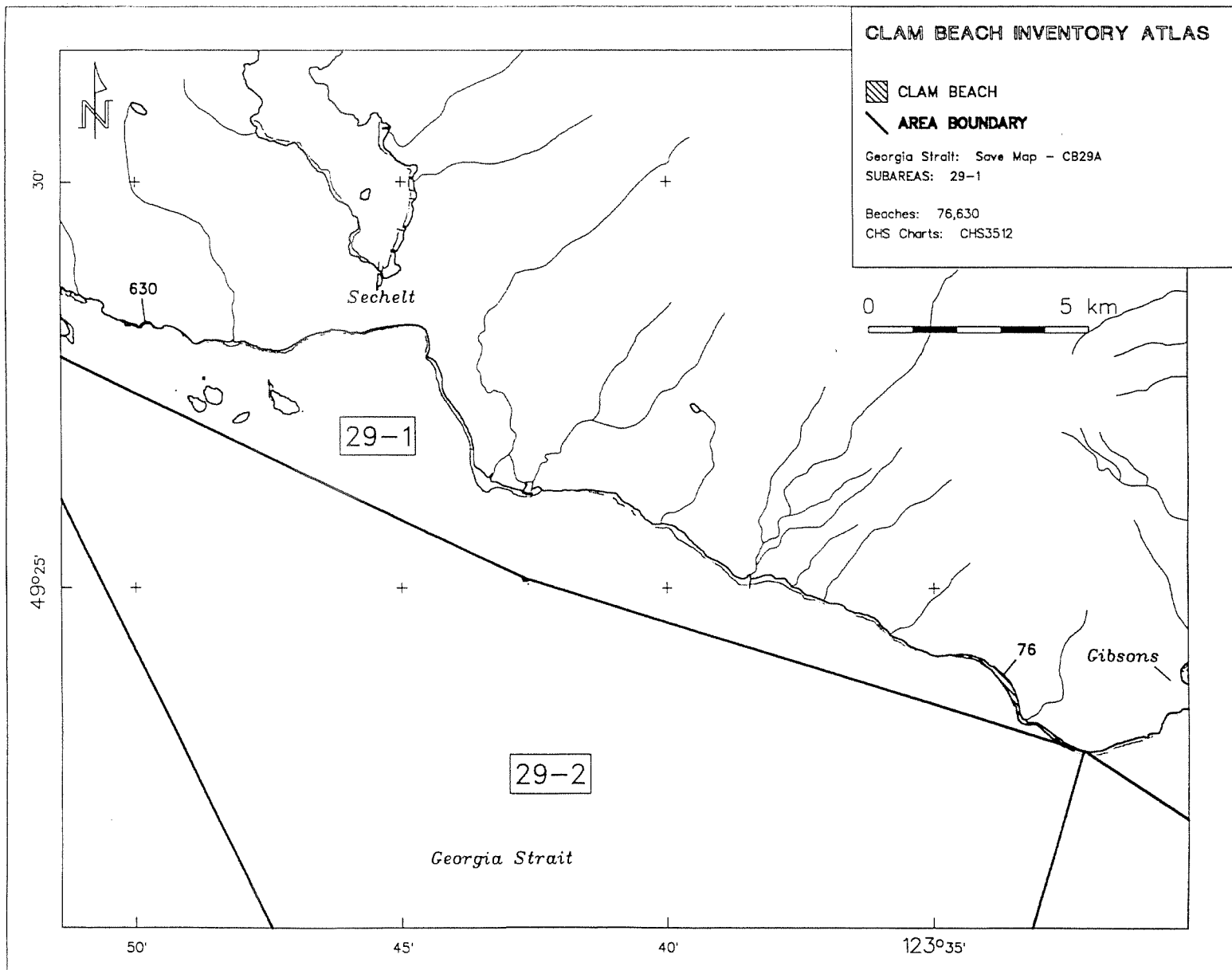
Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
28	1	74	Langdale	10.47	
28	1	75	Grantham's Landing	13.56	
28	3	629	Mcnab Creek	13.78	
28	3	944	Walter Bay	1.35	
Total Beaches:		4	Total Beach Area:	39.16	

Appendix Table 1.10. British Columbia Clam Beach Inventory, sorted by Subarea for Management Area 29.

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
29	1	76	Chaster Creek	33.67	
29	1	630	Sargeant Bay	3.35	
Total Beaches:		2	Total Beach Area:	37.02	



Appendix Figure 1.9.1.



Appendix Figure 1.10.1.

APPENDIX 2.

**DESCRIPTIONS, TABLES AND MAPS OF AREAS CLOSED
TO THE COMMERCIAL INTERTIDAL CLAM FISHERY,
AREAS 13 TO 20, 28 AND 29, FOR ABORIGINAL OR RECREATIONAL
HARVEST, INCLUDING PARK CLOSURES**

**From the 1997 DFO Pacific Region Management Plan for Intertidal
Clams (Manila, Littleneck, Butter and Razor Clams)**

Descriptions of areas closed to the commercial intertidal clam fishery in Areas 13 to 20, 28 and 29, as allocations for Aboriginal food, social and ceremonial harvest, recreational harvest or Park/Reserve closures.

Area 13

Area 13-1 - Mitlenatch Island Nature Park: All the area of foreshore and land covered by water between the high water mark of Mitlenatch Island, Lot 403 Sayward Land District, and a line drawn parallel to a perpendicularly distant 305 m from the said high water mark.

Area 13-12 - Octopus Islands Marine Park: All the unencumbered Crown foreshore and Crown land covered by tidal waters situated in the Sayward Land District inside a line commencing at the northeasterly corner of Sublot 1 of Lot 114 , thence due east 201 m, thence due south to a point on the natural boundary of Lot 1072 on the most northerly of the Octopus Islands, thence south along the west shore of the island to the most westerly point, thence due south 20 m to a point on the natural boundary of Lot 1076, thence southwesterly along the boundary to the most westerly point of said Lot 1076, thence due west to a point on Quadra Island.

Area 13-13 - Rebecca Spit Provincial Park: All the Crown foreshore and Crown Land covered by tidal waters inside of a line commencing at the southeast corner of Lot 33, Sayward Land District; thence N 65° E for 402 m, thence N 35° W for 2213 m; thence west 604 m; thence south 422 m; thence S 35° E for 1891 m to the most southwest corner of Lot 1490; thence easterly along the southern boundary of Lot 1490 to the southwest corner of Lot 33; thence easterly along the south boundary of Lot 33 to the point of commencement.

Area 13-15 - Manson's Landing Marine Park: The intertidal foreshore of Manson's Landing Recreation Area lying inside or shoreward of a line commencing at the southwesterly corner of Lot 64, Sayward Land District, thence due west 241 m; thence north 30° E for 1629 m to a point on Cortes Island and including all of Manson's Lagoon.

Area 14

Area 14-1 - Parksville Beach Recreational Closure - Legal: That portion of Parksville Bay, bounded by a line from the southeasterly corner of Lot 1, Plan 8484, District Lot 70 Nanoose District, in a straight line projected true north to the point of intersection with the city of Parksville boundary (B.C. Gazette, May 1, 1986), thence following the city of Parksville boundary in an easterly direction to a point true north of the high water mark on the former Coast Guard Hovercraft ramp situated on Parcel "B" (D.D. 34903-1) of District Lot 13, Nanoose District thence to the high water mark on the former Coast Guard Hovercraft ramp situated on Part "B" (D.D. 34903-1) of District Lot 13, Nanoose District thence following the high water mark in a westerly direction along the shore to the point of origin. (Recreational presently closed due to contamination)

General Description: That portion of Parksville Beach from the former Coast Guard Hovercraft Ramp to the foot of Bay Avenue.

Area 14-1 - Rath Trevor Provincial Park - Legal: All Crown land covered by water in Nanoose Land District commencing at the northwest corner of Lot 41, being a point on the natural boundary of the Strait of Georgia; thence north 20° E for 281.7 m, thence due east 1.79 km, thence south 12° E for 1.49 km, thence southwesterly in a straight line 1.41 km to the northeast corner of Lot 1 of Lot 59, Plan 18359, being a point on the natural boundary of Strait of Georgia; thence in a general northerly direction along the high tide line to the point of commencement.

Area 14-4 - Qualicum Beach Recreational Closure - Legal: The tidal foreshore of District Lot 10, Newcastle District and a portion of the tidal foreshore of District Lot 9, Newcastle District commencing at the northeasterly corner of Lot 21, District Lot 9, projected true north the low water mark on atums of sounding, thence following the low water mark to the low water mark at the northwesterly corner of the town of Qualicum Beach, thence following the high mark along the foreshore of District Lot 10 and District Lot 9 to the point of origin.

General Description: That portion of the tidal foreshore between the high water mark and the low water mark immediately north of the Town of Qualicum Beach from the foot of Seacroft Road to the easterly foot of Surfside Drive.

Area 14-10 - Fillongley Park, Denman Island - Legal: Those waters bounded by a line from southeast corner of Fillongley Park (Fronting SE 1/4 of Sec 23 Denman Island, Nanaimo Land District, except the part thereof included within the boundaries of Plan 8118) thence in a northerly direction along the shore to the northeast corner of Fillongley Park, thence easterly 90 degrees to a point one-half nautical mile thence to a point one-half nautical mile 90° E of the southeast corner of Fillongley Park, thence to the point of commencement.

General Description: Fillongley Park Recreation Shellfish Reserve. The waters and foreshore of the park seaward a distance of 0.5 nautical miles.

Area 14-13 - Miracle Beach Provincial Park: All Crown Land covered by water in Foreshore Lot 283, Nanaimo Land District.

Area 14-13 - Kye Bay - Legal: Those waters bounded by a line from the light on Cape Lazo, thence northeasterly 45° true for a distance of 0.5 nautical miles, thence northwesterly 293° to a point of land at the most northeast tip of the boat ramp at Air Force Beach, thence southerly along the shore to the point of commencement.
(Recreational reserve)

General Description: The waters of Kye Bay from Cape Lazo light to the boat ramp at Air Force Beach.

Area 14-15 - Baynes Sound Recreational Reserve - Legal: Those waters bounded by a line commencing from a point at the northeast corner of Block 149 Lot 48, thence along the northern boundary of Block 149 Lot 48 to the northwest corner, thence along the

shore in a northerly direction to the southwest corner of Block 149 Lot 49 thence along the southern border of the Block 149 Lot 49 to the southeast corner, thence in an easterly direction 90 degrees to a point 0.5 nautical miles, thence to a point 0.5 nautical miles 90° E of the northeast corner of Block 149 Lot 48, thence to the point of commencement.
General Description: The waters and foreshore of the area from a point 0.5 miles north of Garvin Road to a point 0.5 miles south of Garvin Road.

Area 15

Area 15-2 Mitlenatch Island Nature Park and 15-3: All the area of foreshore and land covered by water between the high water mark of Mitlenatch Island, Lot 403 Sayward Land District, and a line drawn parallel to a perpendicularly distant 305 m from the said high water mark.

Area 15-4 - Okeover Park, Okeover Inlet - Legal: That portion of Subarea 15-4 bounded by a line commencing at the northerly tip of the Okeover Government Dock, running northwesterly 321° true until it meets the shoreline, then in a southeasterly direction back along the shore to the Okeover Government Dock.

General Description: Commencing at the Okeover Government Dock in a northwesterly direction for 1.4 km to the northeast corner of Lot 15, District Lot 6324, thence in a southeasterly direction back along the shoreline to the Okeover Government Dock.

Area 15-5 - Inner Squirrel Cove: That portion of Squirrel Cove inside a line drawn along the shortest distance from the western shore of Protection Island to Cortes Island and inside a line drawn along the shortest distance from the eastern shore of Protection Island to Cortes Island. (Aboriginal allocation closure)

Area 16

Areas 16-5, portion of 16-6 and 16-7 - Portion of Sechelt Inlet: Recreational and Aboriginal for food, social and ceremonial purposes.

Area 17

Area 17 - Yellow Point: That portion of Subarea 17-4 described as the intertidal foreshore between Flewett Point on Vancouver Island southeasterly to Yellow Point. (Recreational reserve)

Area 17 - Sandwell Provincial Park: That portion of Subarea 17-10 described as the waters and intertidal foreshore of Sandwell Provincial Park.

Area 17 - Drumbeg Provincial Park: That portion of Subarea 17-10 described as the waters and intertidal foreshore of Drumbeg Provincial Park on Gabriola Island.

Area 17 - Pilot Bay: That portion of Subarea 17-12 described as the waters and tidal foreshore of Pilot Bay on Gabriola Island. (Recreational reserve)

Area 17 - Gabriola Bar: That portion of Subarea 17-16 described as the waters and intertidal foreshore of Gabriola Island bounded on the east by the Subarea 17-16 boundary thence in a westerly direction along the shore of Gabriola Island to the boat ramp approximately half way through False Narrows. (Recreational and Aboriginal for food, social and ceremonial purposes)

Area 17 - Gabriola Island: That portion of the foreshore of Gabriola Island 400 m in length commencing at the western boundary of Subarea 17-17, thence in an easterly direction. (Recreational reserve)

Area 17 - Nanoose Bay: That portion of Subarea 17-20 described as a 600 m portion of intertidal foreshore of Nanoose Bay directly across from the Department of Highways Rest Stop bounded on either side by Recreational Reserve signs. (Recreational reserve)

Area 18

Area 18 Sansum Narrows: The portion of the intertidal foreshore of Vancouver Island from Octopus Point southerly to Separation Pt.

Appendix Table 2.1. Known clam beaches within Aboriginal harvest, park or recreational reserve closures, from the Clam Beach Inventory Database.

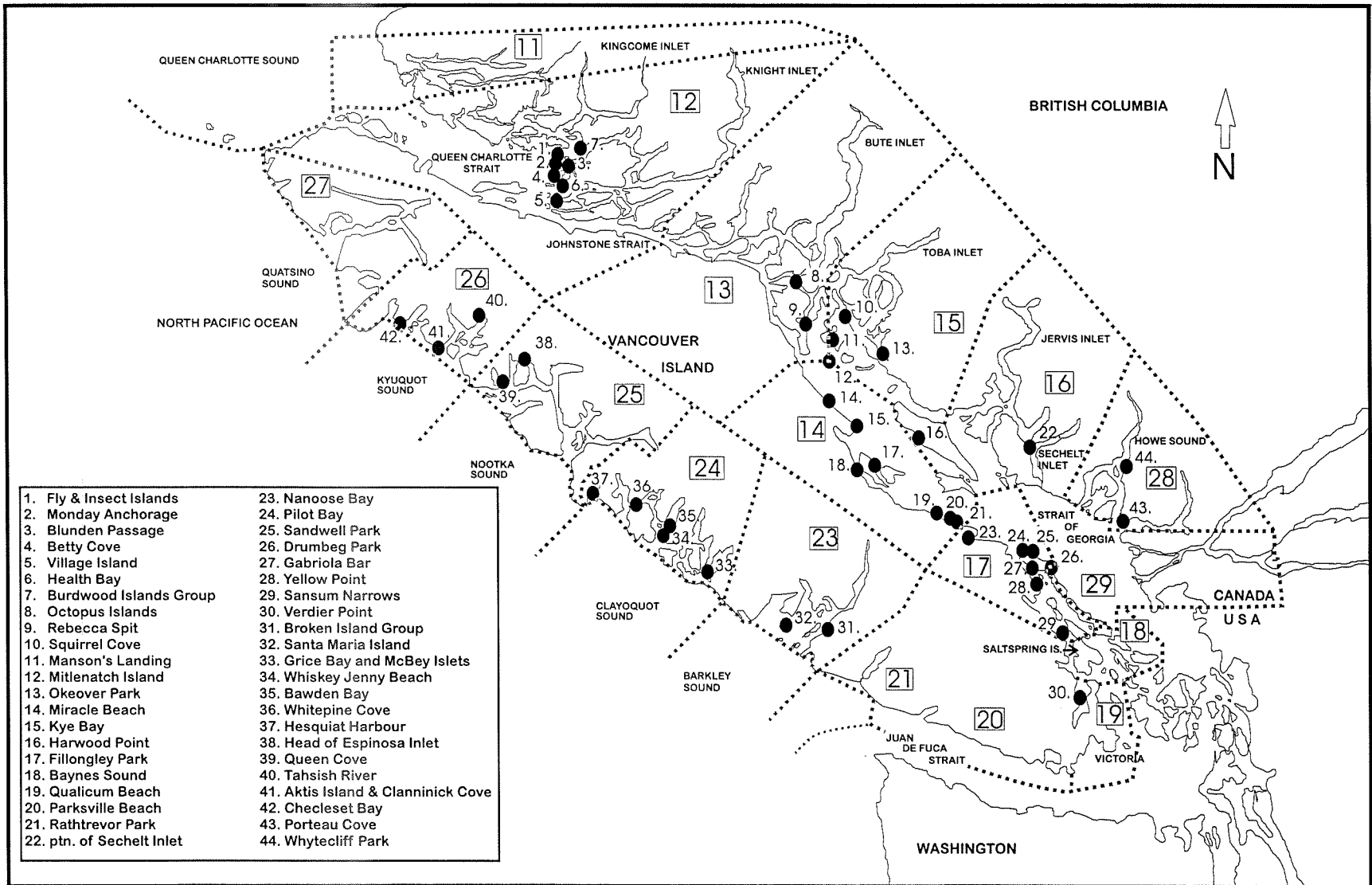
Area	Subarea	Beach #	Beach Location	Closure Name	Closure Type	Beach Area (ha)	Clam Area (ha)
13	1	*		Mitlenatch Island Marine Park	Recreational reserve or park		
13	15	*		Manson's Landing Marine Park	Recreational reserve or park		
13	12	158	Waiatt Bay (N)	Octopus Islands Marine Park	Recreational reserve or park	1.61	
13	12	163	Waiatt Bay (N)	Octopus Islands Marine Park	Recreational reserve or park	3.73	
13	13	966	Millstone Estuary	Rebecca Spit Provincial Park	Recreational reserve or park	3.16	
14	1	45	Brant Point	Rathrevor Provincial Park	Recreational reserve or park	29.6	
14	1	44	Parksville Bay	Parksville Beach	Recreational reserve or park	83.78	
14	4	28	Little Qualicum River	Qualicum Beach	Recreational reserve or park	100.64	
14	10	11	Fillongley Park	Fillongley Park	Recreational reserve or park	81.4	
14	13	*		Miracle Beach Provincial Park	Recreational reserve or park		
14	13	14	**	Kye Bay Rec. Reserve	Recreational reserve or park		
14	15	18	Union Bay	Baynes Snd. Rec. Reserve	Recreational reserve or park	3.57	
14	15	16	Opposite Denman Point	Baynes Snd. Rec. Reserve	Recreational reserve or park	9.52	
15	4	33	Okeover Inlet	Okeover Inlet	Recreational reserve or park	10.58	

Area	Subarea	Beach #	Beach Location	Closure Name	Closure Type	Beach Area (ha)	Clam Area (ha)
15	5	95	Squirrel Cove	Squirrel Cove	Aboriginal harvest	19.95	
15	5	95A	Squirrel Cove	Squirrel Cove	Aboriginal harvest	0.62	
15	5	960A	Squirrel Cove #1	Squirrel Cove	Aboriginal harvest	0.08	
15	5	960B	Squirrel Cove #2	Squirrel Cove	Aboriginal harvest	0.14	
15	5	960C	Squirrel Cove #3	Squirrel Cove	Aboriginal harvest	0.85	
15	5	960D	Squirrel Cove #4	Squirrel Cove	Aboriginal harvest	0.12	
16	21	39	Harwood Point	Harwood Point Park	Recreational reserve or park	18.1	
16	21	40	Mouatt Bay	Harwood Point Park	Recreational reserve or park	29.53	
17	4	408	Yellow Point (N)	Yellow Point Rec. Reserve	Recreational reserve or park	2.84	
17	4	414	Kulleet Bay	Yellow Point Rec. Reserve	Recreational reserve or park	1.59	
17	4	413	Kulleet Bay	Yellow Point Rec. Reserve	Recreational reserve or park	1.49	
17	4	412	Kulleet Bay	Yellow Point Rec. Reserve	Recreational reserve or park	0.78	
17	4	411	Kulleet Bay	Yellow Point Rec. Reserve	Recreational reserve or park	1.17	
17	10	*		Drumbeg Provincial Park	Recreational reserve or park		
17	10	*		Sandwell Provincial Park	Recreational reserve or park		
17	12	*		Gabriola Sands Provincial Park	Recreational reserve or park		
17	16	539B	Boat Ramp to Maples Corner	Gabriola Bar	Aboriginal harvest	26.12	
17	16	942	Gabriola Island (S) 1	Gabriola Island Rec. Reserve	Recreational reserve or park	3.13	

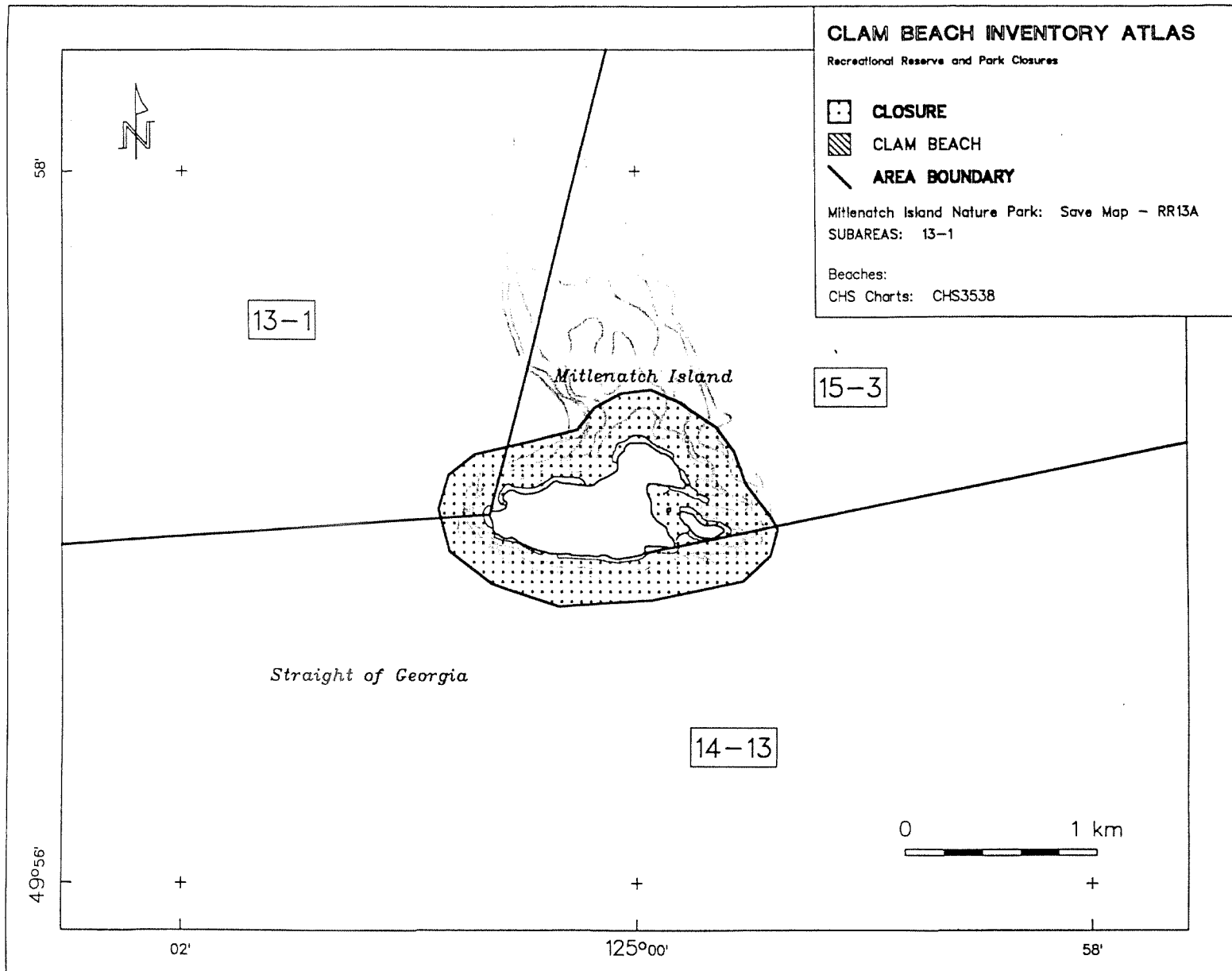
Area	Subarea	Beach #	Beach Location	Closure Name	Closure Type	Beach Area (ha)	Clam Area (ha)
17	20	641	Nanoose Harbour Creek Mouth	Nanoose Bay Rec. Reserve	Recreational reserve or park	10.09	
17	20	643	Arbutus Grove (W)	Nanoose Bay Rec. Reserve	Recreational reserve or park	12.18	
19	8	657	McPhail Point	Verdier Point	Recreational reserve or park	2.98	
19	8	459	McPhail Point to Verdier Point	Verdier Point	Recreational reserve or park	6.88	
28	2	*		Whytecliff Marine Park	Recreational reserve or park		
28	4	*		Porteau Cove Marine Park	Recreational reserve or park		
Total		38					
Beaches:							
Total Beach Area:		466.23					
Total Clam Area:							

* Beach not coded

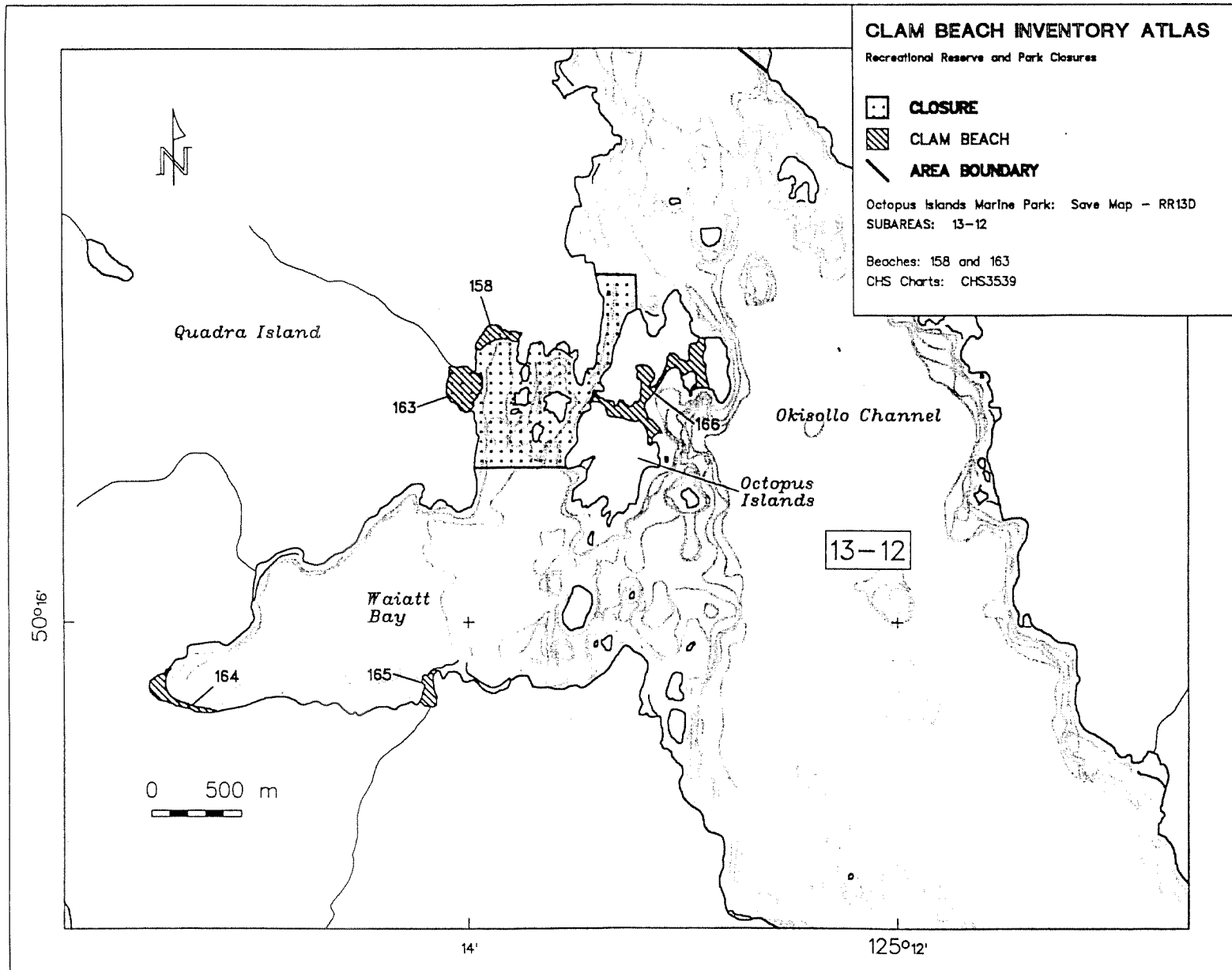
** Beach is outside the closure area



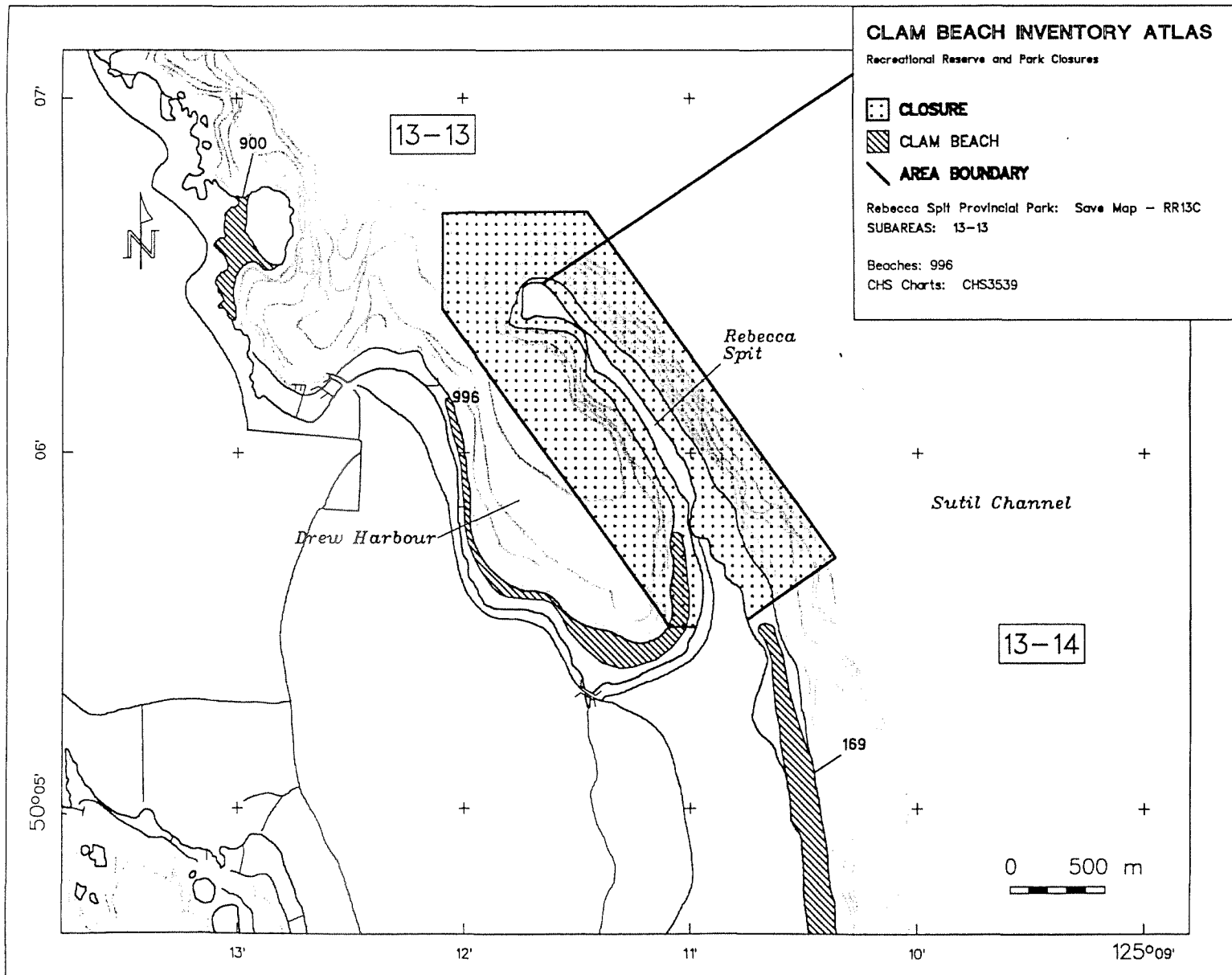
Appendix Figure 2.1.1. Commercial closures in 1997 for park, recreational or Aboriginal clam harvest.



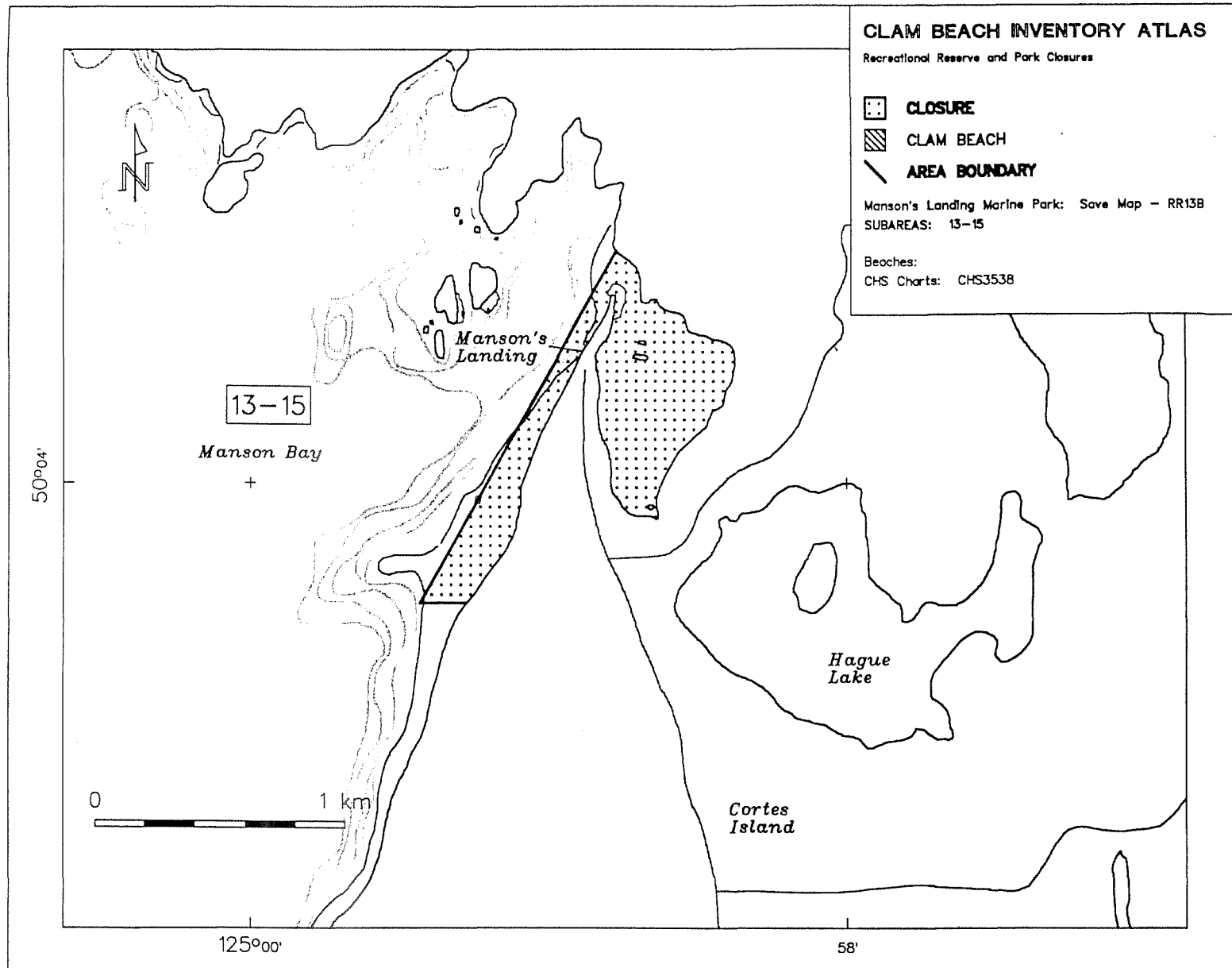
Appendix Figure 2.1.2.



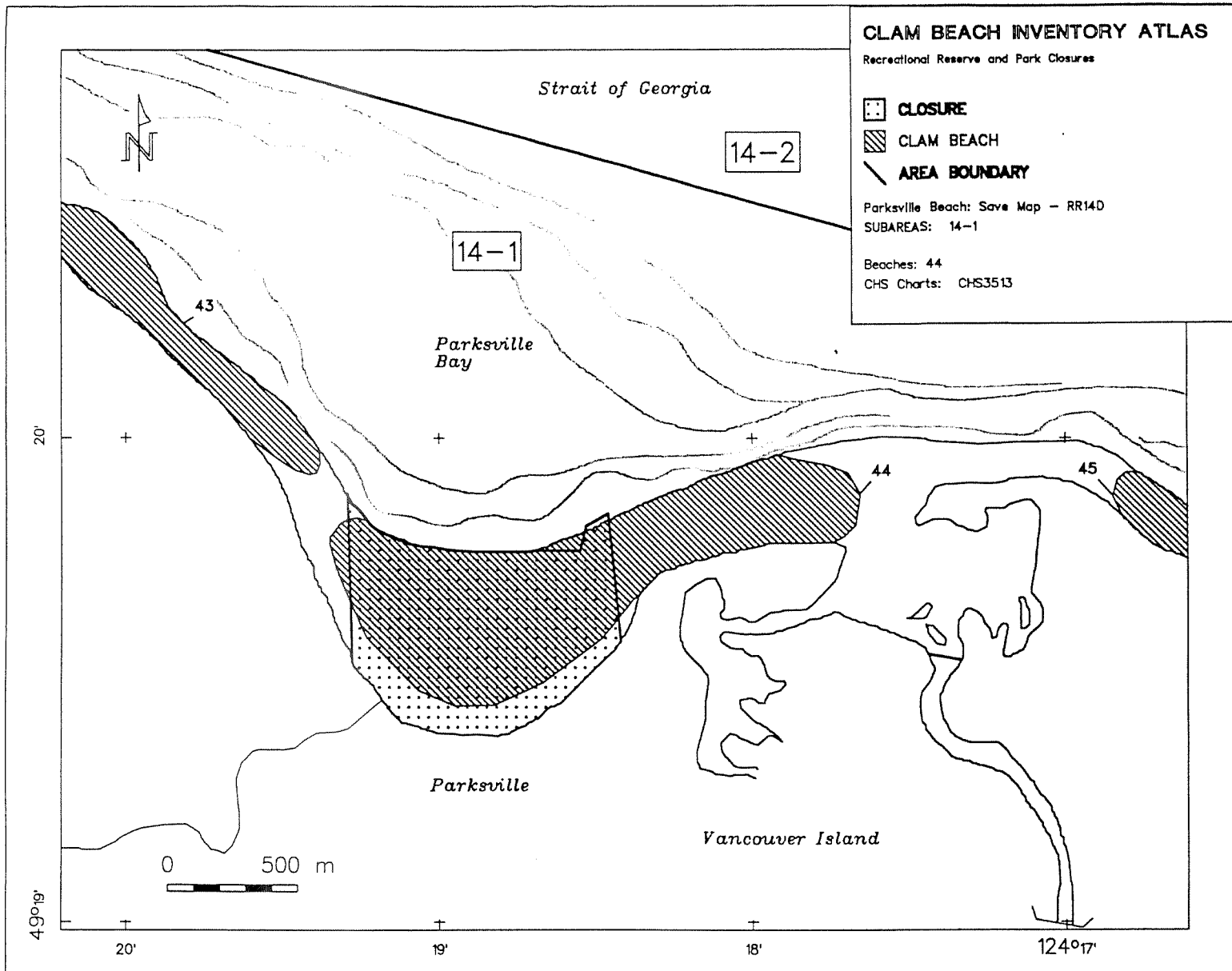
Appendix Figure 2.1.3.



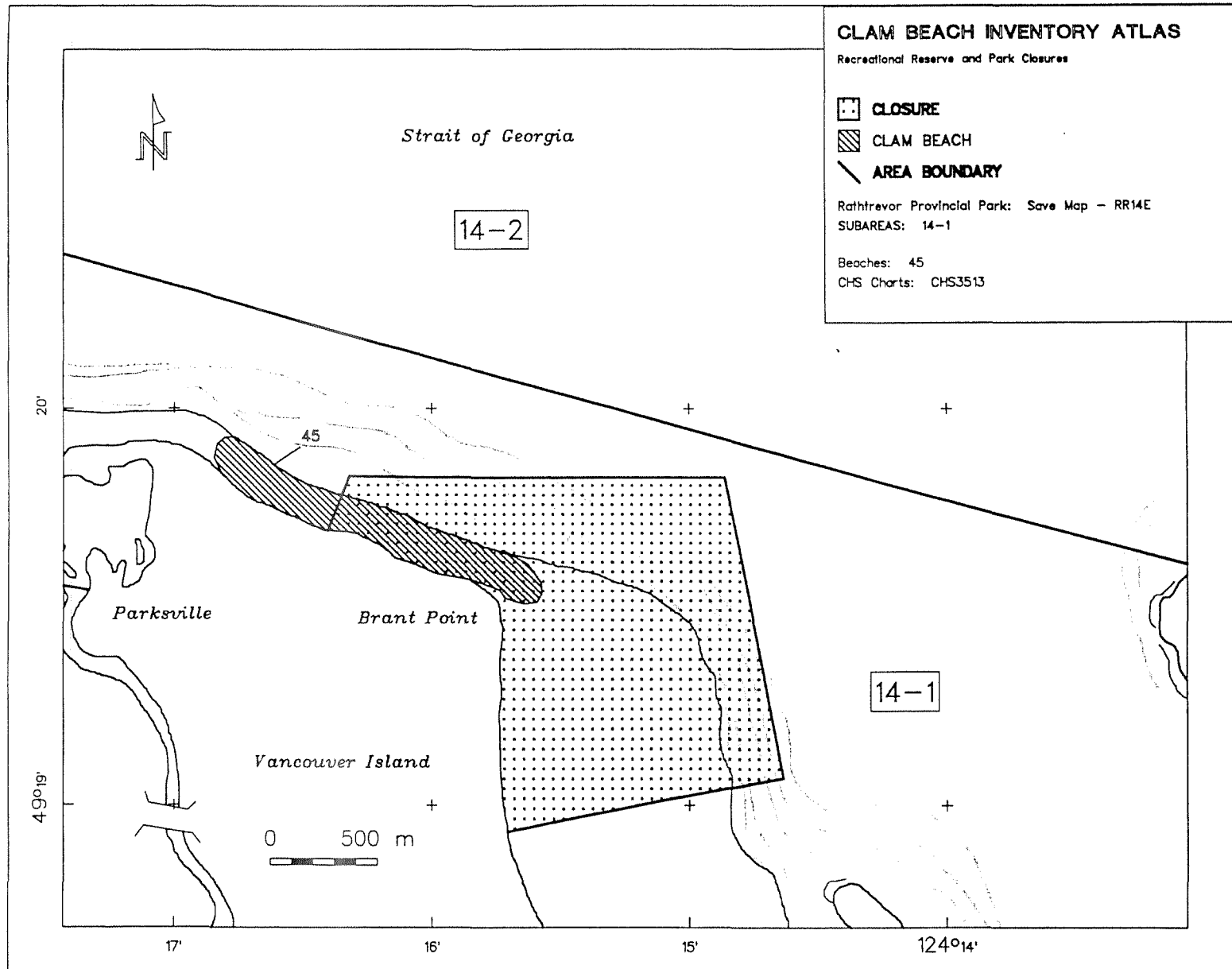
Appendix Figure 2.1.4.



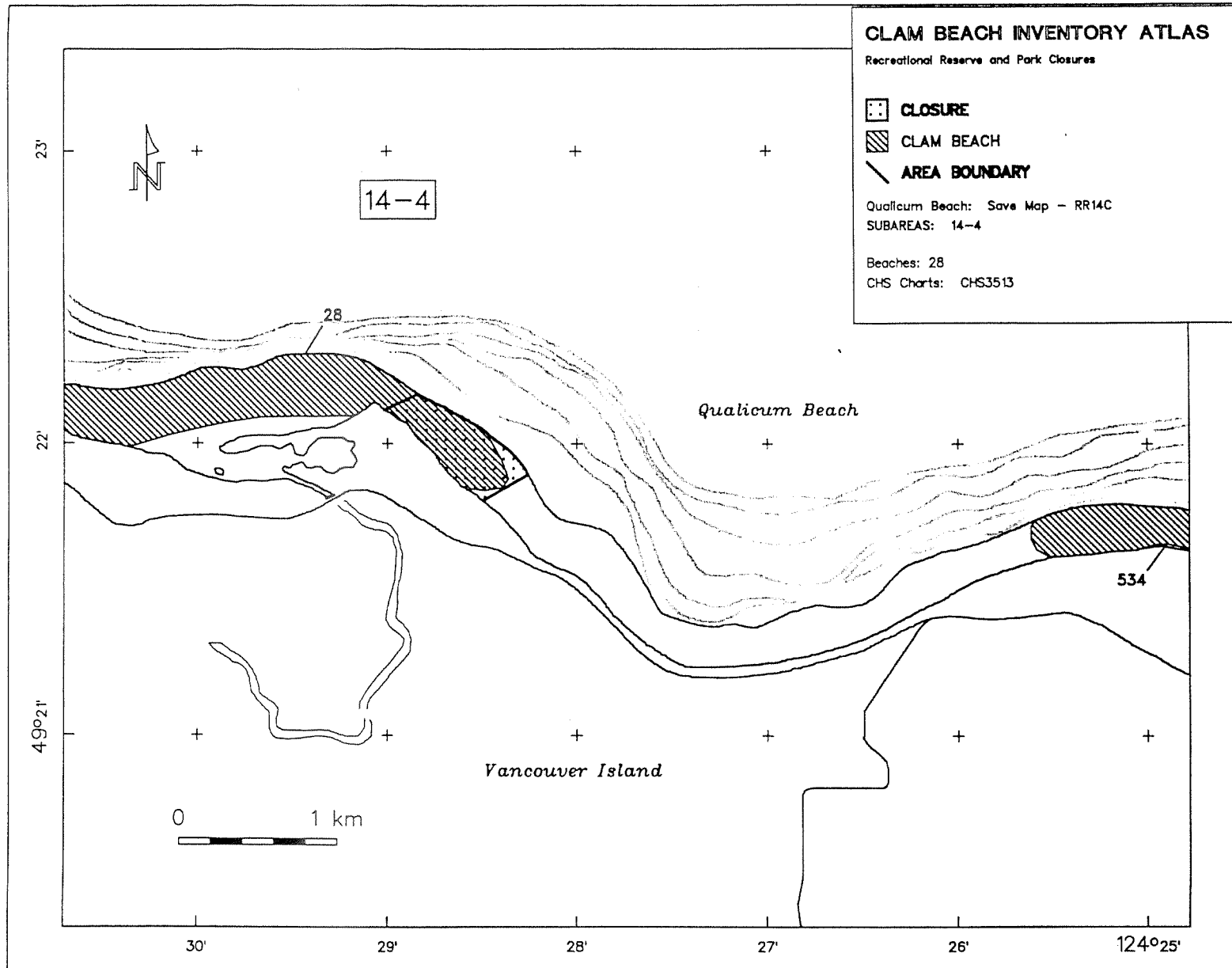
Appendix Figure 2.1.5.



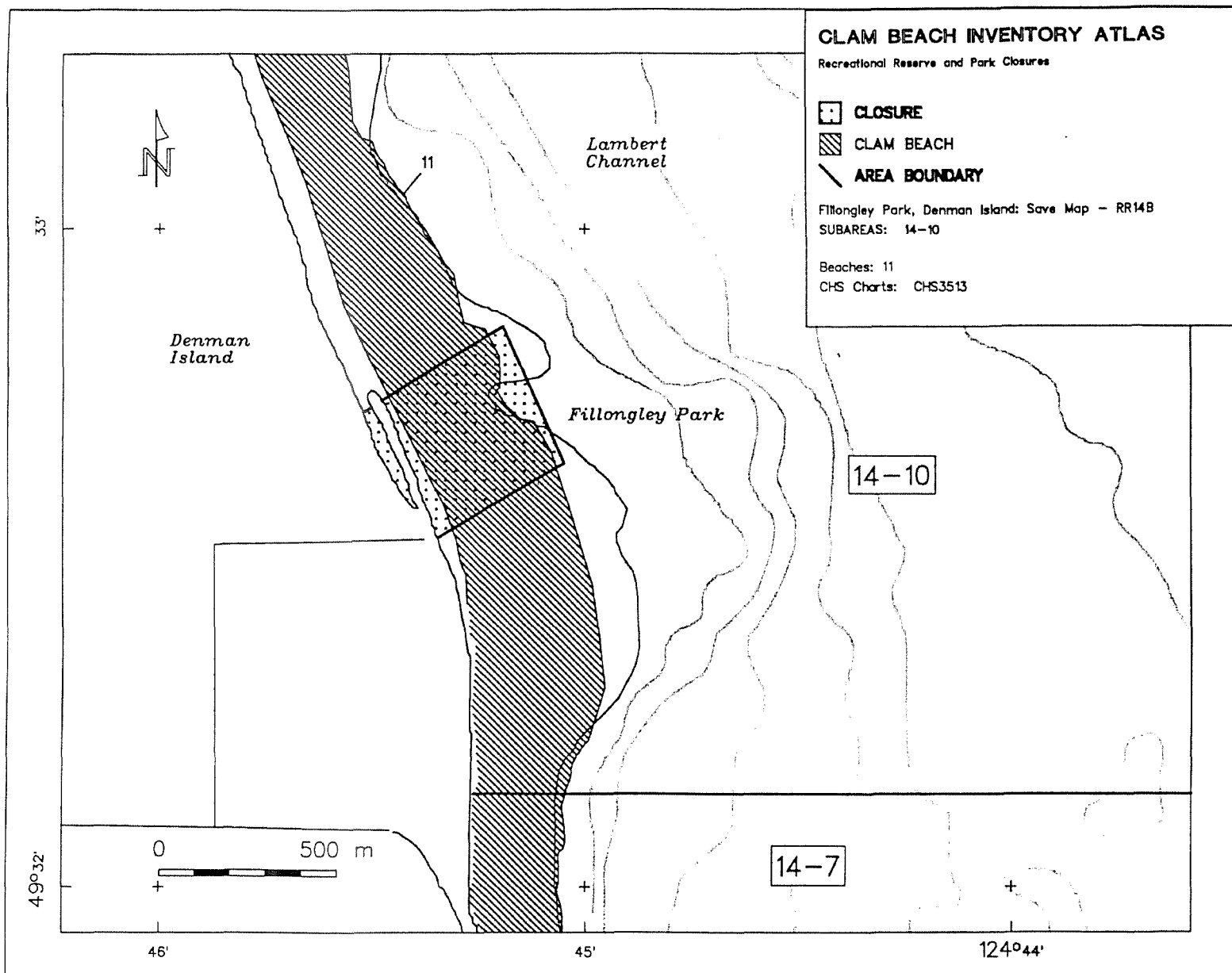
Appendix Figure 2.1.6.



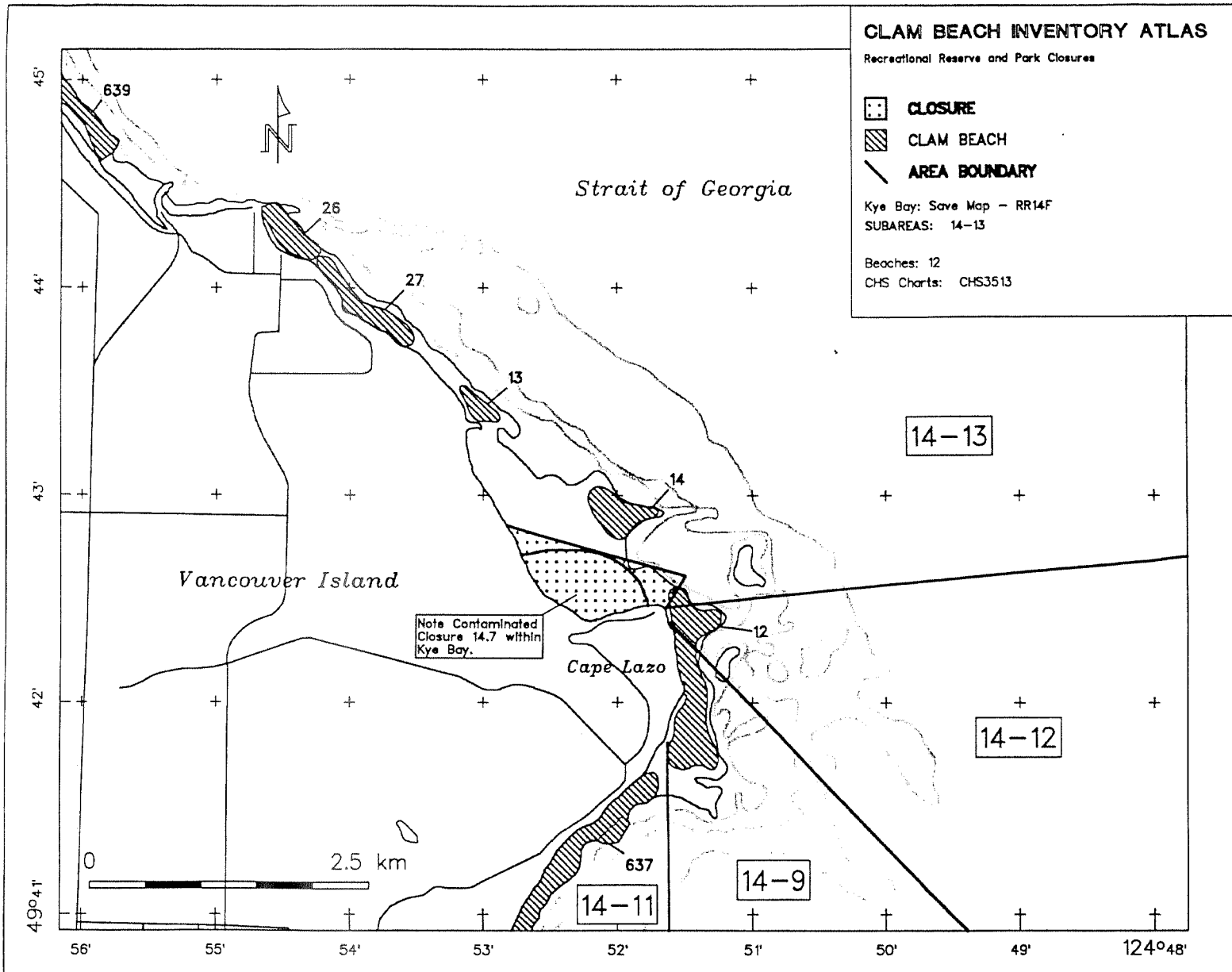
Appendix Figure 2.1.7.



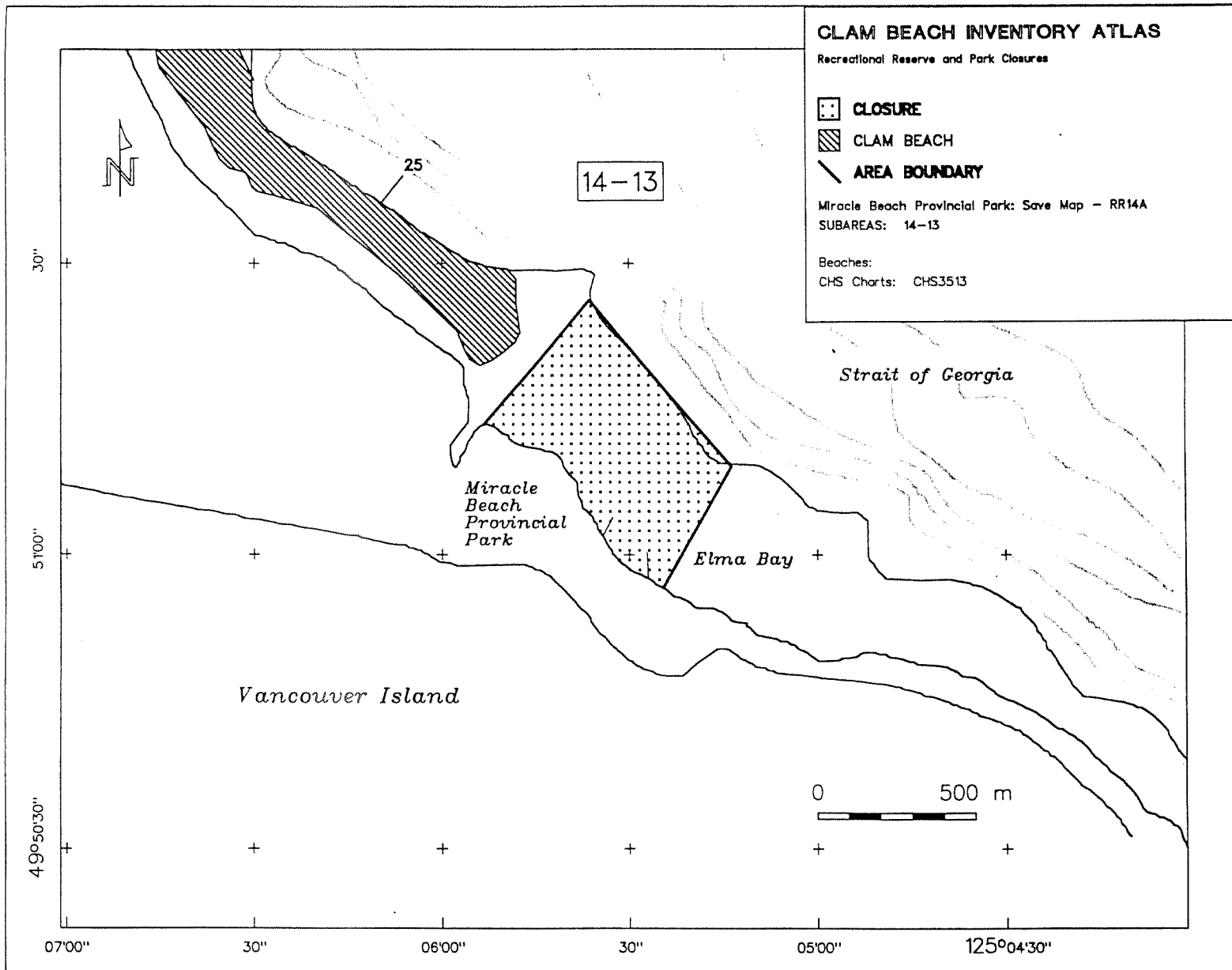
Appendix Figure 2.1.8.



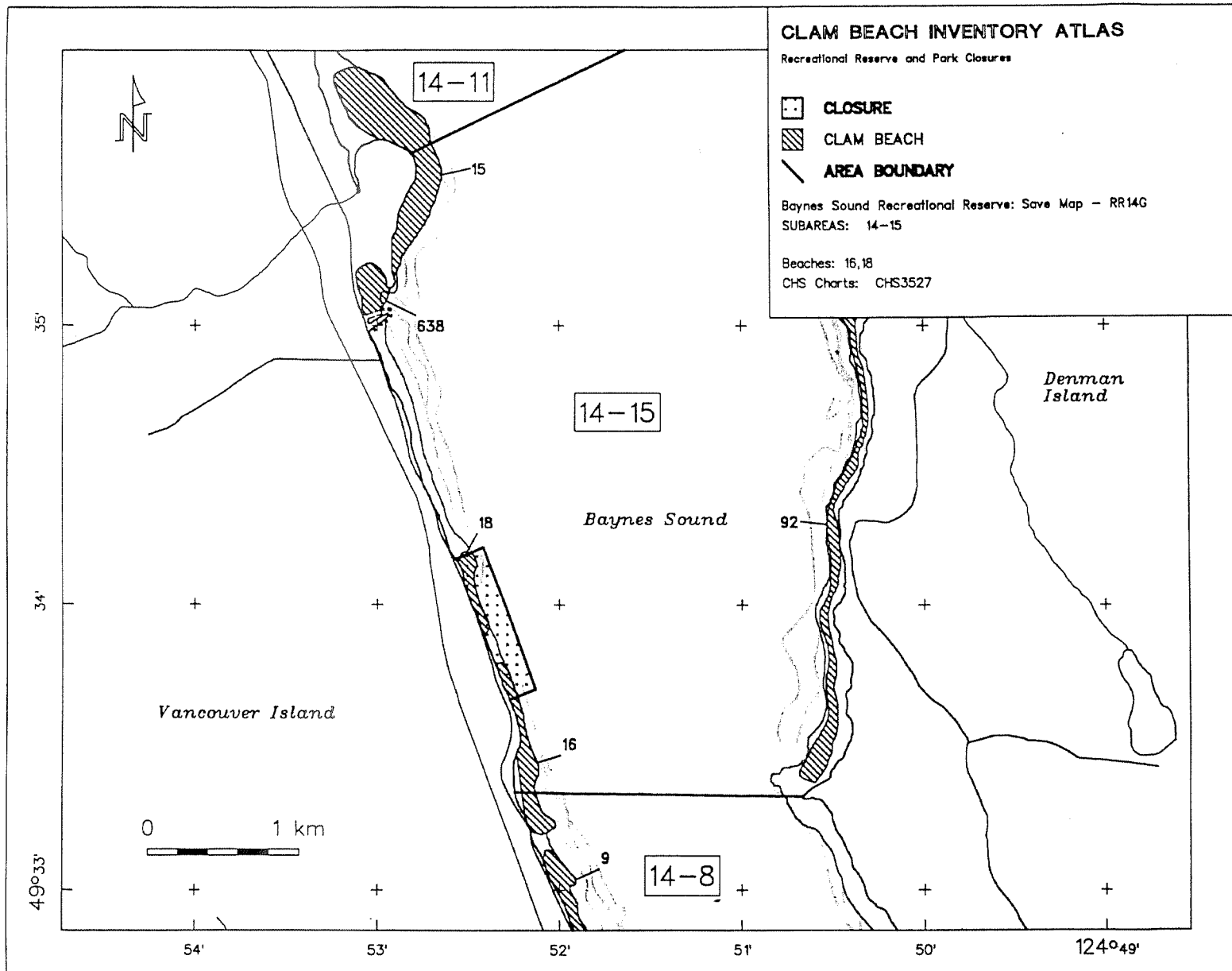
Appendix Figure 2.1.9.



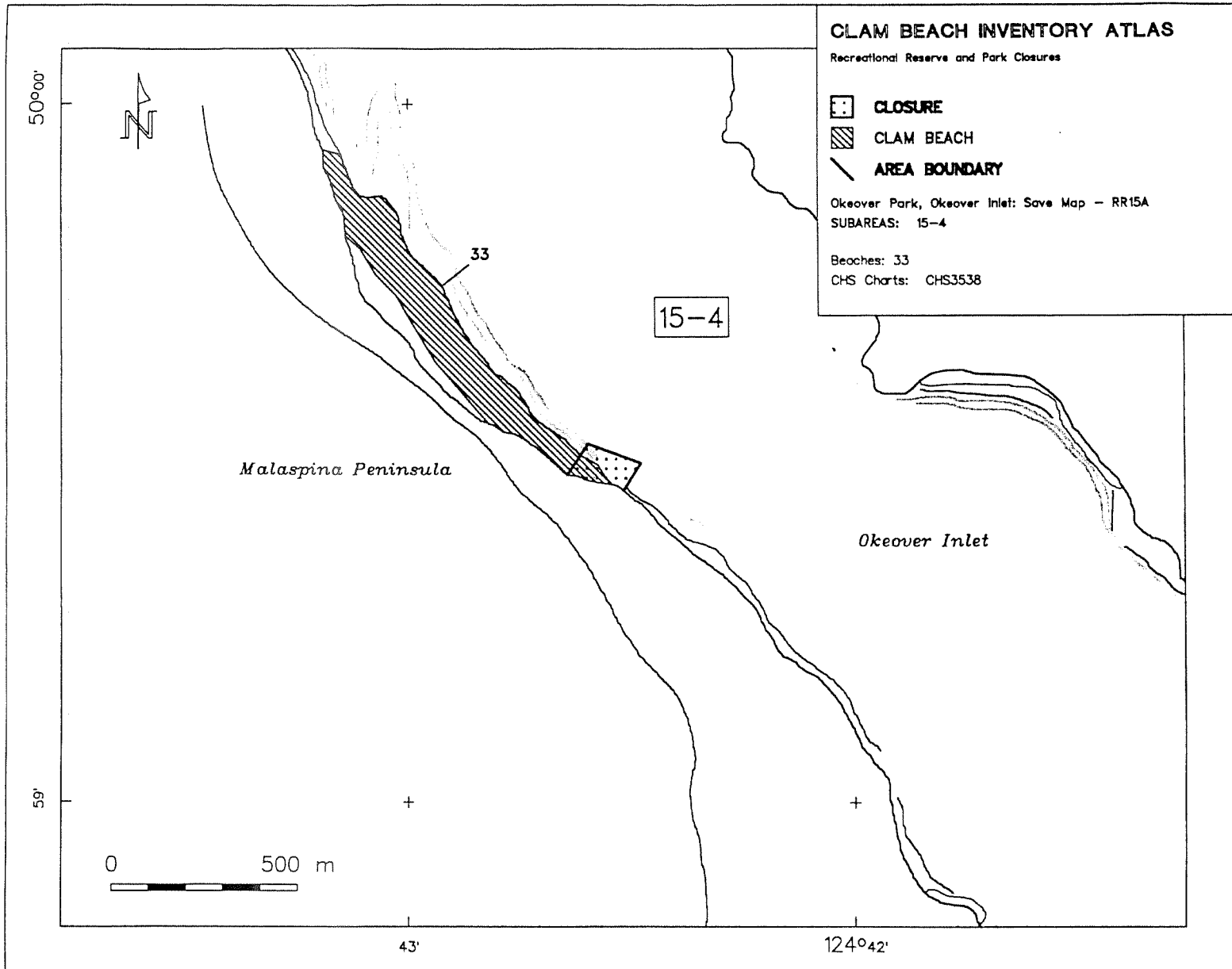
Appendix Figure 2.1.10.



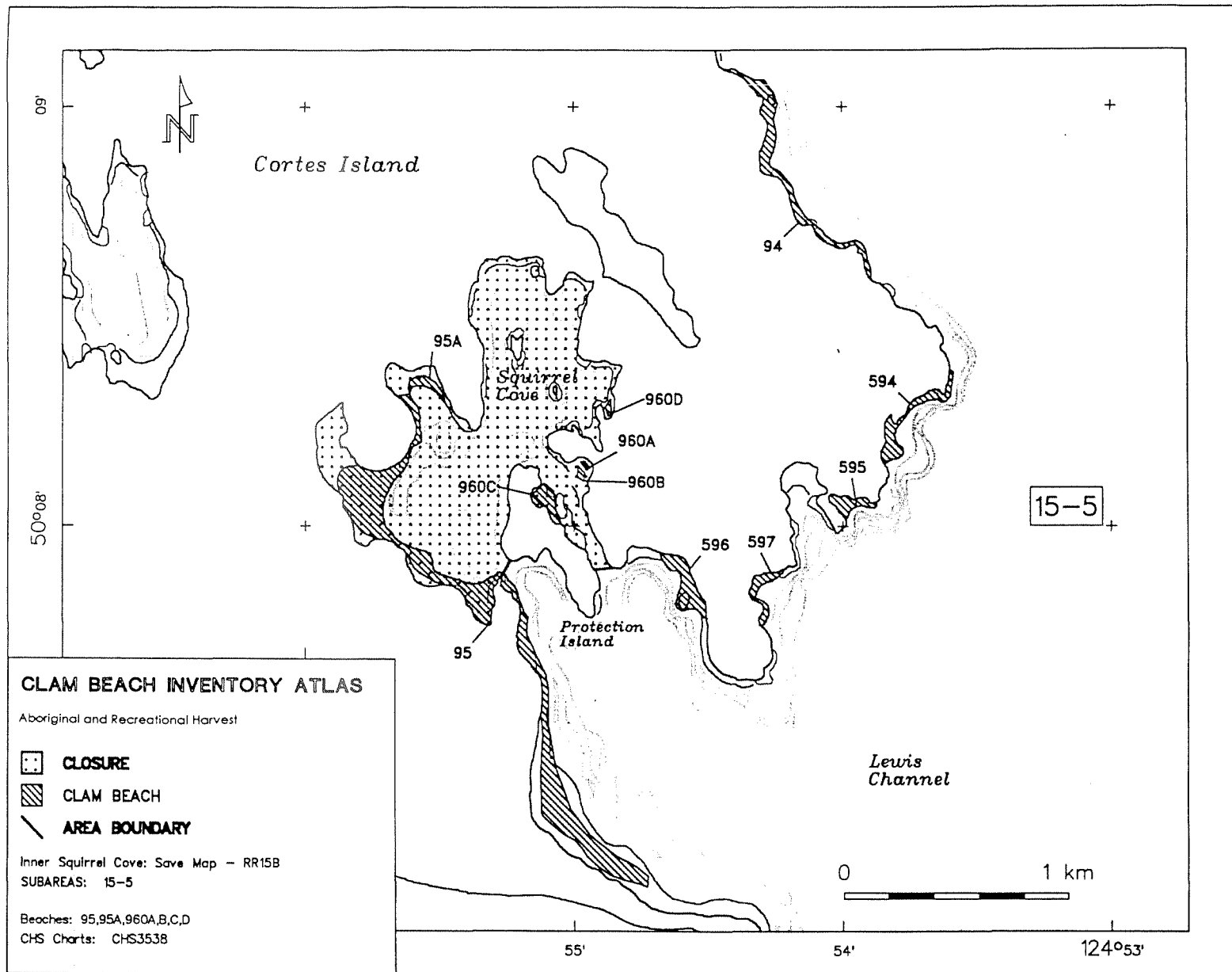
Appendix Figure 2.1.11.



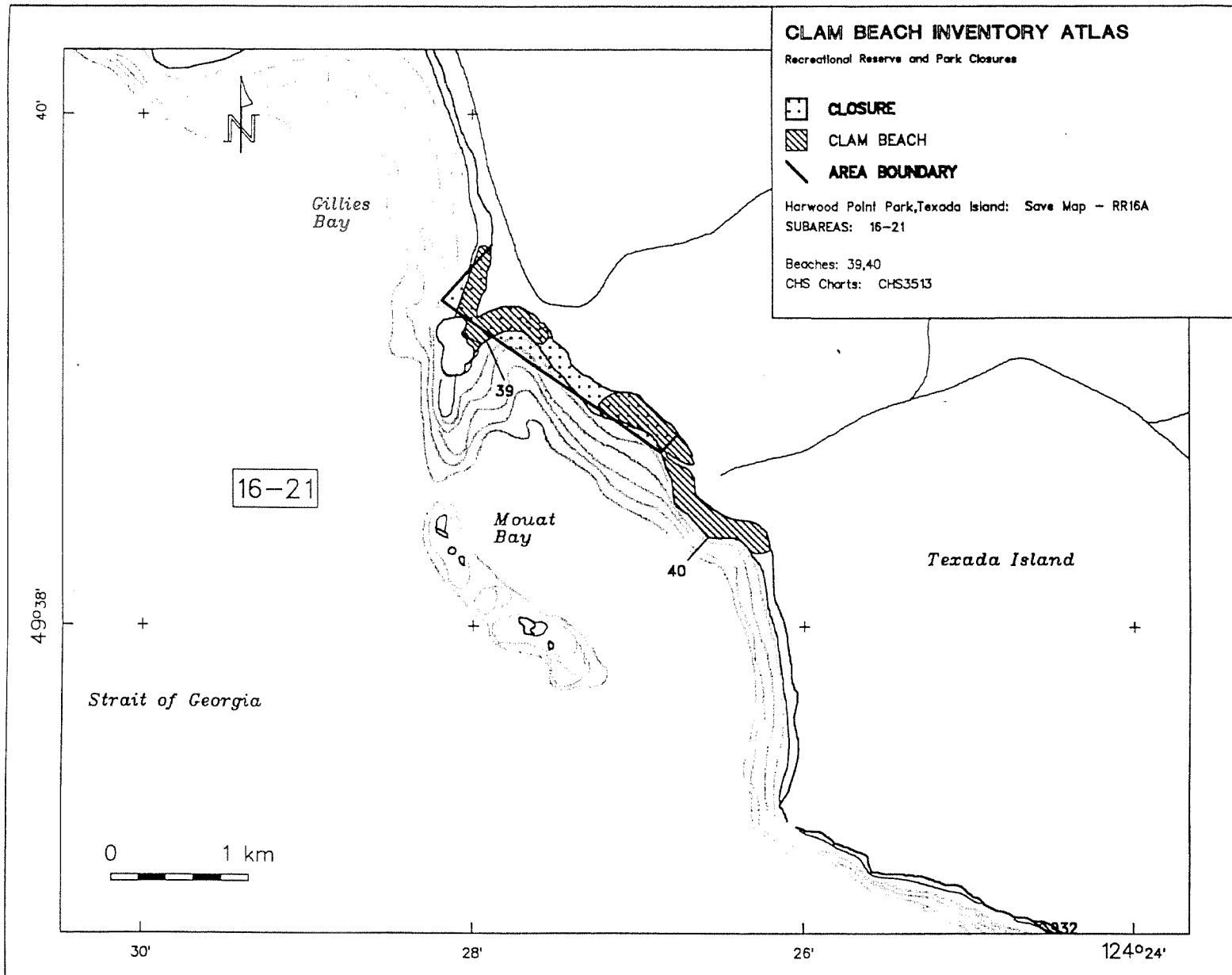
Appendix Figure 2.1.12.



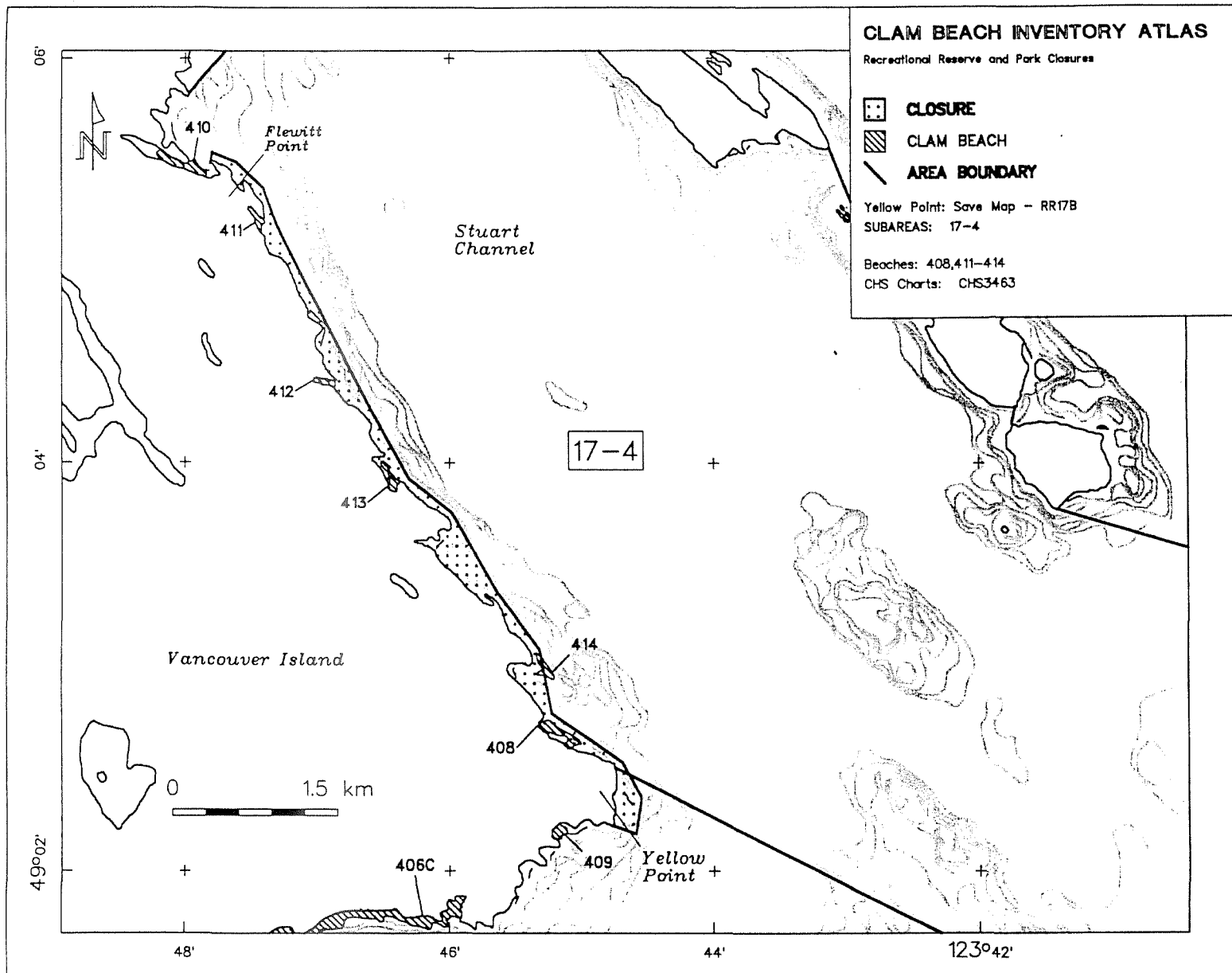
Appendix Figure 2.1.13.



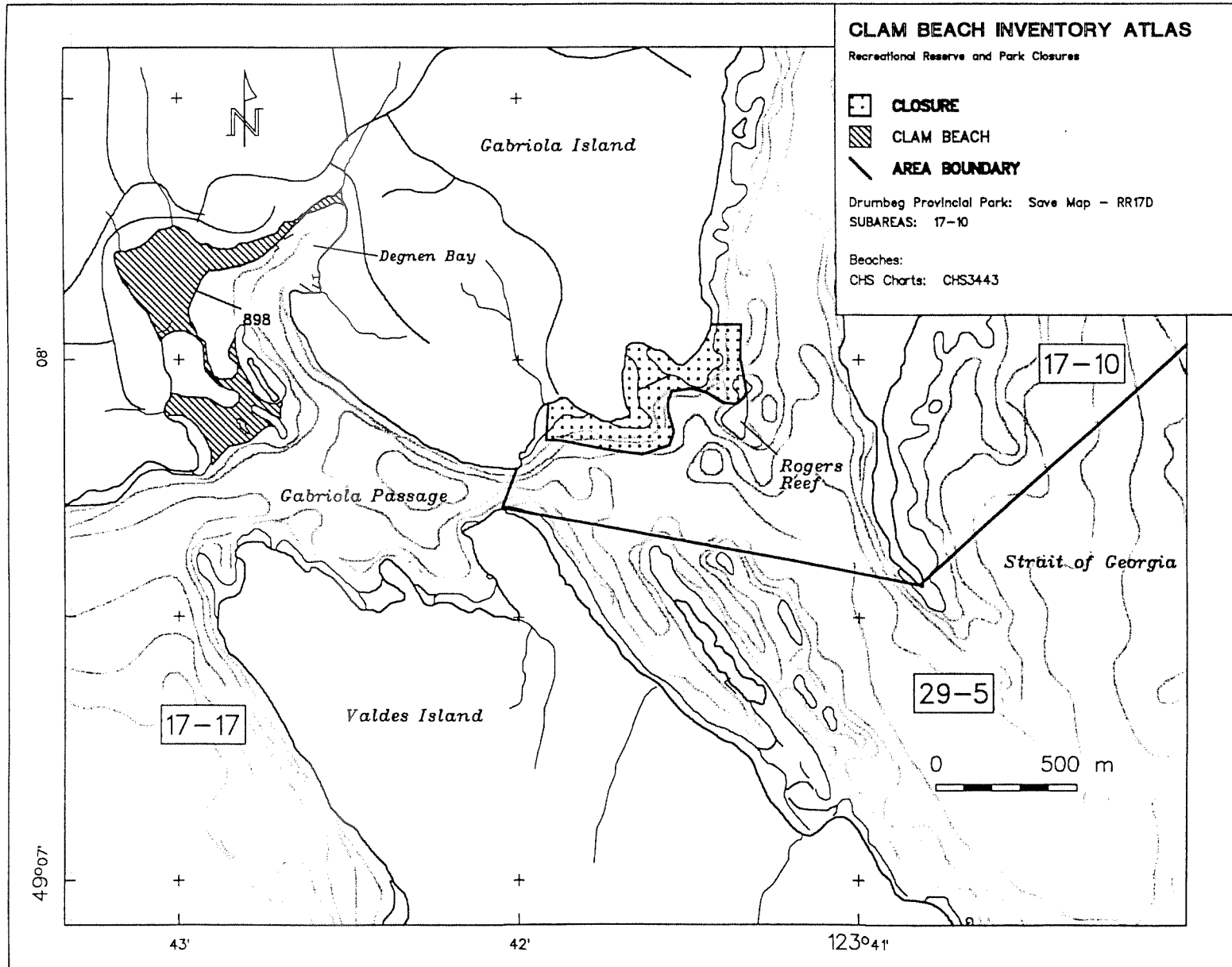
Appendix Figure 2.1.14.



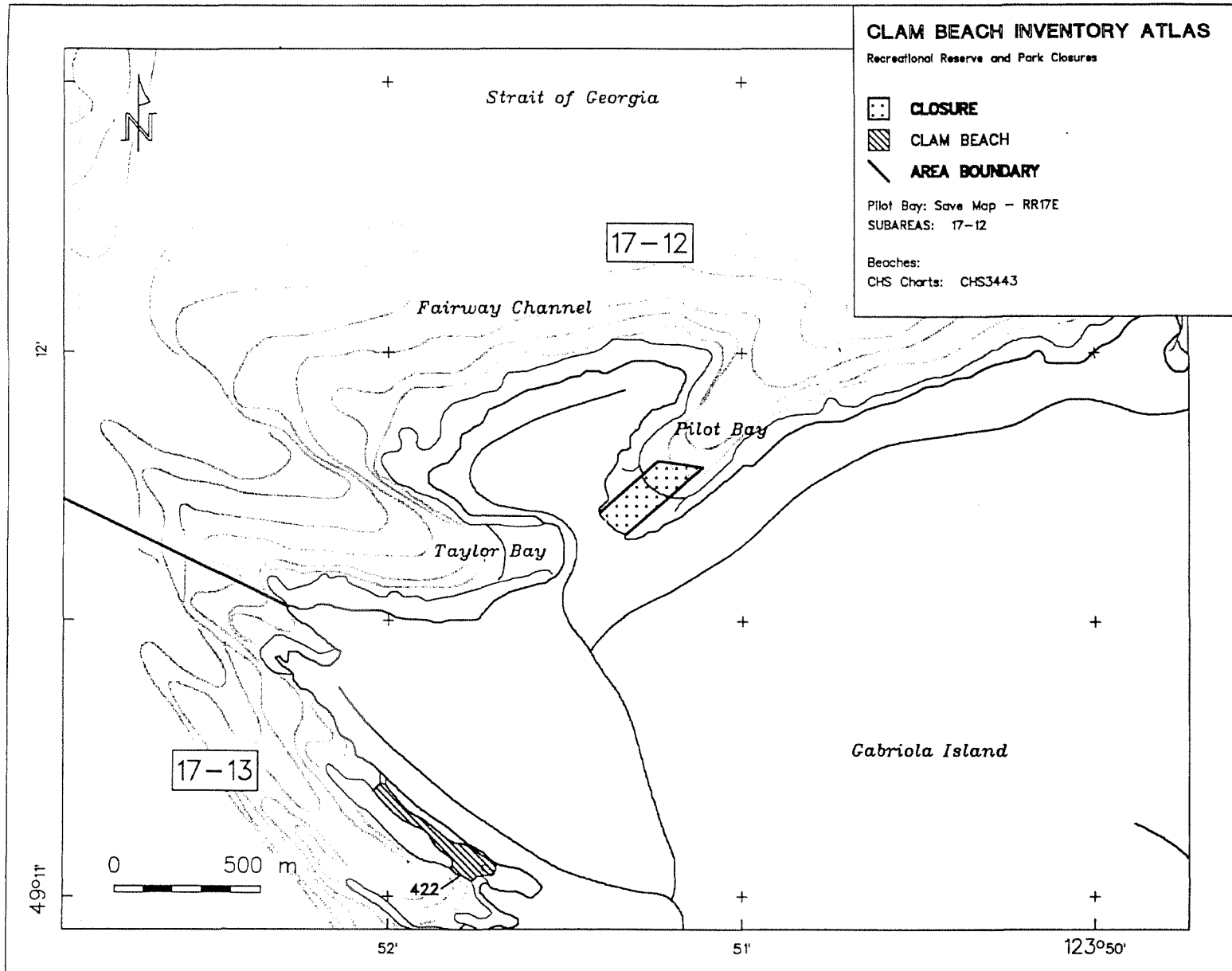
Appendix Figure 2.1.15.



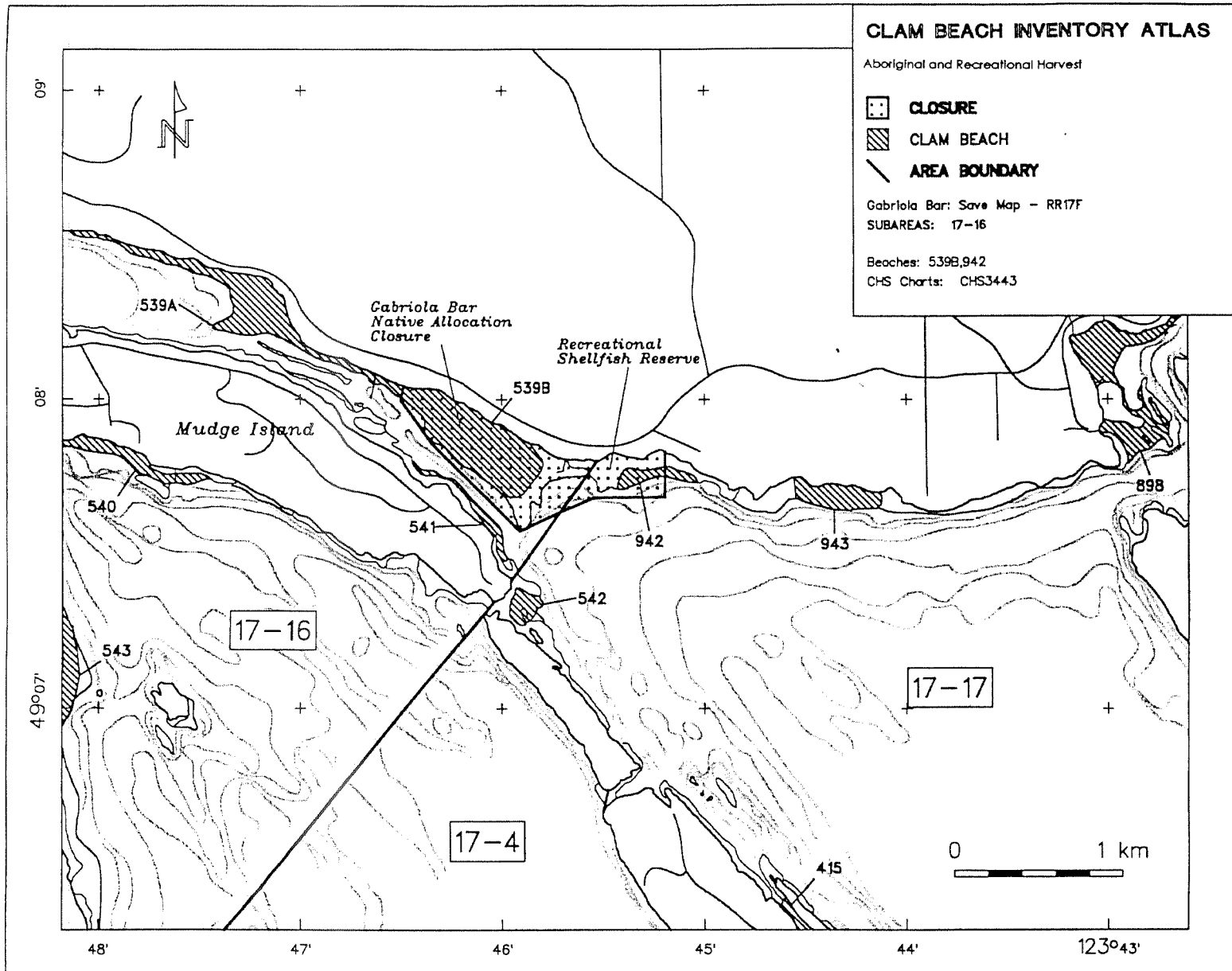
Appendix Figure 2.1.16.



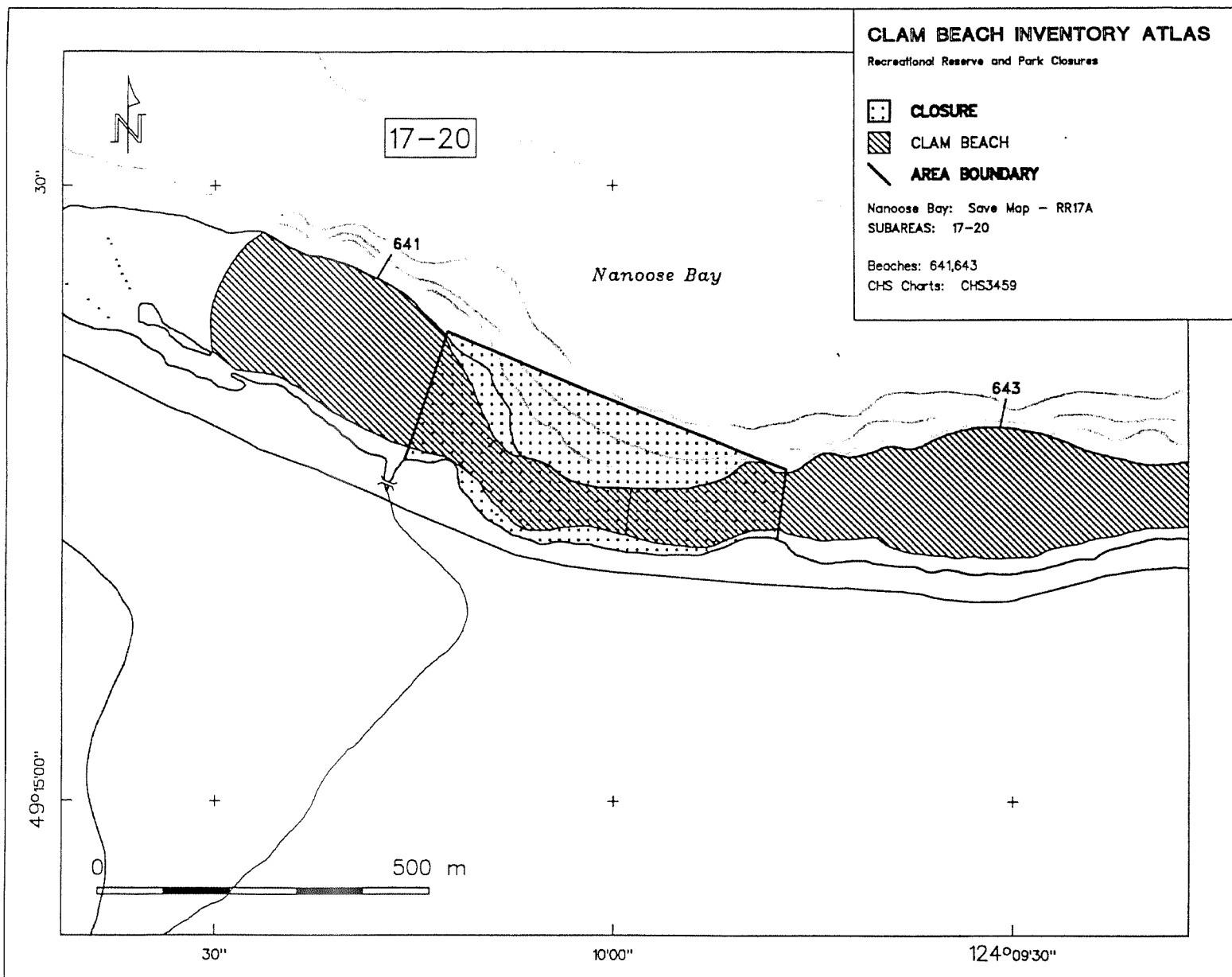
Appendix Figure 2.1.18.



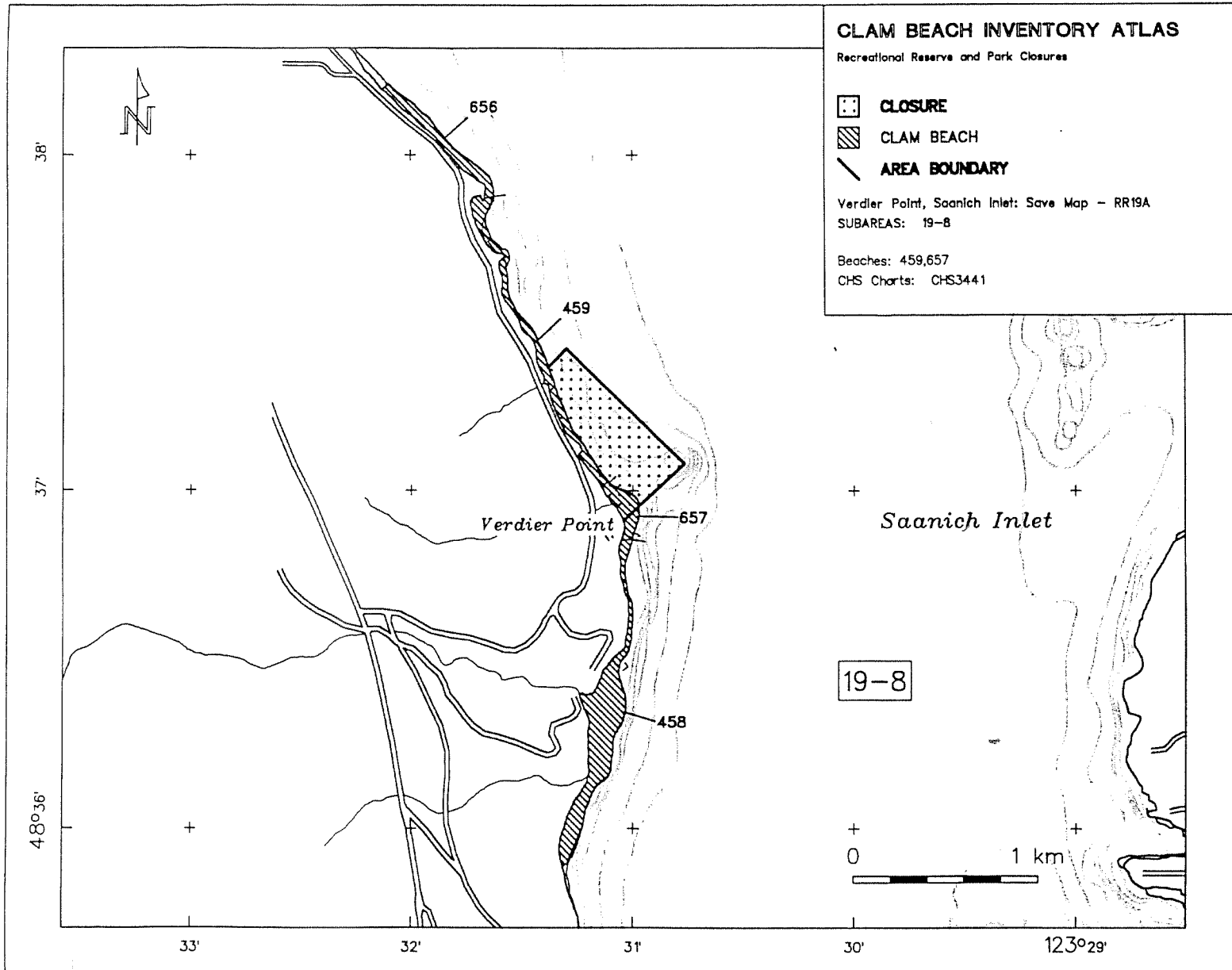
Appendix Figure 2.1.19.



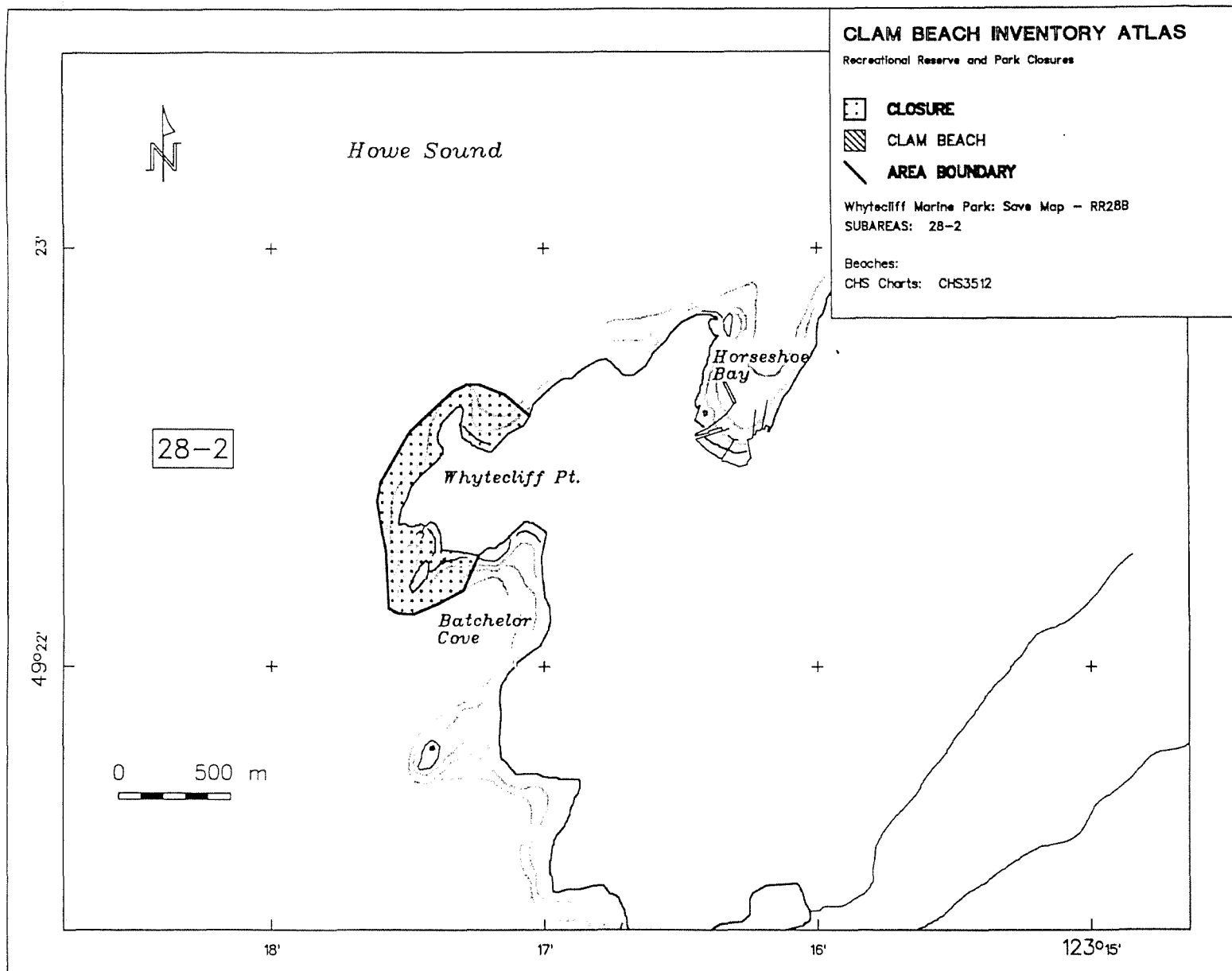
Appendix Figure 2.1.20.



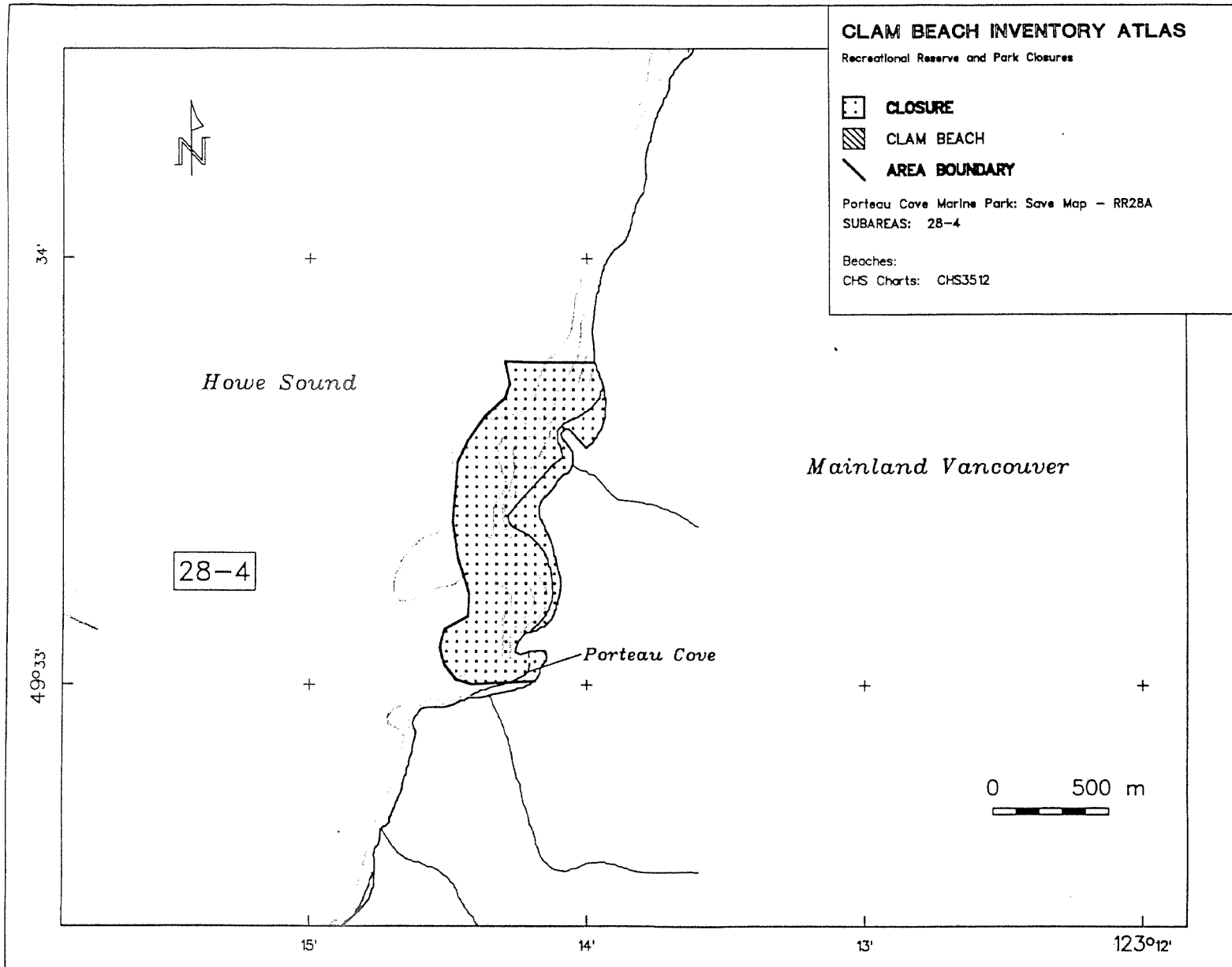
Appendix Figure 2.1.21.



Appendix Figure 2.1.22.



Appendix Figure 2.1.23.



Appendix Figure 2.1.24.

APPENDIX 3.

DESCRIPTIONS OF CONTAMINATED CLOSURES, AREAS 13 TO 20, 28 AND 29

**From the 1997 DFO Pacific Region Management Plan for Intertidal
Clams (Manila, Littleneck, Butter and Razor Clams)**

Note: This list is provided for general information only. Closures may change at any time. For up to date information, please contact the Fish Inspection Branch, Burnaby, BC.

SEWAGE CONTAMINATED AREAS 13 to 20, 28 and 29

Any Canadian fisheries waters of the Pacific Ocean within 125 m of

(a) any wharf, dock, platform or other structure used for vessel moorage; or

(b) any permanently anchored floating structures, including float homes, barges, platforms and vessels.

Area 13

1. The waters and foreshore of Quathiaski Cove, Quadra Island, including Grouse Island, lying inside a straight line drawn across the mouth of the cove.
2. The waters and foreshore of Heriot Bay, Quadra Island, lying within 250 m of the government float and the ferry wharf.
3. That portion of the foreshore from Middle Point, north of Duncan Bay, to a point on the foreshore midway between Pinecrest and Evergreen roads, Campbell River.
4. The foreshore lying 1000 m northward and 500 m southward from the mouth of Simms Creek.
5. The waters lying within a 300 m radius of the mouth of Willow Creek.
6. The waters and foreshore of Big Bay, Stuart Island lying inside a straight line drawn from Hesler Point to Whirlpool Point.
7. The waters and foreshore of Kelsey Bay and Salmon Bay lying inside a straight line drawn from the northern headland of Brasseau Bay through the Peterson Islet navigation beacon to a point on Vancouver Island.
8. The waters and foreshore of Loughborough Inlet lying inside a line drawn between the two headlands of the unnamed bay at the mouth of Grassy Creek.
9. The foreshore at the head of Forward Harbour.
10. The waters and foreshore at the head of Whaletown Bay, Cortes Island lying inside a line drawn from the north shore at 50°06.61'N latitude and of 125°02.82'W longitude thence south to 50°06.56'N latitude and 125°02.82'W longitude.
11. The waters and foreshore of Coulter Bay, Cortes Island, lying inside a line drawn from the northeastern point of the unnamed island in the bay due east to the nearest point of land and from the northwestern side of the unnamed island southwest to the nearest point of land.

- A. The waters and foreshore of Mansons Landing, Cortes Island, lying within 900 m of the government dock, but not including Manson Lagoon.
MAY 31 TO SEPTEMBER 30
- B. The waters and foreshore of Von Donop Inlet, Cortes Island.
MAY 31 TO SEPTEMBER 30
- C. The waters and foreshore of Drew Harbour, Quadra Island, lying inside a straight line drawn from the northernmost tip of Rebecca Spit across the entrance of Drew Harbour to its western headland.
MAY 31 TO SEPTEMBER 30
- D. That portion of the foreshore of Gorge Harbour, Cortes Island, lying between a point on shore 300 m west of the Gorgeview Marina and a point on shore 300 m east of the government wharf.
MAY 31 TO SEPTEMBER 30

Area 14

- 1. The waters and foreshore of Comox Harbour and surrounding areas lying inside a line drawn from the southern headland of the unnamed bay south of Gartley Point to the Comox Bar bell buoy (P54) and thence to a point on land 250 m east of the Point Holmes boat ramp.
- 2. The waters and foreshore of Deep Bay, Baynes Sound, lying within 300 m of the government wharf.
- 3. The foreshore of Union Bay, Baynes Sound, lying between the southern headland of Union Bay and the foot of Tipton Road.
- 4. The foreshore of Base Flats from a northern boundary starting at 49°31.30'N latitude and 124°50.2'W longitude, extending northeasterly towards the Denman Island Ferry Dock, thence along the low water boundary to a point at 49°31.12'N latitude and 124°49.20'W longitude and thence southwesterly to a point 500 m south of Mac's Oysters Ltd. plant.
- 5. The waters and foreshore lying within a 300 m radius of the drainage ditch entering at the foot of Yambury Road, Eaglecrest.
- 6. The waters and foreshore of Qualicum Beach lying 400 m on either side of the mouth of Grandon Creek, and 250 m on either side of the mouth of Beach Creek.
- 7. The waters and foreshore of Kye Bay lying within a 500 m radius of the foot of Lazo Road.

8. The waters and foreshore of Saratoga Beach, from the north side of Oyster River at a point at 49°52.35'N latitude and 125°06.92'W longitude and to a point approximately 1.9 km south at 49°51.52'N latitude and 125°06.33'W longitude.
9. The waters and foreshore of Wall Beach, lying inside a line drawn from a point at 49°18.13'N latitude and 124°13.33'W longitude thence east to a point at 49°18.21'N latitude and 124°13.03'W longitude.
10. The waters and foreshore of the Englishman River and Parksville Bay to French Creek, starting at a point east of the Englishman River mouth at 49°19'55"N latitude and 124°17'14"W longitude thence westerly through Parksville Bay to the French Creek marina quick-flashing red beacon.
11. The waters and foreshore of Mud Bay, Lasqueti Island lying inside a line drawn from the southwestern tip of the headland at 49°29.60'N latitude and 124°20.96'W longitude thence northerly to a point on the opposite shore at 49°29.70'N latitude and 124°20.99'W longitude.
12. The waters and foreshore of Mud Bay starting from 49°29.00'N latitude and 124°47.90'W longitude due east to 49°28.90'N latitude and 124°46.90'W longitude, including the Mud Bay reef, thence southeasterly to 49°28.10'N latitude and 124°45.70'W longitude and thence southwesterly to a point on shore at 49°27.90'N latitude and 124°45.80'W longitude.
13. The waters which lie within a 200 m radius of the mouth of Cowie Creek.
14. The foreshore of Ship Point located within a 300 m radius from its most northern tip.
15. The waters which lie within a 250 m radius of the mouth of McNaughton Creek.
16. The waters and foreshore at the mouth of the Little Qualicum River, starting at the tip of the spit at 49°22'00"N latitude and 124°29'53"W longitude thence northwesterly to the foot of the private road approximately 700 m northwest of the tip of the spit at 49°22'09"N latitude and 124°31'03"W longitude.
17. The waters and foreshore of the small bay northeast of Higgins Island in False Bay, Lasqueti Island, commencing from the point of land at 49°30'00"N latitude and 124°21'23"W longitude, thence southward to the southeast tip of the small island in the bay, thence eastward to the point of land at 49°29'53"N latitude and 124°21'31"W longitude.
18. The waters and foreshore at the mouth of Craig Creek, lying inside a line drawn from the west side of Madrona Point to the foot of Bay Drive.

Area 15

1. The foreshore of Malaspina Strait lying between the northern headland of Scuttle Bay at 49°54.61'N latitude and 124°37.84'W longitude and Myrtle Point at 49°46.79'N latitude and 124°27.08'W longitude.
 2. The waters and foreshore at the head of Freke Anchorage, Okeover Inlet, lying inside a line drawn from the south end of the bluffs located on the north shore at 49°58.18'N latitude and 124°40.64'W longitude to the north end of the shoals on the south shore at 49°58.03'N latitude and 124°41.00'W longitude.
 3. The waters and foreshore of Lund Harbour lying inside a line drawn from the peninsula at the northern end of the harbour entrance to the point of land at the southern entrance to the government wharf.
 4. The waters and foreshore of Refuge Cove, West Redonda Island lying inside a line drawn across the head of the cove, from a point on the north foreshore 400 m from the centre of the bulk oil storage tank situated near the head of the cove, to a point on the south foreshore 275 m from the centre of the bulk oil storage tank.
 5. The waters and foreshore of Lang Bay located inside a line drawn from the eastern headland of Kelly Point at 49°46.28'N latitude and 124°21.93'W longitude, thence easterly to the point at 49°46.15'N latitude and 124°20.67'W longitude.
 6. The waters and foreshore of the unnamed bay immediately north of Turner Bay, Malaspina Peninsula, lying inside a line drawn from the southern headland of the bay due north to the opposite shore.
 7. The waters and foreshore of McRae Cove lying inside a line drawn due east from the western headland of the cove to the opposite shore.
 8. The subtidal waters of Malaspina Strait from Willingdon Creek westward to 49°50.85'N latitude and 124°32.29'W longitude, thence southward to 49°48.24'N latitude and 124°32.29'W longitude, thence eastward to Grief Point.
 9. The waters and foreshore of Sturt Bay located inside a line drawn from the southern point at 49°45.74'N latitude and 124°34.16'W longitude, thence northeasterly to a point at 49°45.80'N latitude and 124°34.12'W longitude.
 10. The waters and foreshore of the westernmost portion of the head of Cortes Bay, Cortes Island, lying inside a line drawn from a point at 50°03.91'N latitude and 124°56.15'W longitude thence south to the nearest point of land at 50°03.86'N latitude and 124°56.15'W longitude.
- A. The waters and foreshore of the area known as Prideaux Haven, including Melanie Cove and Laura Cove, bounded on the west by a line drawn along the shortest distance from

Eveleigh Island to the shore of the mainland and on the north by a line drawn from Lucy Point on Eveleigh Island to the westernmost tip of Scobell Island and thence from the easternmost tip of Scobell Island to Coplestone Point.

MAY 31 TO SEPTEMBER 30

- B. The waters and foreshore of Tenedos Bay lying inside a line drawn from the eastern tip of Bold Head northeast to the southern headland of the easternmost bay of Tenedos Bay.
MAY 31 TO SEPTEMBER 30
- C. The waters and foreshore lying between Allies Island and West Redonda Island.
MAY 31 TO SEPTEMBER 30
- D. The waters and foreshore of Roscoe Bay, West Redonda Island.
MAY 31 TO SEPTEMBER 30
- E. The waters and foreshore of Squirrel Cove, Cortes Island, lying inside a line drawn along the shortest distance from the western shore of Protection Island to Cortes Island and inside a line drawn along the shortest distance from the eastern shore of Protection Island to Cortes Island.
MAY 31 TO SEPTEMBER 30
- F. The waters and foreshore of Cortes Bay, Cortes Island, lying inside a line drawn across the entrance to the bay.
MAY 31 TO SEPTEMBER 30
- G. The waters and foreshore of Grace Harbour lying inside a line drawn from Moss Point to Scott Point.
MAY 31 TO SEPTEMBER 30

Area 16

- 1. The waters and foreshore of Pender Harbour, including Gunboat Bay and Bargain Bay, Sechelt Peninsula, lying east of a line drawn from the southernmost tip of the point between Farrington Cove and Duncan Cove to the Esso float at Donnely Landing, and north of a line drawn from the most southeasterly point of Francis Peninsula to the closest point on the opposite shore.
- 2. The waters and foreshore of Secret Cove, Sechelt Peninsula, lying inside a line drawn from the point on the mainland nearest the northwest tip of Turnagain Island to the northwest tip of Turnagain Island, thence along the western shoreline of the island to the most southerly point on the said island, and thence southeast to the mainland opposite.
- 3. The waters and foreshore of Gillies Bay, Texada Island, lying within an 800 m radius of the mouth of Cranby Creek entering at the head of Gillies Bay.

4. The foreshore of Thunder Bay located inside a line drawn from the mouth of Jefferd Creek, thence easterly to the northeast end of the beach at 49°46.52'N latitude and 124°15.75'W longitude.
5. The foreshore of Churchill Bay, Francis Peninsula, lying within a 200 m radius of the northernmost point of the bay.
6. The waters and foreshore of Porpoise Bay, Sechelt Inlet, extending from a point on shore at the southern boundary of Porpoise Bay Provincial Park at 49°30.25'N latitude and 123°45.00'W longitude, thence southerly along the foreshore to the dock at 49°29.40'N latitude and 123°44.95'W longitude, thence westerly to the headland on the opposite shore at 49°29.45'N latitude and 123°45.75'W longitude, thence northerly along the foreshore to a point on shore at 49°29.75'N latitude and 123°46.05'W longitude.
7. The foreshore at the head of Storm Bay, Sechelt Inlet.
8. The waters and foreshore of Halfmoon Bay lying inside a line drawn from the eastern tip of the unnamed island immediately east of Jeddah Point to the unnamed point in line with the south end of the Redroofs bridge.
9. The waters and foreshore of the unnamed bay, locally known as Long Bay, immediately east of Potter Point, Tucker Bay, Lasqueti Island.
10. The waters and foreshore of the unnamed bay in Blind Bay on Nelson Island commencing from the unnamed headland at the southeastern entrance of Telescope Passage, thence southwest to the point of Nelson Island north of Maynard Head.
11. The waters and foreshore of Maude Cove, Thunder Bay, lying inside a line drawn due west from the eastern headland of the bay to the opposite shore.
12. The waters and foreshore of Scottie Bay lying within a 100 m radius of the unnamed creek located at 49°30.72'N latitude and 124°20.65'W longitude, south of Lindbergh Island.
13. The waters and foreshore of the small unnamed bay east of Four Mile Point, Sechelt Inlet, extending from the western point at 49°31.40'N latitude and 123°46.60'W longitude, thence easterly to the foot of the boat launching ramp at 49°31.40'N latitude and 123°46.40'W longitude.
14. The waters and foreshore of a small unnamed bay in Skookumchuck Narrows, Sechelt Inlet, lying inside a line drawn from the southwestern headland at 49°46.05'N latitude and 123°56.10'W longitude, thence northeasterly to a rock outcrop on the opposite shore at 49°46.10'N latitude and 123°56.05'W longitude.

15. The waters and foreshore located inside a line drawn from the headland on the northwest side of the head of Davie Bay, thence easterly to the headland on the opposite side of the bay.
16. The waters and foreshore located within a 125 m radius of the mouth of Silversands Creek.
 - A. The waters and foreshore of Smuggler Cove lying inside a line drawn from the Smuggler Cove Marine Park sign at the entrance to the cove to the opposite shore.
MAY 31 TO SEPTEMBER 30
 - B. The waters and foreshore of Princess Louisa Inlet inside a line drawn across the narrowest point at Malibu Rapids.
MAY 31 TO SEPTEMBER 30

Area 17

1. The waters and foreshore of Ladysmith Harbour lying inside a line drawn from Sharpe Point at 48°58.90'N latitude and 123°46.00'W longitude, thence southeasterly to a point southeast of Boulder Point at the foot of Clifcoe Road at 48°57.25'N latitude and 123°44.90'W longitude.
2. The waters and foreshore of Chemainus Bay lying inside a line drawn from Bare Point light at 48°55.80'N latitude and 123°42.30'W longitude to the outcrop on the northwest side of the mouth of Askew Creek at 48°56.00'N latitude and 123°43.45'W longitude.
3. The waters and foreshore lying inside a line drawn from the old wharf located about 600 m west of Sherard Point to the North Reef light, thence to the northernmost tip of Bare Point.
4. The waters and foreshore of Nanaimo Harbour, Newcastle Island Passage lying inside a line drawn from Jack Point to Gallows Point on Protection Island, thence along the western shoreline to Bachelor Point, thence northwesterly to the entrance of a small lagoon at 49°11.18'N latitude and 123°55.35'W longitude on Newcastle Island and thence along the southwestern shoreline to Nares Point, including the waters south of a line drawn from Shaft Point to Pimbury Point on Vancouver Island.
5. The waters and foreshore of Departure Bay from Pimbury Point to Horswell Bluff at 49°12.76'N latitude and 123°56.36'W longitude.
6. The waters and foreshore of Degnen Bay, Gabriola Island, lying inside of a line drawn from the beach access at the foot of Gray Road on the west shore to the unnamed point immediately opposite on the east shore, northwest of Josef Point.

7. The waters and foreshore of Silva Bay, Gabriola Island lying within a line drawn from the southern tip of Law Point to the northwestern tip of Sear Island and thence southwesterly to the shoreline of Gabriola Island.
8. The waters and foreshore of Montague Harbour, Galiano Island, lying inside a line drawn from the eastern tip of Gray Peninsula to Winstanley Point.
9. The foreshore of Gabriola Island lying between the unnamed point 350 m southeast of the foot of Shaw Road, and a point on land 200 m northeast of the said unnamed point.
10. The foreshore of Walker Hook, Saltspring Island, lying south of a line drawn from a point at 48°53.57'N latitude and 123°30.00'W longitude to a point at 48°53.55'N latitude and 123°29.65'W longitude, within the hook formed by the spit and the shoreline of Saltspring Island.
11. The waters and foreshore on the northwest side of Nanoose Harbour, lying within a 30 m radius of the unnamed creek located at 49°16.41'N latitude and 124°10.30'W longitude.
12. The waters and foreshore of Clam Bay and Telegraph Harbour, including the boat passage between Thetis and Kuper Islands, lying between, that is, west of a line drawn near the foot of Clam Bay Wharf Road at 48°59.34'N latitude and 123°39.08'W longitude to the opposite shore at 48°58.95'N latitude and 123°39.08'W longitude, and a line drawn from Donckele Point on Kuper Island to Foster Point on Thetis Island.
13. The foreshore of Saltspring Island lying 1500 m northwest and 500 m southeast of the Malaview Estates sewage treatment plant outfall sign, southeast of Fernwood Point.
14. The waters and foreshore lying within a 480 m radius of the unnamed creek entering Houstoun Passage, near the northern terminus of North End Road, Saltspring Island, 2.4 km northwest of the Fernwood Point Dock.
15. The waters and foreshore of Hammond Bay, Nanaimo lying inside a line drawn from the headland on the north side at 49°14.03'N latitude and 123°57.65'W longitude thence southeasterly to Lagoon Head at latitude 49°13.74'N latitude and 123°56.85'W longitude.
16. The waters and foreshore of Taylor Bay, Gabriola Island, lying within a 400 m radius of the most northeastern point of Taylor Bay.
17. The waters and foreshore of Descanso Bay, Gabriola Island, lying within a 70 m radius of the culvert entering the southern end of the bay.
18. The foreshore of Lantzville, from Peterson Road eastward to a point 50 m east of the boat ramp at the Shoregrove Resort.

19. The waters and foreshore of Duck Bay, Saltspring Island, lying inside, that is eastward, of a line drawn due north from the first headland on the south side of Dock Point to the opposite shore.
20. The waters and foreshore of the northern shore of Vesuvius Bay, Saltspring Island, from a point on the shore 150 m north of the ferry slip to a point on the shore 500 m southeast of the ferry terminal.
21. The foreshore of Booth Bay, Saltspring Island, lying east of 123°33.57'W longitude, and the waters and foreshore of Booth Inlet (also known as Booth Lagoon).
22. The waters and foreshore lying within a 400 m radius of the mouth of Porter Creek, Stuart Channel.
23. The waters and foreshore of the small unnamed bay located at 48°56.00'N latitude and 123°35.75'W longitude, on the northwest side of Saltspring Island.
24. The waters and foreshore of Nanoose Harbour, located at a point at 49°15.21'N latitude and 124°08.69'W longitude to a point approximately 340 m east at 49°15.15'N latitude and 124°08.49'W longitude approximately 1 km west of Fleet Point.
25. The waters and foreshore of Descanso Bay, Gabriola Island, from the point of land on the north side of the bay at 49°10.78'N latitude and 123°51.61'W longitude thence west to a point on the opposite shore at 49°10.80'N latitude and 123°51.67'W longitude.
26. The waters and foreshore of Stone Cutters Bay, Saltspring Island, lying inside of a line drawn due north from the first headland on the south side of Stone Cutters Bay to the opposite shore at 48°55.77'N latitude and 123°35.57'W longitude.
 - A. The waters and foreshore of the large bay on the west side of Tent Island.
MAY 31 TO SEPTEMBER 30
 - B. The waters and foreshore of Pirates Cove, De Courcy Island.
MAY 31 TO SEPTEMBER 30
 - C. The waters and foreshore of Conover Cove, Wallace Island, lying inside a line drawn between the headlands at the entrance to the cove.
MAY 31 TO SEPTEMBER 30
 - D. The waters and foreshore of the cove northwest of Conover Cove, Wallace Island, lying inside a line drawn from the northwesternmost point of the shoal at 48°56.65'N latitude and 123°33.40'W longitude, thence northeasterly to the end of the headland on the opposite shore.
MAY 31 TO SEPTEMBER 30

Area 18

1. The waters and foreshore of Cowichan Bay, including Genoa Bay and Boatswain Bank, lying inside a line drawn from Separation Point to Hatch Point.
2. The waters and foreshore of Long Harbour, Saltspring Island, lying within a 305 m radius of the ferry slip.
3. The waters and foreshore of Fulford Harbour, Saltspring Island, lying inside a line drawn in a due east-west direction through the quick-flashing red light on the southeast side of the harbour.
4. The waters and foreshore of Ganges Harbour, Saltspring Island, including Walter Bay lying inside or northwest of a straight line drawn from the western tip of Walter Bay Spit to the west end of Goat Island and thence westerly to the shore of Saltspring Island.
5. The waters and foreshore at the head of Burgoyne Bay, Saltspring Island, lying inside of a line drawn from 48°47'22"N latitude and 123°31'24"W longitude to 48°47'43"N latitude and 123°30'39"W longitude.
6. The waters and foreshore of Thieves Bay, North Pender Island.
7. The waters and foreshore of Bedwell Harbour, lying inside a line drawn from the Skull Islet reef to Hay Point, South Pender Island.
8. The waters and foreshore of Hope Bay, North Pender Island, lying inside, that is, south of a line drawn from the land end of the government dock to Auchterlonie Point on the opposite side.
9. The waters and foreshore of Birds Eye Cove, Maple Bay, lying inside a line drawn from a point on the western shoreline located 125 m north of the Maple Bay Yacht Club wharf true east to the eastern shore.
10. The waters and foreshore of Horton Bay, Mayne Island, lying inside a line drawn from Aitken Point to the most westerly point of Curlew Island, thence southward to a point on Mayne Island 125 m east of the public wharf.
11. The foreshore of Village Bay, Mayne Island, lying inside a line drawn from a point on land 125 m north of the ferry dock to Crane Point.
12. The foreshore of North Pender Island, including Boat Nook, between Thieves Bay and Oaks Bluff.
13. The waters and foreshore of Annette Inlet, Prevost Island, lying inside a line drawn across the narrowest point of the inlet, approximately midpoint of the inlet.

14. The foreshore at the head of Boot Cove, Saturna Island, lying inside a line drawn northwest from the northern tip of the small hook of land on the eastern shore, to the opposite shore.
15. The foreshore of Saanich Peninsula, from the Saanich Peninsula-Piers Island cable marker to Curteis Point.
16. The waters and foreshore at the head of Long Harbour, Saltspring Island lying inside a line drawn from the north side at 48°51.73'N latitude and 123°27.88'W longitude to the opposite shore at 48°51.77'N latitude and 123°28.00'W longitude.
17. The waters and foreshore of the unnamed bay at the north side of Ganges Harbour, Saltspring Island, lying inside a line drawn from the isthmus at 48°51.38'N latitude and 123°29.10'W longitude to the opposite shore at 48°51.50'N latitude and 123°29.10'W longitude.
18. The waters and foreshore of the three unnamed bays east of Fulford Harbour, Saltspring Island, lying inside a line drawn from the western headland at 48°45.45'N latitude and 123°24.85'W longitude thence due south to Louisa Rock, thence on a true bearing of 50° to the northeasterly headland at 48°45.50'N latitude and 123°24.45'W longitude .
19. The waters and foreshore of Satellite Channel on Saltspring Island from the DFO boundary marker at Cape Keppel at 48°43.00'N latitude and 123°30.00'W longitude, thence northwesterly to the headland at Musgrave Point at 48°44.90'N latitude and 123°33.00'W longitude.
20. The waters and foreshore of Selby Cove, Prevost Island, lying inside a line drawn across the entrance to the cove.
 - A. The waters and foreshore of Long Harbour, Saltspring Island, east of the Shellfish Sanitary Closure 18.16 boundary to a line drawn across the narrows northwest of the B.C. Ferries dock, from the northern side of the narrows at 48°51'38"N latitude and 123°27'38"W longitude due south to the southern side of the narrows at 48°51'34"N latitude and 123°27'38"W longitude.
MAY 31 TO SEPTEMBER 30
 - B. The waters and foreshore of Reef Harbour, lying inside a line drawn from the northeastern tip of Tumbo Island at 48°47.90'N latitude and 123°04.45'W longitude to Cabbage Island thence along the northern shoreline of Cabbage Island to a point at 48°48.00'N latitude and 123°05.25'W longitude, and thence southward to a point on Tumbo Island at 48°47.75'N latitude and 123°05.25'W longitude.
MAY 31 TO SEPTEMBER 30

Area 19

1. The waters and foreshore of Vancouver Island, lying inside a line drawn from the southernmost end of Coburg Peninsula (Esquimalt Lagoon) at 48°25.10'N latitude and 123°28.29'W longitude, thence southeasterly to Racon buoy at 48°22.53'N latitude and 123°23.50'W longitude, thence northeasterly to a point of land west of Gonzales Point at 48°24.58'N latitude and 123°18.14'W longitude, thence to the foreshore to a point on shore, at 48°32.20'N latitude and 123°21.82'W longitude, parallel with the northern end of Parker Road, Cordova Bay.
2. The foreshore of Saanich Peninsula, from Curteis Point southward to a point on shore, at 48°32.20'N latitude and 123°21.82'W longitude, parallel with the northern end of Parker Road, Cordova Bay.
3. The waters and foreshore of Saanich Inlet, including Mill Bay, extending from Hatch Point at 48°41.65'N latitude and 123°32.00'W longitude, thence southerly to the Bamberton Cement Company Dock at 48°35.35'N latitude and 123°31.20'W longitude.
4. The waters and foreshore of Thomson Cove, Saanich Inlet, lying inside a line drawn from the northern headland of Thomson Cove to Henderson Point.
5. The waters and foreshore of Brentwood Bay, Saanich Inlet, lying inside a line drawn from Henderson Point at 48°35.89'N latitude and 123°28.79'W longitude to Willis Point at 48°34.65'N latitude and 123°29.13'W longitude.
6. The waters and foreshore of Coles Bay, Saanich Inlet, lying inside a line drawn from Yarrow Point to a point on the eastern shore of the bay 125 m south of the unnamed creek entering at 8600 Kleewyck Road.
7. The waters and foreshore of Finlayson Arm, Saanich Inlet, lying south of the power cables crossing the southern tip of Sawluctus Island.
8. The waters and foreshore of Quarantine Cove lying inside a line drawn from William Head to the southern end of Weir Beach.
9. The subtidal waters on the east side of Saanich Peninsula lying inside a line drawn from Cordova Spit southeast to the southernmost tip of James Island, thence southwest to the boat launching ramp at Island View Beach.
10. The waters and foreshore of northeastern Saanich Inlet, lying inside a line drawn from Moses Point to Coal Point, thence southeasterly to the northern headland of Towner Bay, thence to Warrior Point, and thence to a point 125 m south of the dock at the Institute of Ocean Sciences.
11. The waters and foreshore of the west side of Squally Reach from a point 200 m south of the southernmost creek (Irving Creek), thence following the shoreline northwards along the 10 m depth line, to a point 200 m north of the northernmost creek.

Area 20

1. The waters and foreshore of Sooke Harbour and Sooke Basin, lying inside a line drawn from the eastern tip of Whiffin Spit due east to a point on the opposite shore, thence along the shoreline to Company Point.
2. The waters and foreshore of Pedder Bay lying inside a line drawn from Cape Calver to William Head.

Area 28

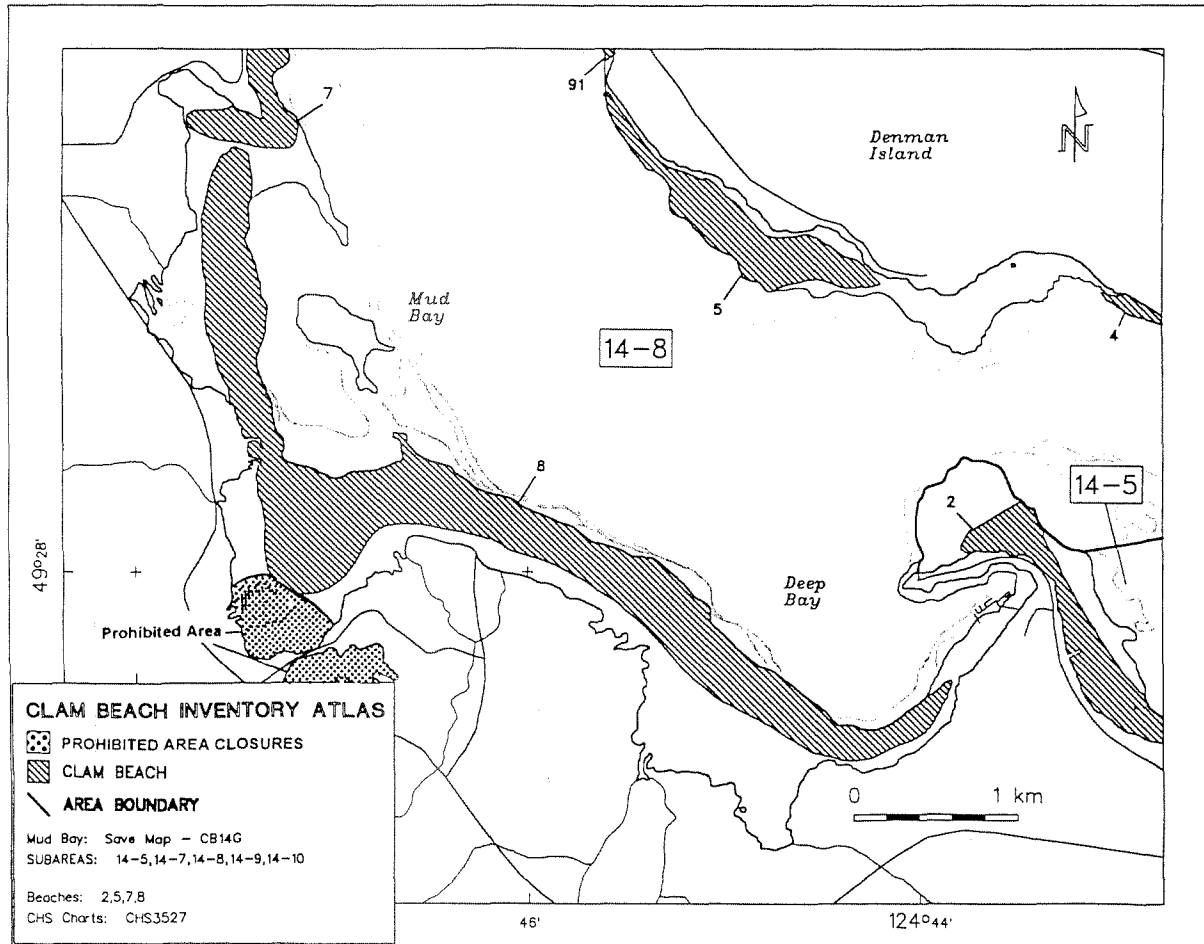
1. The waters and foreshore of Burrard Inlet, Indian Arm and Vancouver Harbour lying inside, that is easterly and northerly, of a line drawn from the western end of the Fraser River North Arm Jetty to Point Atkinson.
2. That portion of Horseshoe Bay, lying inside a line drawn due east from the northern tip of Tye Point to the opposite shore of Horseshoe Bay.
3. The foreshore from Gower Point to Soames Point, Gibsons Landing.
4. The foreshore at the head of Port Graves, Gambier Island.
5. The foreshore lying within a 200 m radius of the Camp Fircom sewage outfall, Halkett Bay, Gambier Island.
6. That portion of the foreshore known as McNab Creek.
7. The foreshore lying 200 m to the west and 400 m to the east of the mouth of Potlatch Creek.
8. The foreshore of Deep Bay, Bowen Island, lying inside a line drawn from the red navigation beacon on the south shore of Deep Bay to the foot of Ocean View Road.
9. The foreshore at the mouth of Grafton Creek, Grafton Bay, Bowen Island.
- A. The foreshore of Plumper Cove, Keats Island, lying within a 300 m radius of the Provincial Park wharf.
MAY 31 TO SEPTEMBER 30

Area 29

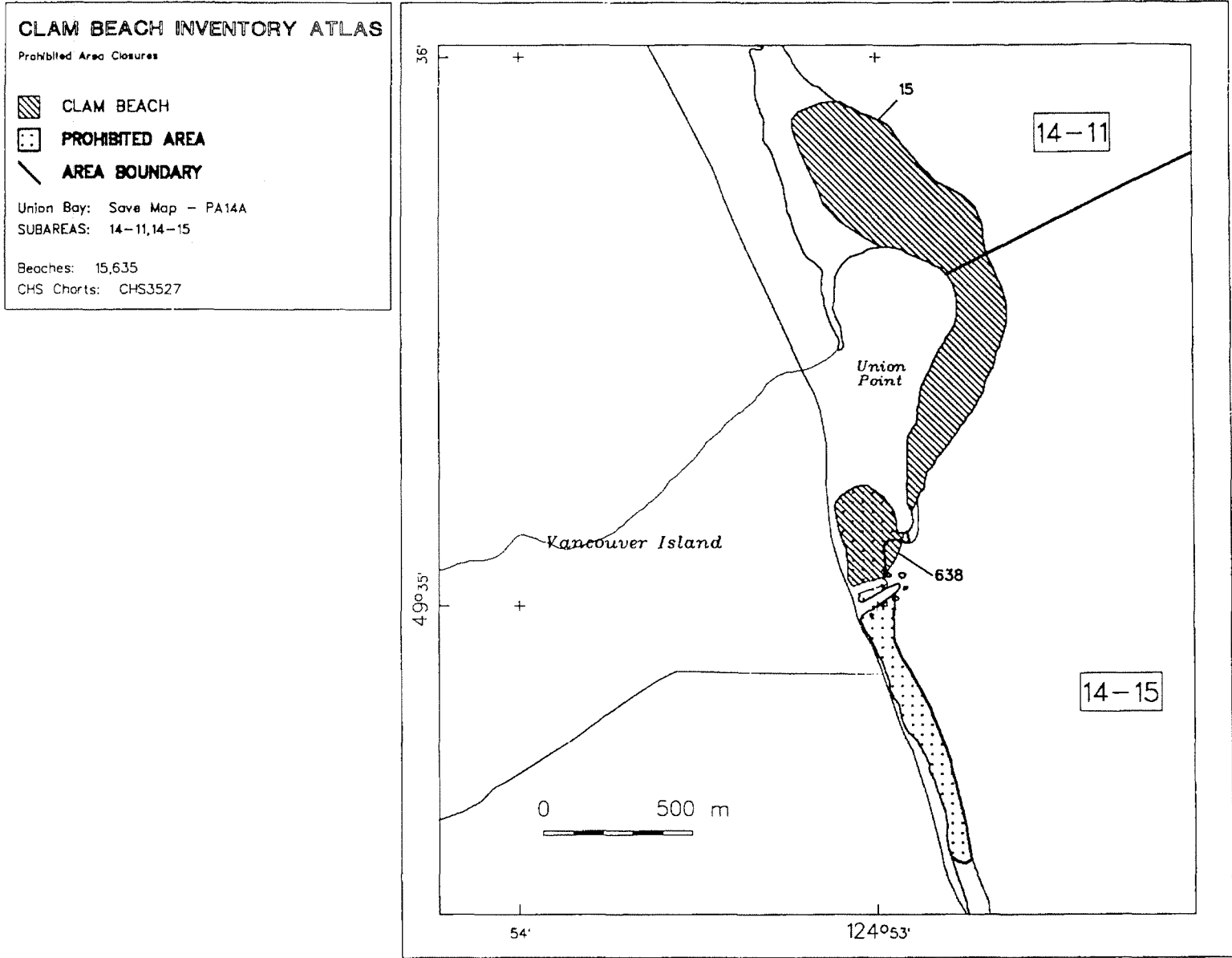
1. The foreshore from the mouth of Chaster Creek to Gower Point.
2. The waters and foreshore of Boundary Bay, Mud Bay and Semiahmoo Bay, lying inside, that is, northerly of the International Boundary Line.

3. The waters and foreshore in the Strait of Georgia, lying inside a line drawn from the International Boundary through the westerly end of Tsawwassen Causeway to the light at Sand Heads and thence to the western end of the Fraser River North Arm Jetty.
4. That portion of Sargeant Bay, Sechelt Peninsula, within a 300 m radius of the mouth of the unnamed creek entering the northernmost area of the bay.
5. The waters and foreshore of Whaler Bay, Galiano Island, lying inside, that is southeast of a line drawn 265° True from Cain Point to the western shore of Galiano Island.

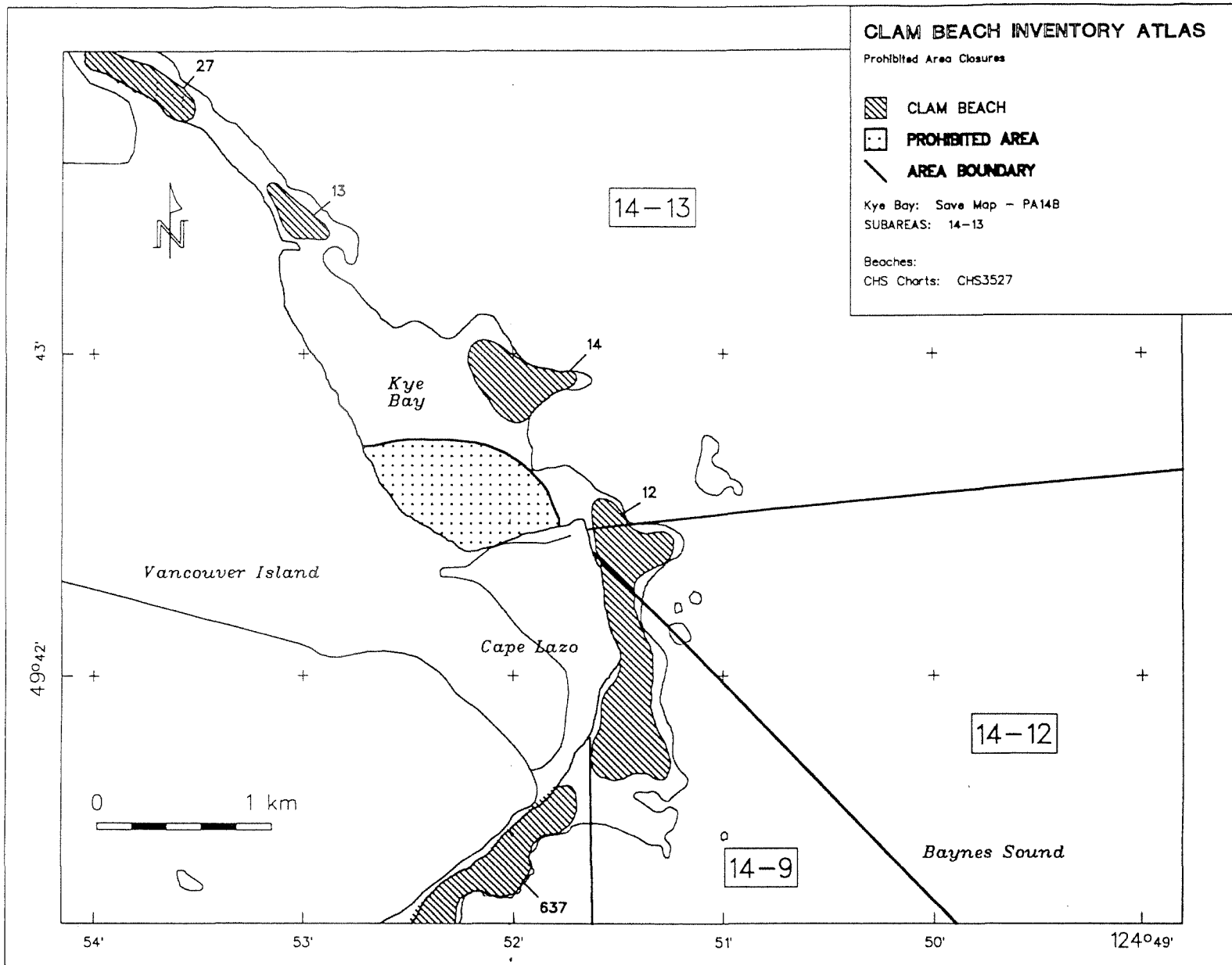
APPENDIX 4.
MAPS OF PROHIBITED AREA CLOSURES
SOUTHERN INSIDE WATERS



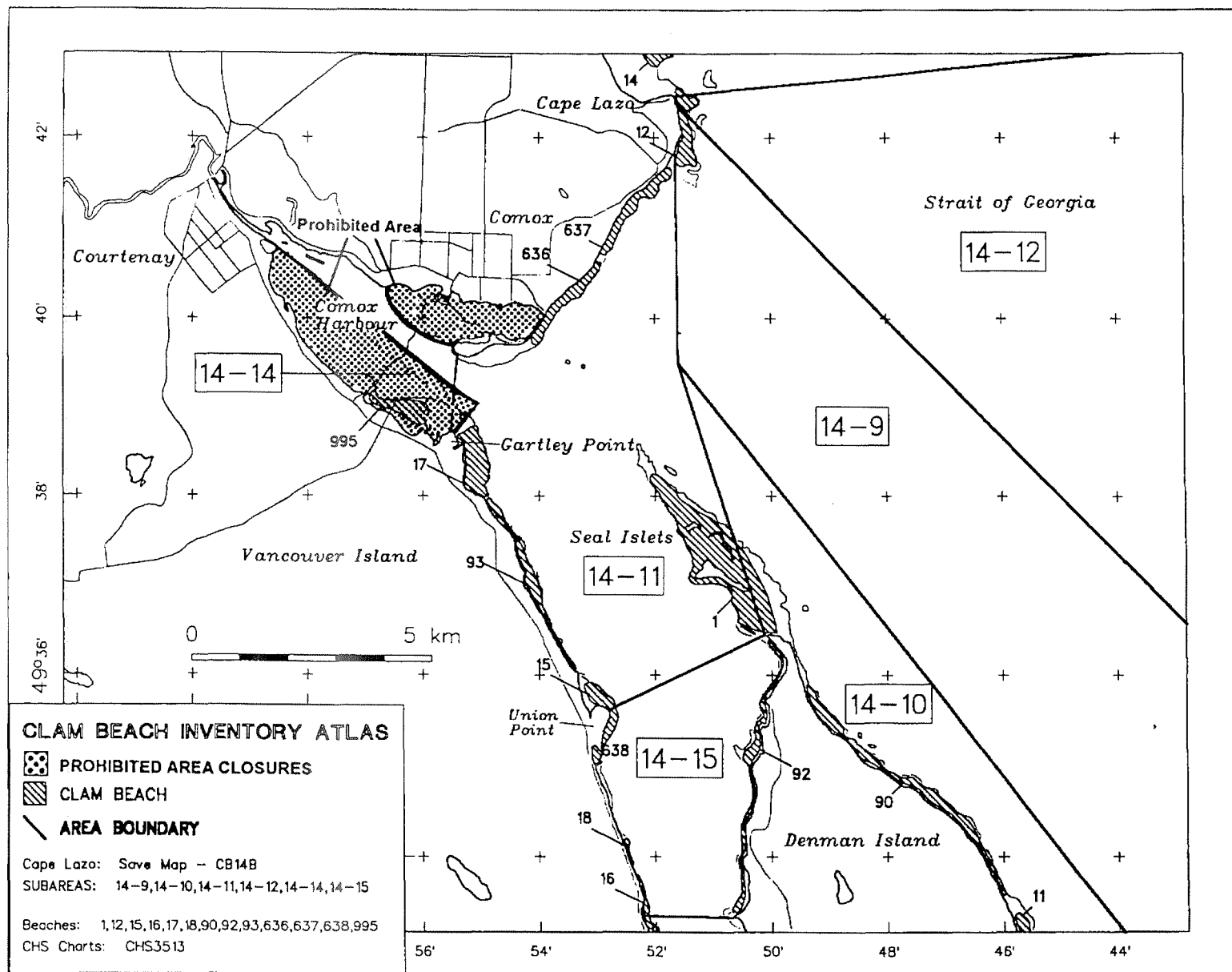
Appendix Figure 4.1



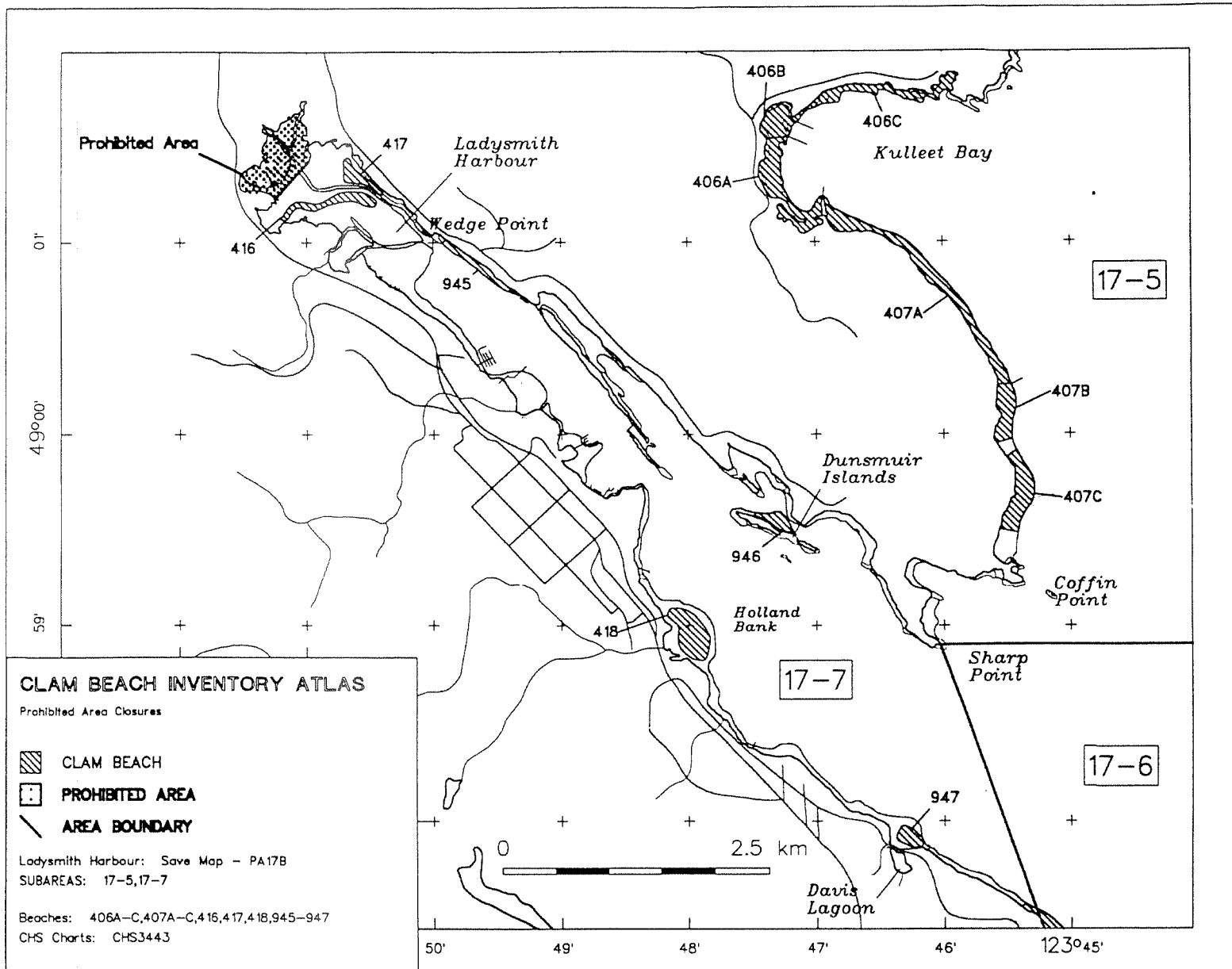
Appendix Figure 4.2



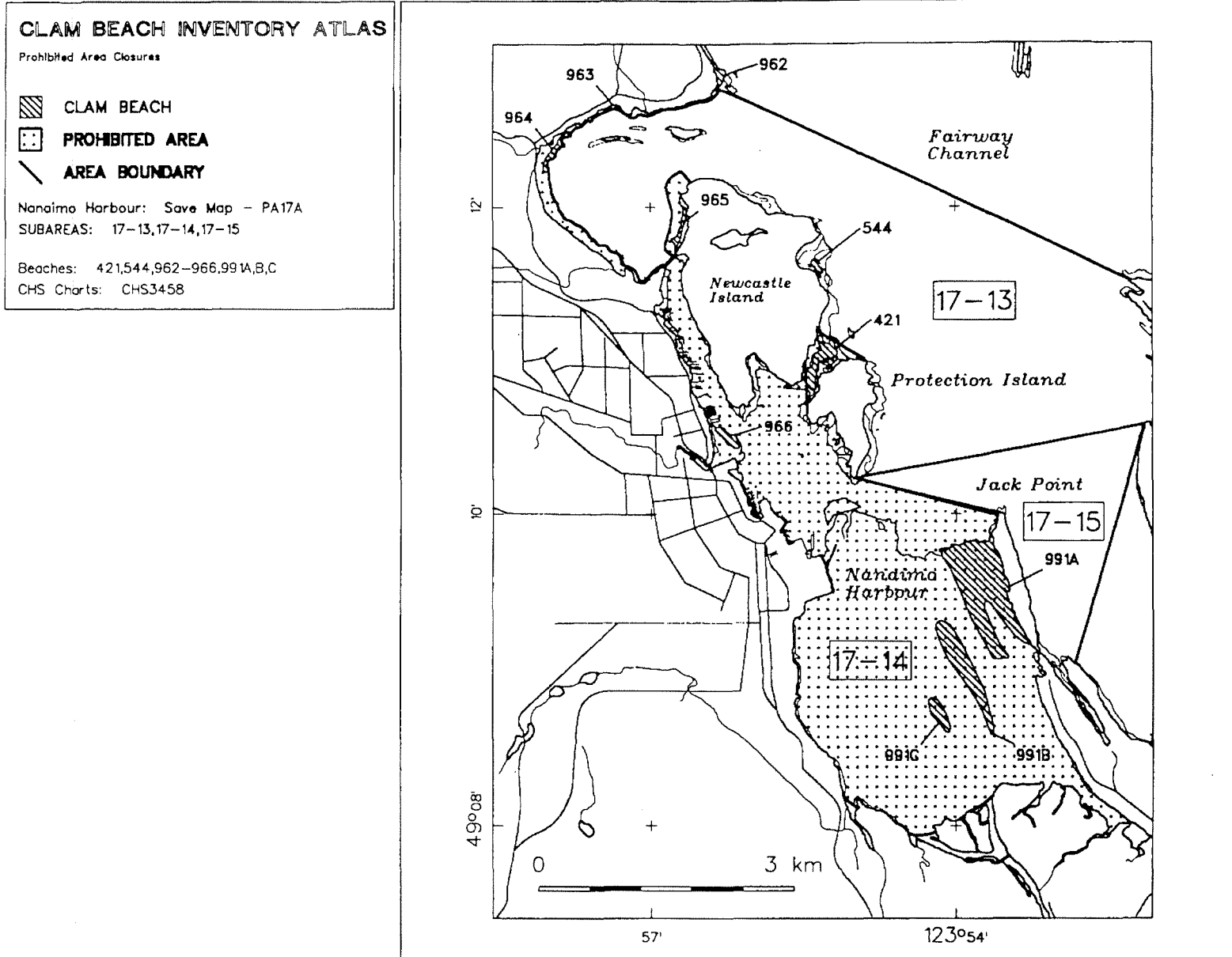
Appendix Figure 4.3



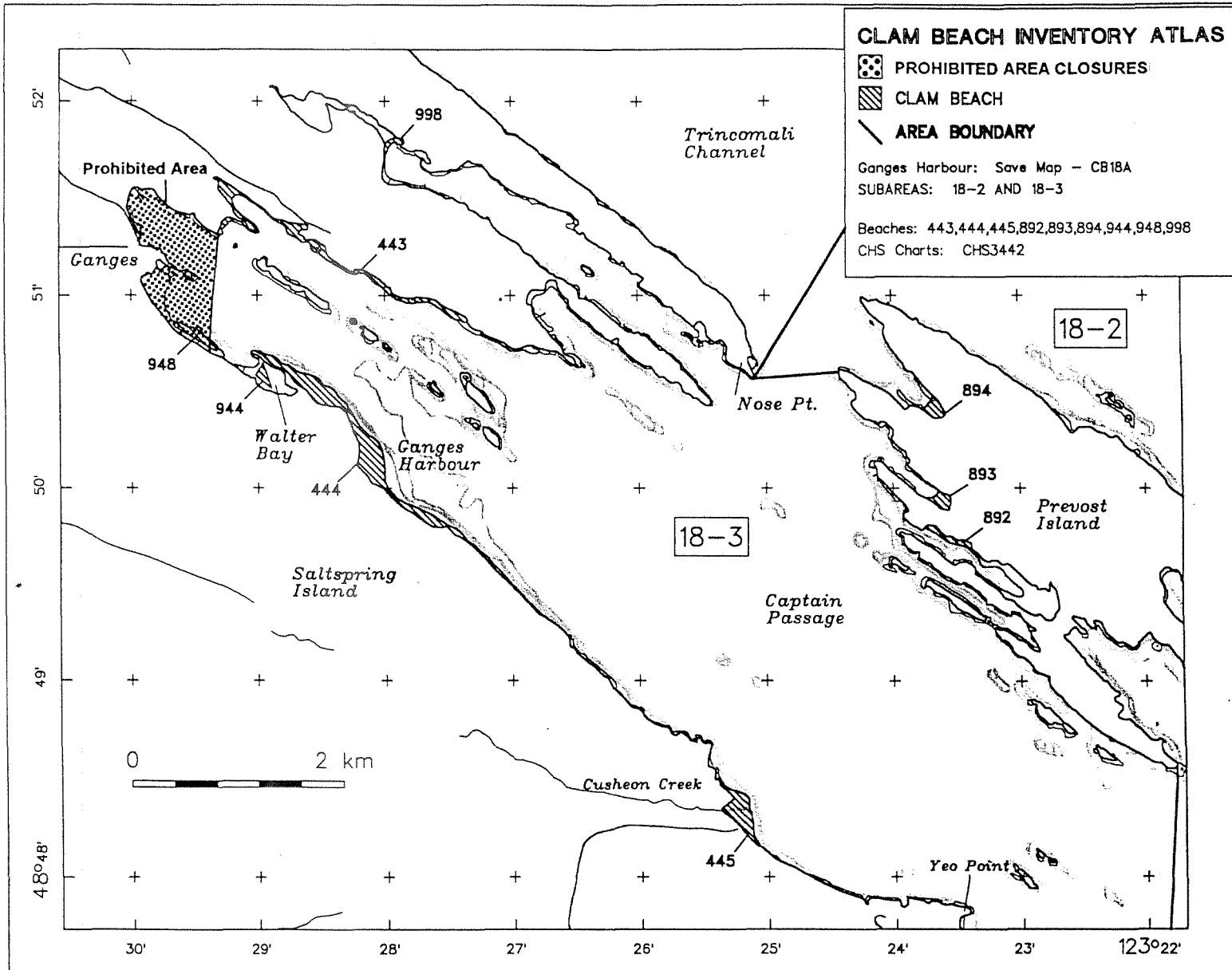
Appendix Figure 4.4



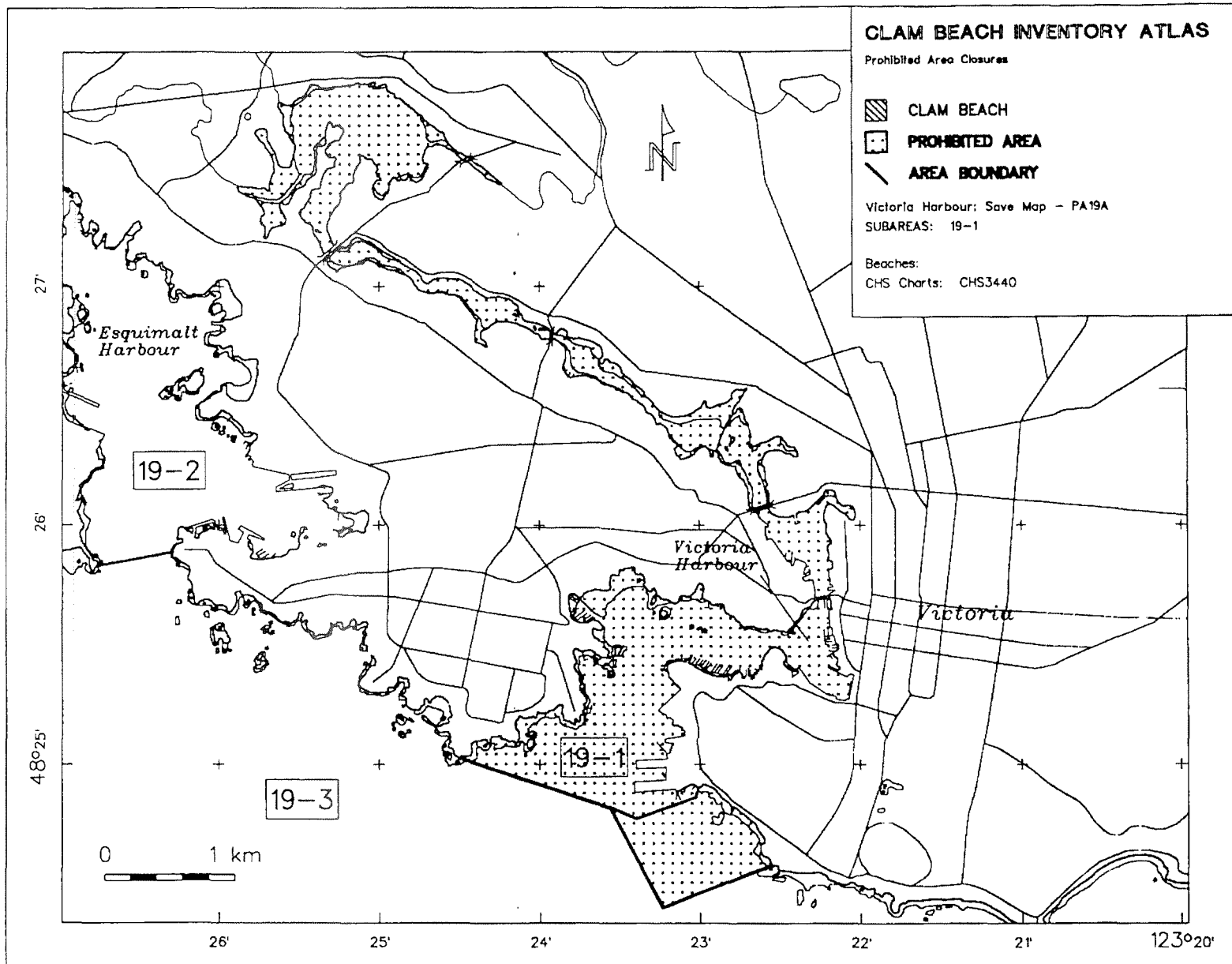
Appendix Figure 4.5



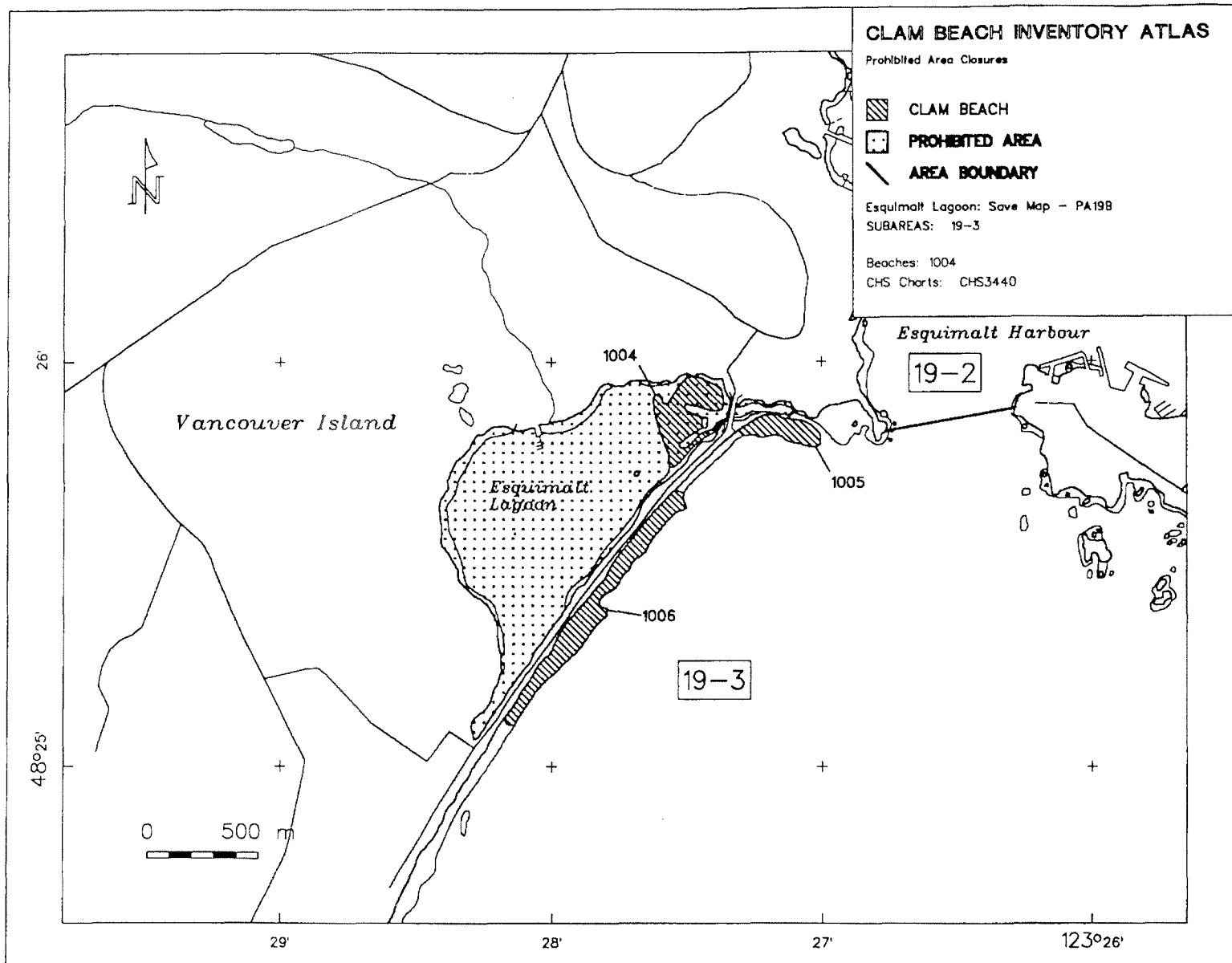
Appendix Figure 4.6



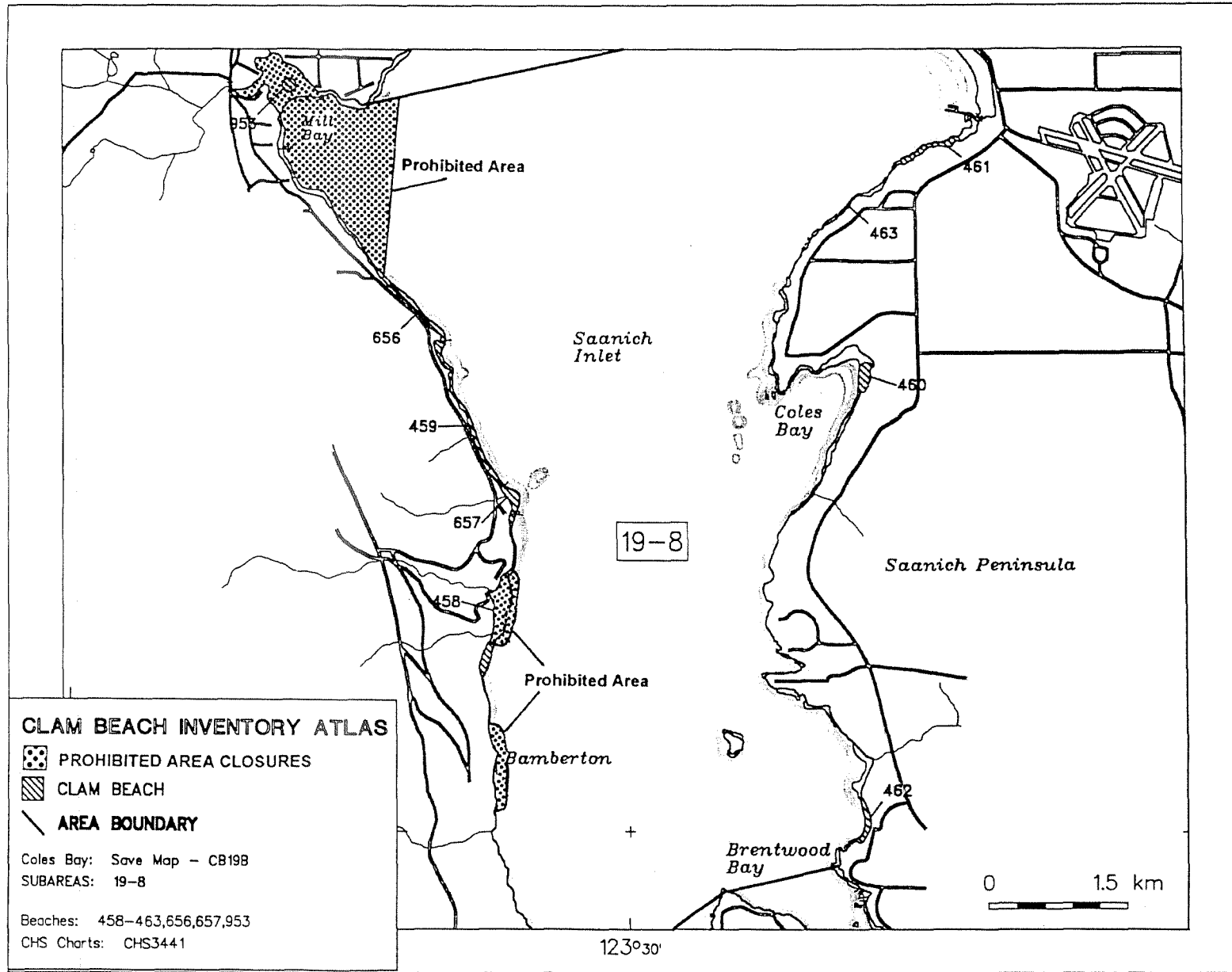
Appendix Figure 4.7



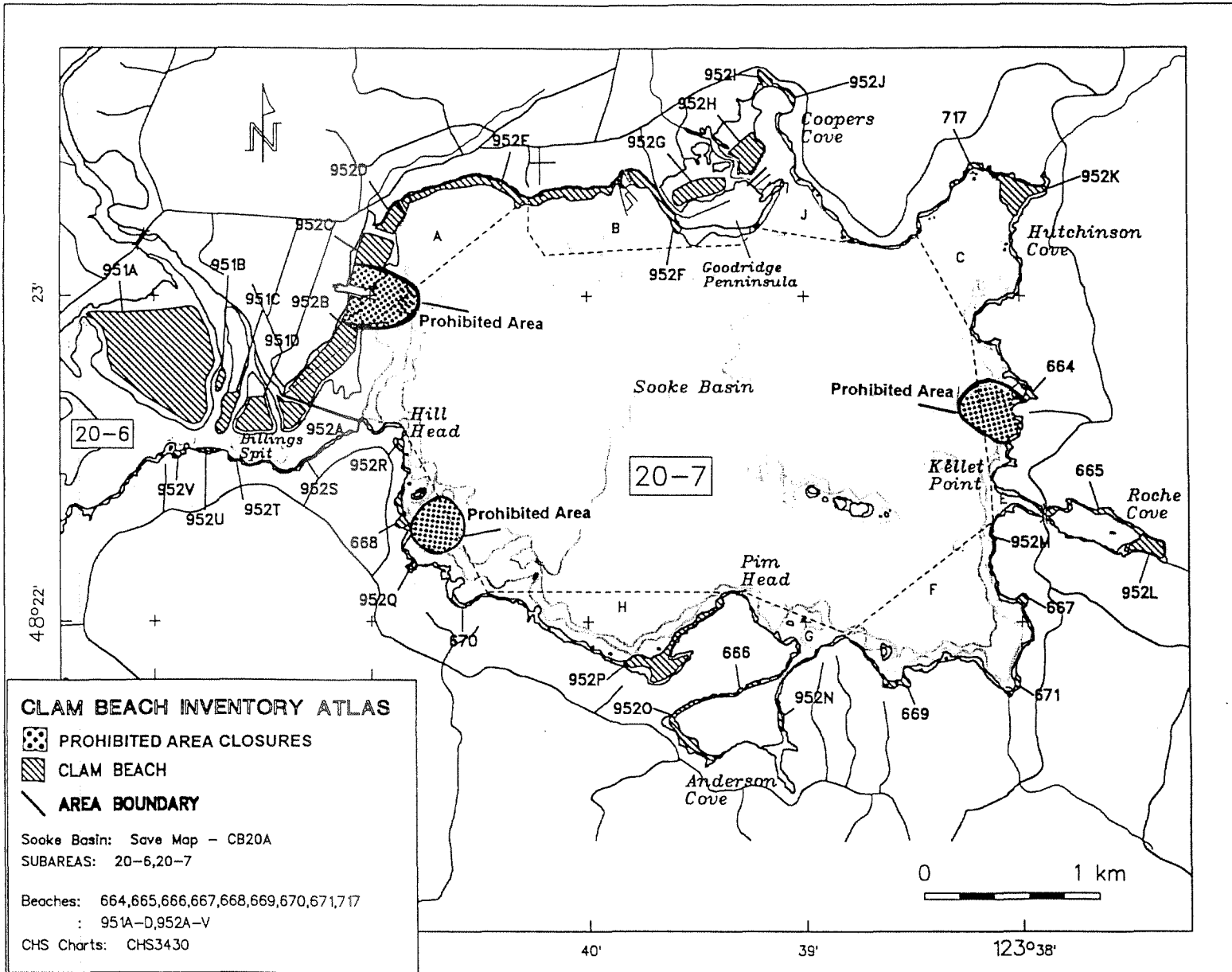
Appendix Figure 4.8



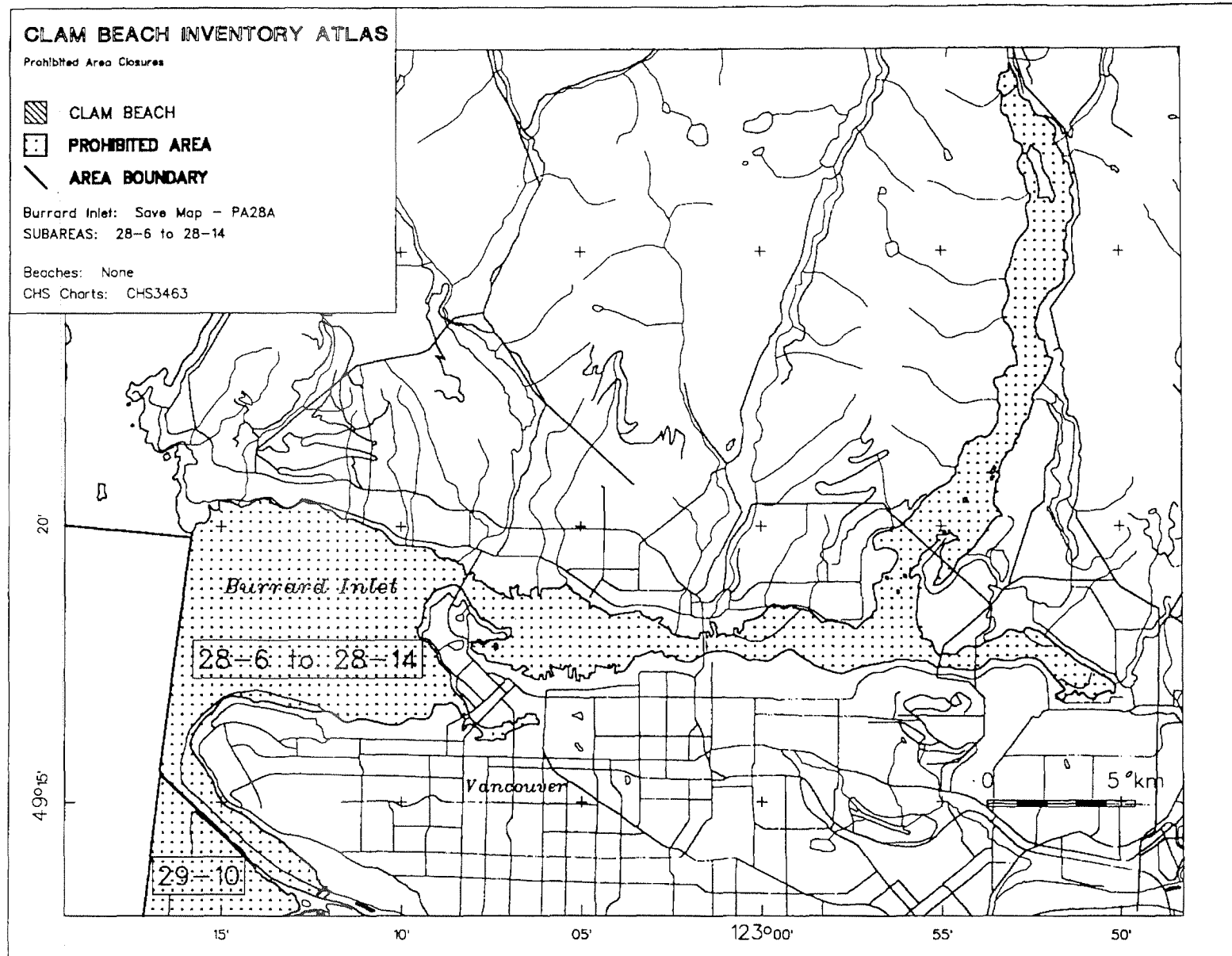
Appendix Figure 4.9



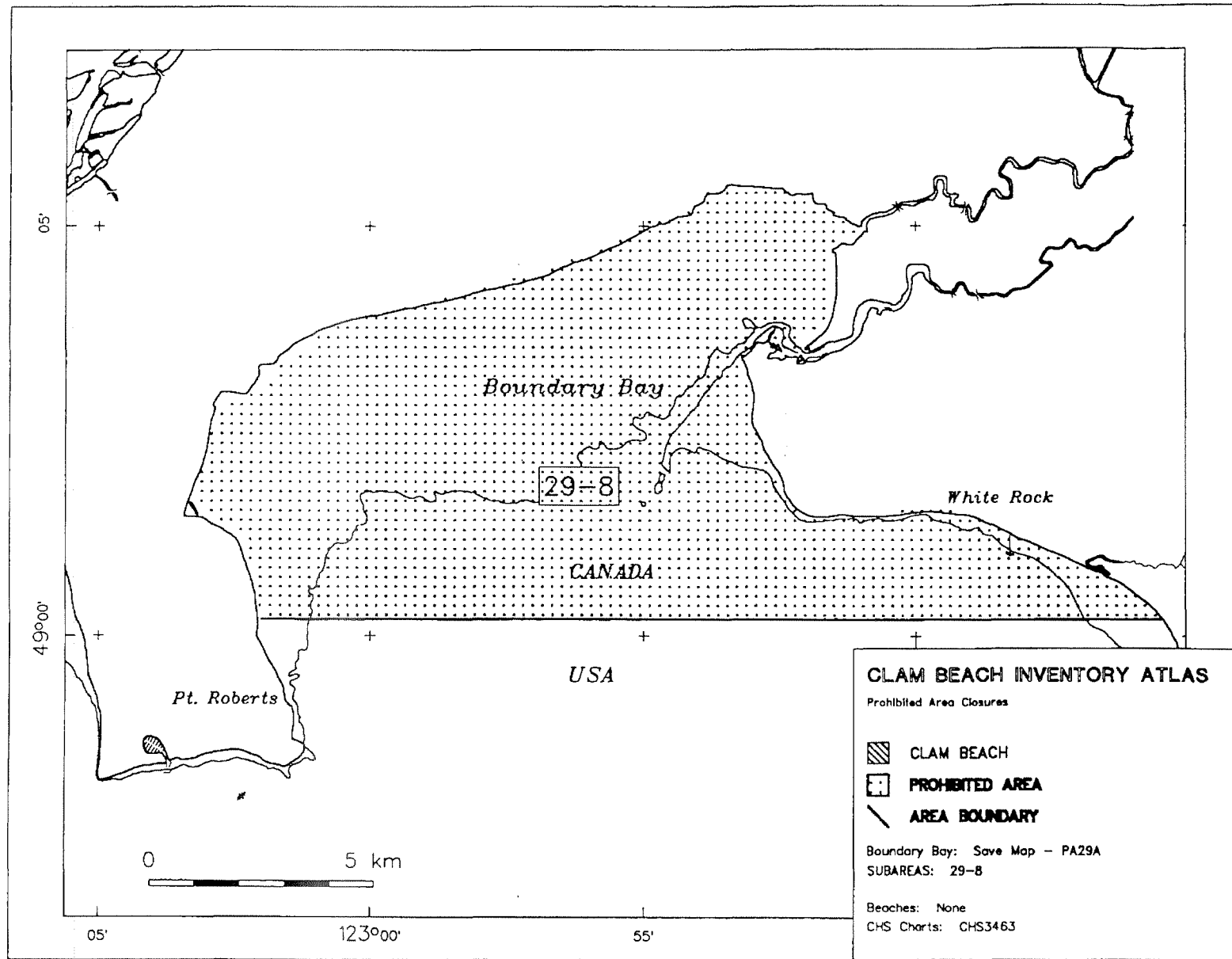
Appendix Figure 4.10



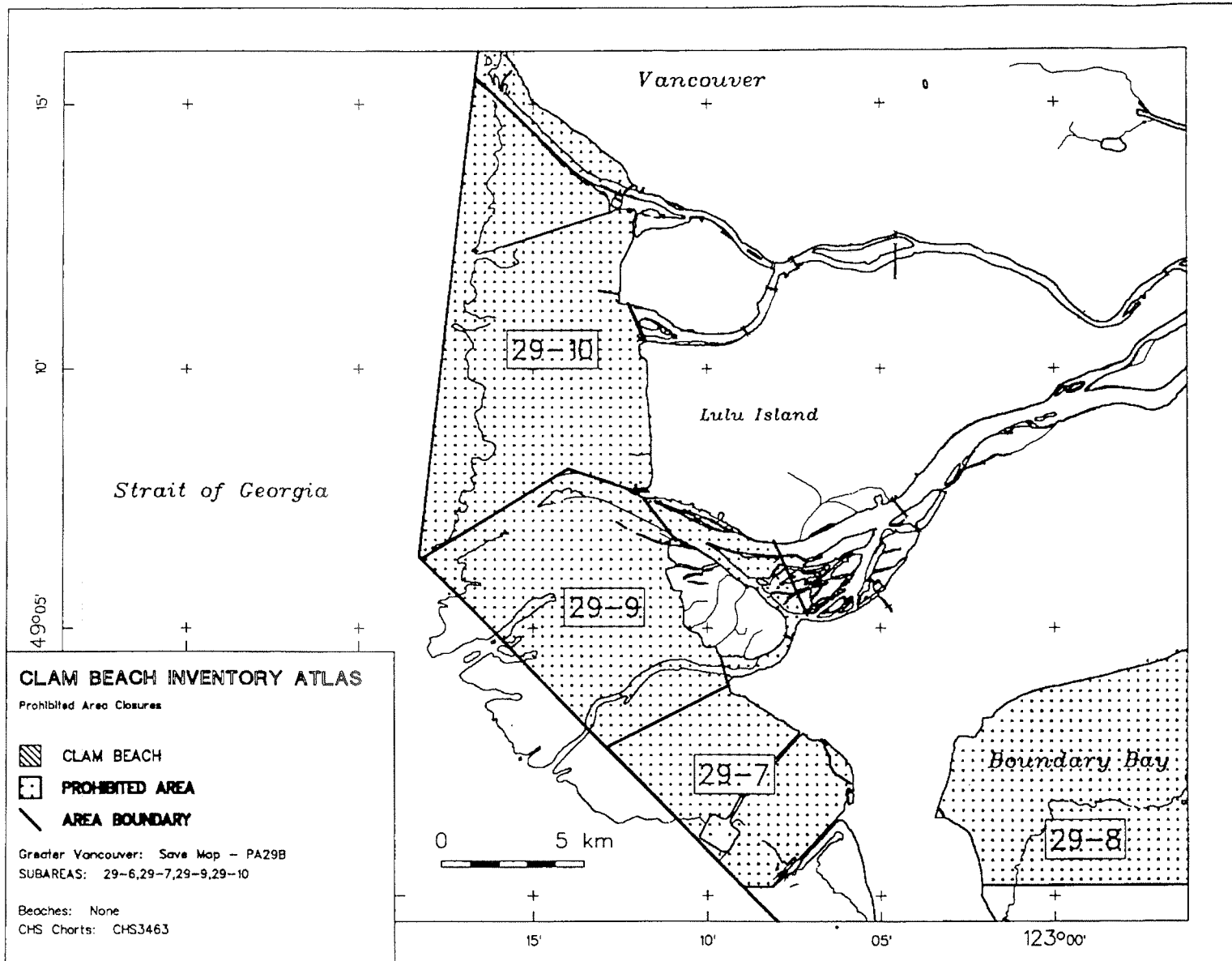
Appendix Figure 4.11



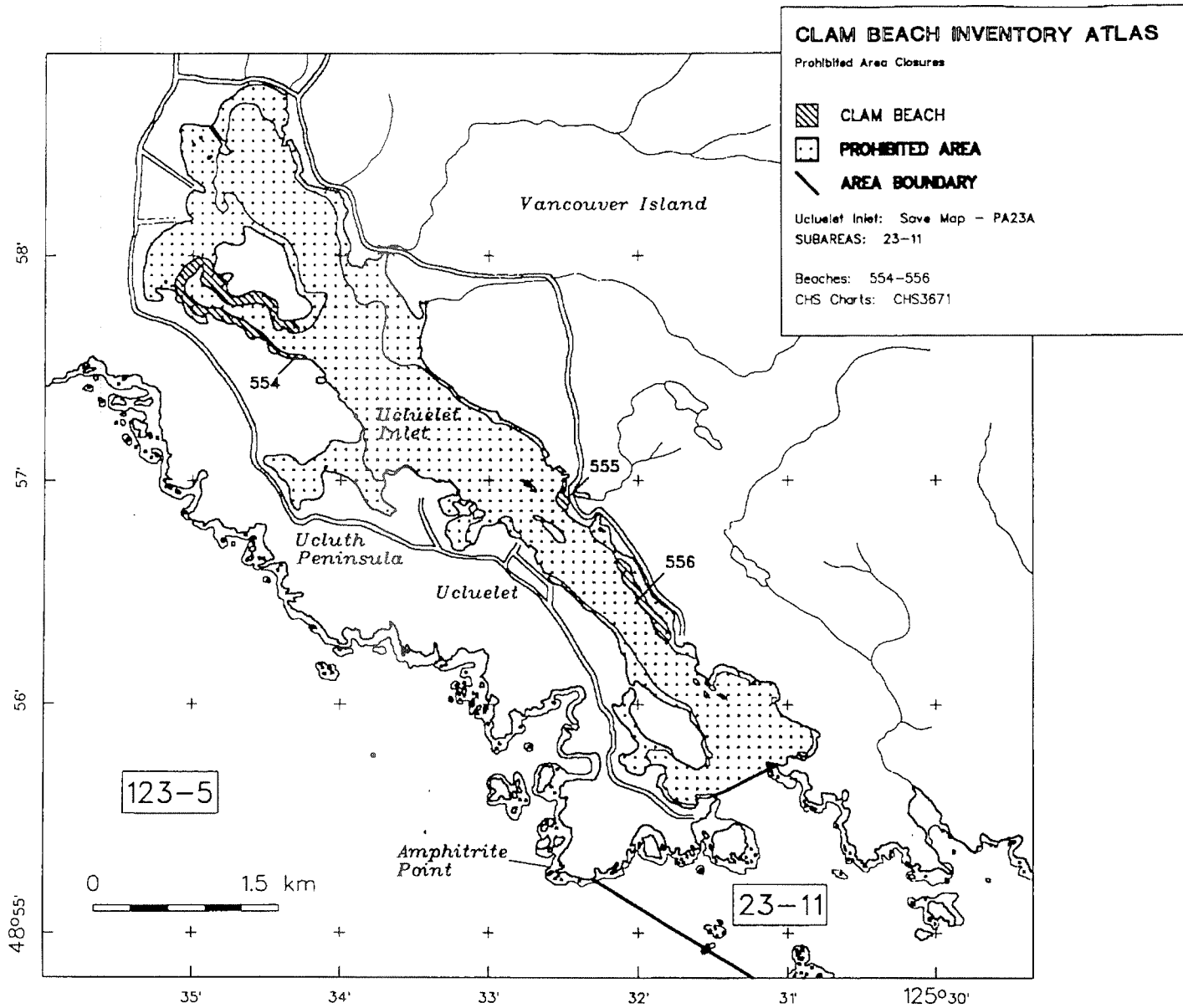
Appendix Figure 4.12



Appendix Figure 4.13



Appendix Figure 4.14



Appendix Figure 4.15

APPENDIX 5.

TABLE OF CLAM BEACHES SORTED BY LOCATION NAME

AREAS 13 TO 20, 28 AND 29

Appendix Table 5.1. British Columbia Clam Beach Inventory, sorted by Location for Management Areas 13 to 20, 28 and 29.

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
17	12	401	Ada Island	2.11	
16	10	635	Agamemnon Channel	5.33	
16	11	114	Agnew Passage	1.45	
15	1	743	Albion Point	15.76	
15	1	60	Albion Point	28.64	
16	11	921	Alexander Point	1.91	
16	16	538	Alexander Point	2.52	
16	18	55	Anderson Bay	1.75	
20	7	666	Anderson Cove	0.45	
16	10	714	Anis Bay	0.98	
18	3	892	Annette Inlet (Outer Point)	2.66	
17	20	642	Arbutus Grove	2.26	
17	20	643	Arbutus Grove (W)	12.18	
17	20	400	Arbutus Grove to Fleet Point	9.49	
15	2	744	Atrevida Reef (Near)	15.75	
17	6	434	Augustus Point	0.65	
16	12	129	Baker Bay	2.45	
16	11	111	Ball Point, A	0.36	
16	11	112	Ball Point, B	0.65	
19	8	458	Bamberton Park	15.37	
15	4	35	Bastion Point	6.88	
18	4	658	Bedwell Harbour	6.96	
18	4	659	Bedwell Harbour	1.83	
18	5	451	Bennett Bay	11.57	
13	25	178	Bickley Bay	5.10	
13	23	611	Big Bay	0.53	
13	17	730	Bird Cove	16.28	
17	4	405	Blackberry Point	6.73	
16	16	68	Blind Bay	8.99	
17	4	410	Boat Harbour	2.90	
18	4	480	Boat Nook	0.72	
14	11	637	Boat Ramp	42.14	
18	7	472	Boatswain Bank	21.16	
13	11	156	Bodega Point	5.32	
16	19	931	Boho Bay	7.37	
18	5	1002	Boot Cove	5.51	
17	9	435	Booth Bay	19.16	
15	5	596	Boulder Point	2.25	
17	6	436	Boulder Point	24.32	
15	5	597	Boulder Point	0.98	
14	1	45	Brant Point	29.60	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
16	13	131	Brittain Bay	10.07	
14	8	96	Buckley Bay	33.40	
13	16	85	Burdwood Bay	19.37	
18	7	649	Burgoyne Bay	15.85	
13	22	150	Bute Inlet, Head	161.24	
18	11	478	Cabbage Island	22.12	
13	26	171	Cameleon Harbour	41.95	
14	11	12	Cape Lazo	41.82	
13	1	151	Cape Mudge	70.79	
16	5	56	Carlson Creek	4.98	
20	1	989	Carmanah Creek	37.91	
13	16	87	Carrington Bay	1.39	
13	25	177	Charles Bay	14.25	
29	1	76	Chaster Creek	33.67	
16	15	928	Chatterbox Falls	1.85	
13	10	154	Chomat Point	20.22	
17	8	441	Clam Bay	8.48	
17	8	438	Clam Bay	1.28	
17	8	437	Clam Bay	3.13	
17	8	440	Clam Bay	5.00	
17	8	439	Clam Bay	7.81	
16	16	116	Clio Island	4.23	
16	16	115	Clio Island	8.64	
16	19	625	Clio Island (SE)	1.30	
16	16	922	Clio Islands, C	1.23	
16	17	67	Cockburn Bay (S)	13.45	
19	8	460	Coles Bay	3.67	
14	4	534	Columbia Beach	31.26	
14	4	535	Columbia Beach	56.04	
16	20	80	Cook Bay	4.20	
15	3	100	Copeland Island	1.80	
15	3	101	Copeland Island	4.29	
15	3	103	Copeland Island	1.02	
15	3	102	Copeland Island	1.28	
15	5	691	Copplestone Point	0.46	
15	3	874	Cortes Island (E)	2.22	
13	16	86	Coulter Bay	10.55	
18	8	999	Cowichan Bay	15.02	
19	5	455	Cowichan Head (N)	8.21	
17	8	419	Crescent Bay	6.46	
13	12	869	Crescent Channel, A	1.15	
13	12	870	Crescent Channel, B	0.80	
13	12	871	Crescent Channel, C	1.57	
17	6	746	Crescent Point	7.62	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
16	11	122	Culloden Point	3.74	
18	3	445	Cusheon Creek	7.55	
17	19	399	Datum Rock Breakwater	6.24	
16	21	41	Davie Bay	9.70	
16	19	932	Davie Bay (N)	10.44	
16	21	877	Davis Bay	6.10	
17	7	947	Davis Lagoon	3.50	
17	17	415	De Courcy Island	1.84	
19	7	993	Deep Cove	7.25	
17	10	898	Degnen Bay	16.37	
14	8	91	Denman Island to Metcalf Bay	53.47	
17	13	964	Departure Bay	2.99	
17	13	422	Descanso Bay	2.51	
16	14	140	Deserted Bay	8.36	
16	14	139	Deserted Bay	5.67	
17	16	543	Dodd Narrows - Round Island	11.13	
16	6	81	Dorston (S)	3.95	
13	38	187	Douglas Bay	2.05	
13	13	996	Drew Harbour	190.72	
17	7	946	Dunsmuir Island	3.63	
16	11	920	East Vanguard Bay	4.14	
16	2	71	Edgecombe Island (NE)	6.84	
16	12	716	Elephant Point (N)	0.32	
16	12	715	Elephant Point (N)	0.87	
19	3	1005	Esquimalt Lagoon	3.15	
19	3	1004	Esquimalt Lagoon	6.80	
19	3	1006	Esquimalt Lagoon	10.20	
13	17	713	Evans Bay	7.27	
13	17	530	Evans Bay (Head)	10.54	
15	5	693	Eveleigh Island	0.60	
16	11	121	Fair View Bay	1.36	
14	3	49	False Bay	21.02	
14	8	7	Fanny Bay	46.87	
17	2	429	Fernwood	20.37	
14	10	11	Fillongley Park	81.40	
13	38	188	Forward Harbour	16.11	
16	4	880	Francis Point	4.13	
13	43	191	Frazer Bay	23.78	
15	4	32	Freke Anchorage	23.27	
14	4	43	French Creek	34.03	
15	1	64	Frolander Bay	8.46	
18	10	470	Fulford Harbour	12.15	
17	17	942	Gabriola Island (S) 1	3.13	
17	17	943	Gabriola Island (S) 2	6.60	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
18	3	443	Ganges Harbour	16.57	
18	3	444	Ganges Harbour	25.83	
14	15	17	Gartley Point	59.12	
14	15	93	Gartley to Booms	36.68	
15	5	582	Gloucester Point	1.73	
19	12	950	Goldstream Flats	14.70	
13	15	585	Gorge Harbour	0.16	
13	15	583	Gorge Harbour	0.67	
13	15	584	Gorge Harbour	0.44	
15	4	82	Grace Harbour	1.49	
13	11	155	Granite Bay	11.95	
28	1	75	Grantham's Landing	13.56	
16	12	128	Granville Bay	2.39	
17	9	899	Grave Point (N)	7.57	
17	2	646	Gray Pen	3.58	
16	10	536	Green Bay	2.09	
16	10	537	Green Bay	3.75	
17	21	424	Hammond Bay	1.58	
17	21	425	Hammond Bay	5.07	
16	11	742	Hardy Island	3.73	
15	4	144	Hare Point	0.88	
15	4	875A	Hare Point (S)	1.50	
16	12	123	Harmony Island	0.51	
16	12	124	Harmony Island	0.57	
16	12	125	Harmony Island	0.82	
16	12	127	Harmony Island	0.54	
16	12	126	Harmony Island	0.22	
16	2	104	Harness Island	1.92	
16	2	105	Harness Island	1.01	
13	6	900	Harriot Island	7.07	
15	2	36	Harwood Island	52.43	
16	21	39	Harwood Point	18.10	
13	37	185	Haswell Point	34.78	
13	26	732	Hemming Bay	0.60	
13	26	181	Hemming Bay	2.22	
13	26	182	Hemming Bay	2.24	
13	26	180	Hemming Bay	1.50	
15	3	29	Hernando Island (E)	10.20	
15	3	98	Hernando Island (N)	89.36	
15	3	99	Hernando Island (S)	10.77	
16	16	627	Hidden Basin	0.94	
16	8	919	Highland Point	0.77	
14	8	9	Hindoo Creek	31.56	
13	12	161	Hjorth Bay	3.31	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
17	7	418	Holland Bank	12.24	
18	5	449	Hope Bay	2.86	
17	12	962	Horsewell Bluff	2.18	
18	5	450	Horton Bay	6.66	
16	12	130	Hotham Sound	1.16	
16	12	925	Hotham Sound (E)	1.22	
20	7	717	Hutchinson Cove	0.72	
13	13	613	Hyacinthe Bay	0.58	
13	13	614	Hyacinthe Bay	0.56	
13	13	612	Hyacinthe Bay	2.01	
17	21	423	Icarus Point	49.12	
19	8	462	Indian Bay	3.03	
18	5	446	Irish Bay	6.58	
15	4	601	Isabel Bay	0.56	
18	6	1003	Isabella Island	1.79	
13	37	745	Jackson Bay	54.39	
13	37	179	Jackson Point	1.04	
18	3	894	James Bay	2.59	
19	6	457	James Island	3.89	
16	19	620	Jedediah Island	5.59	
16	19	929A	Jervis Island, A	2.34	
16	19	929B	Jervis Island, B	2.58	
15	5	94	Junction Point (N)	3.99	
15	5	594	Junction Point (S)	2.05	
15	5	595	Junction Point (S)	1.02	
15	4	875B	Kakaekae Point (N)	1.37	
15	4	875C	Kakaekae Point (S)	1.72	
13	11	731	Kanish Bay	1.99	
20	7	664	Kellet Point (N)	0.37	
13	33	531	Kelsey Bay	12.68	
13	33	532	Kelsey Bay	12.81	
16	13	132	Killam Bay	1.56	
13	12	157	King Islets (Hoskyn Channel)	3.69	
14	13	639	Kitty Coleman to Little River	102.44	
13	29	183	Knox Bay	11.91	
14	10	90	Komas Bluff	74.00	
17	5	407C	Kulleet Bay	12.90	
17	5	406A	Kulleet Bay	18.25	
17	5	407A	Kulleet Bay	23.59	
17	5	406B	Kulleet Bay	8.55	
17	5	406C	Kulleet Bay	13.28	
17	5	407B	Kulleet Bay	8.65	
17	4	411	Kulleet Bay (N)	1.17	
17	4	412	Kulleet Bay (N)	0.78	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
17	4	413	Kulleet Bay (N)	1.49	
17	4	414	Kulleet Bay (N)	1.59	
16	7	106C	Kunechin Islets	2.02	
16	6	106A	Kunechin Point	7.47	
16	6	106B	Kunechin Point	2.71	
17	8	442B	Kuper Island (E)	11.87	
17	8	442C	Kuper Island (E)	27.63	
17	8	442A	Kuper Island (E)	21.95	
14	13	14	Kye Bay	15.78	
14	13	13	Kye Bay (N)	5.45	
17	7	416	Ladysmith (Head), A	7.29	
17	7	417	Ladysmith (Head),B	3.86	
17	21	420	Lagoon Hd (S)	1.52	
17	6	430	Lamalchi Bay	10.78	
28	1	74	Langdale	10.47	
14	3	621	Lasqueti Island (S)	10.24	
14	3	622	Lasqueti Island (S)	17.44	
14	3	623	Lasqueti Island (S)	23.07	
15	5	603	Lewis Channel	13.46	
17	16	542	Link Island	2.85	
14	4	28	Little Qualicum River	100.64	
14	13	26	Little River (N)	12.09	
14	13	27	Little River (S)	16.16	
17	10	426	Lock Bay	4.18	
18	3	998	Long Harbour	1.11	
14	15	92	Longbeak Point to Denman Island	42.14	
18	6	471	Louisa Rock	8.66	
18	5	1001	Lyall Harbour	13.16	
14	5	2	Mapleguard Point	62.36	
13	15	21	Marina Island	279.68	
15	5	148	Mary Point	1.03	
15	5	147	Mary Point	2.85	
15	5	149	Mary Point	9.97	
15	5	146	Mary Point	3.79	
15	5	145	Mary Point	4.20	
13	43	190	Mcbride Bay	15.59	
13	43	189	Mcbride Bay	52.18	
28	3	629	Mcnab Creek	13.78	
19	8	657	Mcphail Point	2.98	
19	8	459	Mcphail to Verdier Point	6.88	
15	1	63	Mcrae Cove	8.44	
15	5	690	Melanie Cove	2.23	
13	3	173	Menzies Bay	16.03	
13	3	174	Menzies Bay	3.37	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
14	8	5	Metcalf Bay to Repulse Point	40.42	
19	8	953	Mill Bay	1.83	
17	13	966	Millstone Estuary	3.16	
14	13	97	Miracle Beach Rd (S)	11.13	
14	13	640	Miracle Beach Rd (S) to Kitty Coleman	95.44	
17	2	428	Montague	3.07	
18	6	468	Moresby Island	2.51	
18	6	467	Moresby Island	4.46	
18	6	469	Moresby Island	3.02	
15	4	602	Moss Point	0.49	
16	21	40	Mouatt Bay	29.53	
13	3	175	Mt. Lolo Bay	9.10	
13	3	152	Mt. Lolo Bay	5.97	
16	20	79	Mt. Shepard	4.18	
14	8	8	Mud Bay to Deep Bay	215.64	
17	16	541	Mudge Island (E)	2.60	
17	16	540	Mudge Island (S)	6.28	
18	7	473	Musgrave Point	1.70	
17	14	991B	Nanaimo River Estuary	22.78	
17	14	991C	Nanaimo River Estuary	5.11	
17	14	991A	Nanaimo River Estuary	65.09	
17	20	396	Nanoose Bay (Head)	56.28	
17	19	398	Nanoose Breakwater to Blunden Point	75.24	
17	20	641	Nanoose Harbour Creek Mouth	10.09	
18	5	477	Narvaez Bay	3.09	
18	5	453	Navy Channel	1.96	
18	5	452	Navy Channel	4.92	
16	11	924	Nelson Island (N)	1.97	
16	11	113	Nelson Island (S)	1.08	
17	13	544	Newcastle Island	1.42	
16	16	913	Nile Point	3.23	
16	7	107	Nine Mile Point	5.38	
15	1	878	North East Bay	2.68	
16	6	912	North Highland Point	2.09	
16	19	930	North Long Bay	1.59	
15	1	53	Northeast Bay	2.72	
14	1	872	Northwest Bay	4.36	
13	12	166	Octopus Island	7.63	
15	4	33	Okeover Inlet	10.58	
13	13	167	Open Bay	2.36	
13	13	168	Open Bay	6.11	
14	15	16	Opposite Denman Point	9.52	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
18	2	895	Otter Bay	4.54	
13	9	153	Otter Cove	2.97	
13	12	162	Owen Bay	11.21	
14	13	42	Oyster Pond (S)	27.88	
14	13	25	Oyster River to Black Creek	37.31	
17	13	963	Pacific Biological Station	0.56	
18	7	648	Paddy Mile Stone	2.02	
17	12	961	Page Lagoon	6.35	
14	1	44	Parksville Bay	83.78	
19	8	461	Patricia Bay	3.46	
19	8	655	Patricia Bay (N)	13.33	
16	3	905	Pender Harbour	12.27	
13	17	170	Penn Island	1.65	
17	8	954	Pennalukut Spit	14.63	
17	16	539A	Percy Anchorage to Ramp	19.14	
14	7	3	Phipps Point to Hornby Island	26.84	
18	6	997A	Piers Island	0.74	
18	6	997B	Piers Island	1.52	
18	6	997C	Piers Island	0.80	
13	16	88	Plunger Pass	3.92	
15	1	51	Pocahontas Bay	4.97	
16	5	631	Porpoise Bay	19.41	
18	5	464	Port Browning	1.13	
18	6	465	Portland Island	5.63	
18	6	466	Portland Island	5.44	
16	15	135	Potato Creek	1.89	
15	5	692	Prideaux Haven	3.04	
16	15	136	Princess Louisa , A	2.94	
16	15	137	Princess Louisa, B	1.40	
16	15	138	Princess Louisa, C	4.32	
17	13	421	Protection Gap	9.60	
14	3	741	Prowse Point Area	1.74	
14	5	20	Qualicum Bay	83.26	
16	17	628	Quarry Bay	19.84	
16	15	142	Queens Reach (Head)	6.16	
16	15	141	Queens Reach (Head)	14.10	
16	9	918	Rapid Inlet	0.95	
15	1	38	Raven Bay	8.40	
13	14	169	Rebecca Spit to Francisco Point	116.99	
15	3	879	Redonda Bay (SW)	0.78	
13	18	606	Rendezvous Island	2.01	
13	18	609	Rendezvous Island	2.50	
13	18	608	Rendezvous Island	1.90	
13	18	607	Rendezvous Island	3.28	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
13	18	610	Rendezvous Island	1.04	
13	18	605	Rendezvous Island	1.12	
13	18	604	Rendezvous Island	2.36	
14	8	4	Repulse Point to Boyle Point	9.59	
17	2	994	Retreat Cove	3.16	
17	19	397	Richard Point	0.94	
14	3	740	Richardson Cove	2.86	
13	17	529	Robertson Lake	1.29	
20	7	665	Roche Cove	1.35	
14	14	995	Royston	37.07	
19	8	463	Saanich Inlet (38'45")	0.43	
18	6	662	Saanich Inlet (N.Tip)	0.99	
18	6	663	Saanich Inlet (N.Tip)	0.58	
18	3	948	Sailing Club Beach	3.49	
16	17	117	Sakinaw Lake (Mouth)	2.03	
16	11	66	Saltery Bay	11.73	
16	13	926	Samarez Bluff (S)	1.34	
18	7	653	Sansum Narrows	0.32	
18	7	651	Sansum Narrows	0.49	
18	7	652	Sansum Narrows	0.29	
18	7	650	Sansum Point (N)	1.99	
29	1	630	Sargeant Bay	3.35	
18	7	475	Satellite Channel	1.99	
18	7	476	Satellite Channel	9.46	
18	7	474	Satellite Channel	3.95	
15	2	30	Savary Island (N)	179.16	
15	2	31	Savary Island (S)	63.26	
15	4	599	Scott Point	1.45	
15	4	600	Scott Point	0.80	
15	4	598	Scott Point	0.41	
16	19	47	Scottie Bay	10.21	
16	17	57	Sechelt Creek	6.53	
16	9	917	Sechelt Rapids, B	5.06	
16	9	108	Secret Bay	0.76	
17	2	896	Secretary Islands	1.76	
18	3	893	Selby Cove	2.32	
17	13	965	Shaft Point to Tyne Point	2.23	
18	4	660	Shark Cove	1.22	
18	4	661	Shark Cove	1.56	
17	16	539B	Shaw River to Ramp	26.12	
14	13	23	Shelter Point	17.39	
14	9	10	Shields Point to Tralee Point	23.43	
17	4	404	Shingle Point	17.10	
14	8	6	Ship Peninsula	43.61	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
19	6	456	Sidney Spit	76.86	
16	9	58	Skookum Island (E)	3.04	
16	9	78	Skookumchuck Narrows	0.96	
16	9	634	Skookumchuk Narrows (NW)	1.61	
16	9	59	Skookumchuk Narrows (C)	0.76	
16	9	109	Skookumchuk Narrows, A	1.36	
16	9	110	Skookumchuk Narrows, B	1.22	
16	9	916	Skookumchuk Narrows, D	2.35	
13	11	176	Small Inlet	21.21	
16	1	72	Smuggler Cove	6.04	
16	5	54	Snake Bay	11.48	
20	7	667	48 22'06" (1) Sooke Basin	0.31	
20	7	668	48 22'21" (5) Sooke Basin	0.82	
20	7	669	123 38'40" (3) Sooke Basin	0.71	
20	7	670	123 40'30" (4) Sooke Basin	0.37	
20	7	671	48 21'48" (2) Sooke Basin	0.32	
20	7	952G	Sooke Basin	2.67	
20	7	952B	Sooke Basin	7.84	
20	7	952D	Sooke Basin	1.33	
20	7	952A	Sooke Basin	1.56	
20	7	952F	Sooke Basin	1.73	
20	7	952H	Sooke Basin	2.53	
20	7	952I	Sooke Basin	0.43	
20	7	952J	Sooke Basin	0.24	
20	7	952C	Sooke Basin	4.96	
20	7	952N	Sooke Basin	0.30	
20	7	952Q	Sooke Basin	0.09	
20	7	952S	Sooke Basin	0.35	
20	7	952T	Sooke Basin	0.05	
20	7	952P	Sooke Basin	3.84	
20	7	952O	Sooke Basin	1.63	
20	7	952R	Sooke Basin	0.20	
20	7	952K	Sooke Basin	2.88	
20	7	952U	Sooke Basin	0.24	
20	7	952E	Sooke Basin	5.61	
20	7	952M	Sooke Basin	0.07	
20	7	952V	Sooke Basin	0.21	
20	7	952L	Sooke Basin	1.46	
20	6	951C	Sooke Harbour	1.64	
20	6	951B	Sooke Harbour	0.44	
20	6	951A	Sooke Harbour	30.19	
20	6	951D	Sooke Harbour	2.91	
18	5	481	South Pender Island	0.97	
18	5	484	South Pender Island	1.06	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
18	5	483	South Pender Island	0.79	
18	5	482	South Pender Island	2.00	
17	2	897	Southey Point	7.23	
15	3	24	Spilsbury Point	11.66	
15	5	95A	Squirrel Cove	0.62	
15	5	95	Squirrel Cove	19.95	
15	5	960A	Squirrel Cove #1	0.08	
15	5	960B	Squirrel Cove #2	0.14	
15	5	960C	Squirrel Cove #3	0.85	
15	5	960D	Squirrel Cove #4	0.12	
16	19	624	Squitty Bay	2.96	
16	11	923	St. Vincent Bay	3.60	
15	1	65	Stillwater Bay	9.15	
15	4	83	Stopford Point	0.68	
16	4	882	Storm Bay, B	1.37	
16	6	626	Storm Bay,A	13.17	
13	16	89	Subtle Island	0.93	
13	15	22	Sutil Point	212.82	
16	11	883B	Sykes Island, B	2.55	
16	11	883C	Sykes Island, C	0.77	
16	12	883A	Sykes Island,A	1.02	
17	6	431	Telegraph Harbour	10.74	
17	6	432	Telegraph Harbour	4.72	
16	16	70	Telescope Passage (W)	4.05	
16	16	69	Telescope Passage (E)	2.89	
15	4	700	Tenedos Bay	0.47	
17	6	433	Tent Island	3.81	
17	6	442E	Tent Island (E)	2.35	
17	6	442D	Tent Island (N)	18.21	
14	5	19	Thames Creek	52.55	
15	4	34	Theodosia Inlet	16.75	
16	1	633	Thormanby Island	2.22	
16	1	632	Thormanby Island	7.99	
16	1	73	Thormanby Island (N)	3.83	
20	2	990	Thrasher Cove	50.92	
16	11	61	Thunder Bay	13.59	
16	11	62	Thunder Point	6.26	
13	26	172	Thurston Bay	4.32	
13	37	186	Topaze Harbour	28.94	
19	7	654	Towner Bay	4.40	
16	13	927	Trear Creek (S)	1.87	
14	15	1	Tree Island	280.88	
16	19	120	Tucker Bay	6.06	
16	19	119	Tucker Bay	6.40	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
16	19	118	Tucker Bay	1.93	
18	11	479	Tumbo Island	4.19	
13	28	864	Turn Island (NW), B	4.89	
13	28	863	Turn Island, A	1.27	
16	1	77	Turnagain Island	0.60	
16	5	909	Tuwanek Point	1.56	
14	15	18	Union Bay (S)	3.57	
14	15	638	Union Bay (S)	5.28	
14	15	15	Union Point	32.27	
16	13	134	Vancouver Bay	12.30	
16	14	133	Vancouver Bay (S)	2.53	
19	8	656	Verdier Point (N)	3.89	
13	32	184	Vere Cove	2.10	
17	9	1000	Vesuvius Bay	1.12	
13	12	159	Village Bay	3.06	
13	12	160	Village Bay	2.02	
13	17	591	Von Donop Inlet	3.35	
13	17	590	Von Donop Inlet	6.48	
13	17	589	Von Donop Inlet	0.26	
13	17	592	Von Donop Inlet	1.03	
13	17	587	Von Donop Inlet	1.52	
13	17	593	Von Donop Inlet	10.48	
13	17	588	Von Donop Inlet	0.25	
13	17	586	Von Donop Inlet	2.72	
13	12	164	Waiatt Bay	1.86	
13	12	165	Waiatt Bay	1.20	
13	12	163	Waiatt Bay (N)	3.73	
13	12	158	Waiatt Bay (N)	1.61	
13	28	866	Walkem Islands (NW), B	6.37	
13	28	865	Walkem Islands, A	5.65	
17	2	645	Walker Hook	15.34	
14	1	533	Wall Beach	8.03	
28	3	944	Walter Bay	1.35	
17	7	945	Wedge Point to Page Point	5.01	
16	1	52	Welcome Beach	37.08	
16	19	50	Wells Point	2.57	
16	16	914	West Agamemnon #1	1.25	
16	16	915	West Agamemnon #2	1.88	
16	8	911	West Highland Point	7.66	
16	19	48	West Point	2.68	
16	6	910	West Sechelt Inlet	1.76	
18	5	647	Whaler Bay (Outer)	0.71	
20	6	891	Whiffin Spit	10.98	
13	12	84	Whiterock Passage	4.99	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
19	3	454	Wier Beach	7.39	
14	11	636	Willemar Bluff	40.24	
17	6	644	Willy Island	5.85	
17	12	403	Winchelsea Islands	1.39	
17	12	402	Winchelsea Islands	1.09	
18	5	448	Winter Cove	7.06	
18	5	447	Winter Cove	4.28	
15	4	143	Wooton Bay	3.21	
17	4	408	Yellow Point (N)	2.84	
17	5	409	Yellow Point (S)	1.23	
Total Beaches:		533	Total Beach Area:	6844.56	

APPENDIX 6.

TABLE OF CLAM BEACHES SORTED BY CLAM BEACH NUMBER

AREAS 13 TO 20, 28 AND 29

Appendix Table 6.1. British Columbia Clam Beach Inventory, sorted by Clam Beach Number for Management Areas 13 to 20, 28 and 29.

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
14	15	1	Tree Island	280.88	
14	5	2	Mapleguard Point	62.36	
14	7	3	Phipps Point to Hornby Island	26.84	
14	8	4	Repulse Point to Boyle Point	9.59	
14	8	5	Metcalf Bay to Repulse Point	40.42	
14	8	6	Ship Peninsula	43.61	
14	8	7	Fanny Bay	46.87	
14	8	8	Mud Bay to Deep Bay	215.64	
14	8	9	Hindoo Creek	31.56	
14	9	10	Shields Point to Tralee Point	23.43	
14	10	11	Fillongley Park	81.40	
14	11	12	Cape Lazo	41.82	
14	13	13	Kye Bay (N)	5.45	
14	13	14	Kye Bay	15.78	
14	15	15	Union Point	32.27	
14	15	16	Opposite Denman Point	9.52	
14	15	17	Gartley Point	59.12	
14	15	18	Union Bay (S)	3.57	
14	5	19	Thames Creek	52.55	
14	5	20	Qualicum Bay	83.26	
13	15	21	Marina Island	279.68	
13	15	22	Sutil Point	212.82	
14	13	23	Shelter Point	17.39	
15	3	24	Spilsbury Point	11.66	
14	13	25	Oyster River to Black Creek	37.31	
14	13	26	Little River (N)	12.09	
14	13	27	Little River (S)	16.16	
14	4	28	Little Qualicum River	100.64	
15	3	29	Hernando Island (E)	10.20	
15	2	30	Savary Island (N)	179.16	
15	2	31	Savary Island (S)	63.26	
15	4	32	Freke Anchorage	23.27	
15	4	33	Okeover Inlet	10.58	
15	4	34	Theodosia Inlet	16.75	
15	4	35	Bastion Point	6.88	
15	2	36	Harwood Island	52.43	
15	1	38	Raven Bay	8.40	
16	21	39	Harwood Point	18.10	
16	21	40	Mouatt Bay	29.53	
16	21	41	Davie Bay	9.70	
14	13	42	Oyster Pond (S)	27.88	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
14	4	43	French Creek	34.03	
14	1	44	Parksville Bay	83.78	
14	1	45	Brant Point	29.60	
16	19	47	Scottie Bay	10.21	
16	19	48	West Point	2.68	
14	3	49	False Bay	21.02	
16	19	50	Wells Point	2.57	
15	1	51	Pocahontas Bay	4.97	
16	1	52	Welcome Beach	37.08	
15	1	53	Northeast Bay	2.72	
16	5	54	Snake Bay	11.48	
16	18	55	Anderson Bay	1.75	
16	5	56	Carlson Creek	4.98	
16	17	57	Sechelt Creek	6.53	
16	9	58	Skookum Island (E)	3.04	
16	9	59	Skookumchuk Narrows (C)	0.76	
15	1	60	Albion Point	28.64	
16	11	61	Thunder Bay	13.59	
16	11	62	Thunder Point	6.26	
15	1	63	Merae Cove	8.44	
15	1	64	Frolander Bay	8.46	
15	1	65	Stillwater Bay	9.15	
16	11	66	Saltery Bay	11.73	
16	17	67	Cockburn Bay (S)	13.45	
16	16	68	Blind Bay	8.99	
16	16	69	Telescope Passage (E)	2.89	
16	16	70	Telescope Passage (W)	4.05	
16	2	71	Edgecombe Island (NE)	6.84	
16	1	72	Smuggler Cove	6.04	
16	1	73	Thormanby Island (N)	3.83	
28	1	74	Langdale	10.47	
28	1	75	Grantham's Landing	13.56	
29	1	76	Chaster Creek	33.67	
16	1	77	Turnagain Island	0.60	
16	9	78	Skookumchuck Narrows	0.96	
16	20	79	Mt. Shepard	4.18	
16	20	80	Cook Bay	4.20	
16	6	81	Dorston (S)	3.95	
15	4	82	Grace Harbour	1.49	
15	4	83	Stopford Point	0.68	
13	12	84	Whiterock Passage	4.99	
13	16	85	Burdwood Bay	19.37	
13	16	86	Coulter Bay	10.55	
13	16	87	Carrington Bay	1.39	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
13	16	88	Plunger Pass	3.92	
13	16	89	Subtle Island	0.93	
14	10	90	Komas Bluff	74.00	
14	8	91	Denman Island to Metcalf Bay	53.47	
14	15	92	Longbeak Point to Denman Island	42.14	
14	15	93	Gartley to Booms	36.68	
15	5	94	Junction Point (N)	3.99	
15	5	95A	Squirrel Cove	0.62	
15	5	95	Squirrel Cove	19.95	
14	8	96	Buckley Bay	33.40	
14	13	97	Miracle Beach Rd (S)	11.13	
15	3	98	Hernando Island (N)	89.36	
15	3	99	Hernando Island (S)	10.77	
15	3	100	Copeland Island	1.80	
15	3	101	Copeland Island	4.29	
15	3	102	Copeland Island	1.28	
15	3	103	Copeland Island	1.02	
16	2	104	Harness Island	1.92	
16	2	105	Harness Island	1.01	
16	7	106C	Kunechin Islets	2.02	
16	6	106A	Kunechin Point	7.47	
16	6	106B	Kunechin Point	2.71	
16	7	107	Nine Mile Point	5.38	
16	9	108	Secret Bay	0.76	
16	9	109	Skookumchuk Narrows, A	1.36	
16	9	110	Skookumchuk Narrows, B	1.22	
16	11	111	Ball Point, A	0.36	
16	11	112	Ball Point, B	0.65	
16	11	113	Nelson Island (S)	1.08	
16	11	114	Agnew Passage	1.45	
16	16	115	Clio Island	8.64	
16	16	116	Clio Island	4.23	
16	17	117	Sakinaw Lake (Mouth)	2.03	
16	19	118	Tucker Bay	1.93	
16	19	119	Tucker Bay	6.40	
16	19	120	Tucker Bay	6.06	
16	11	121	Fair View Bay	1.36	
16	11	122	Culloden Point	3.74	
16	12	123	Harmony Island	0.51	
16	12	124	Harmony Island	0.57	
16	12	125	Harmony Island	0.82	
16	12	126	Harmony Island	0.22	
16	12	127	Harmony Island	0.54	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
16	12	128	Granville Bay	2.39	
16	12	129	Baker Bay	2.45	
16	12	130	Hotham Sound	1.16	
16	13	131	Brittain Bay	10.07	
16	13	132	Killam Bay	1.56	
16	14	133	Vancouver Bay (S)	2.53	
16	13	134	Vancouver Bay	12.30	
16	15	135	Potato Creek	1.89	
16	15	136	Princess Louisa , A	2.94	
16	15	137	Princess Louisa, B	1.40	
16	15	138	Princess Louisa, C	4.32	
16	14	139	Deserted Bay	5.67	
16	14	140	Deserted Bay	8.36	
16	15	141	Queens Reach (Head)	14.10	
16	15	142	Queens Reach (Head)	6.16	
15	4	143	Wooton Bay	3.21	
15	4	144	Hare Point	0.88	
15	5	145	Mary Point	4.20	
15	5	146	Mary Point	3.79	
15	5	147	Mary Point	2.85	
15	5	148	Mary Point	1.03	
15	5	149	Mary Point	9.97	
13	22	150	Bute Inlet, Head	161.24	
13	1	151	Cape Mudge	70.79	
13	3	152	Mt. Lolo Bay	5.97	
13	9	153	Otter Cove	2.97	
13	10	154	Chomat Point	20.22	
13	11	155	Granite Bay	11.95	
13	11	156	Bodega Point	5.32	
13	12	157	King Islets (Hoskyn Channel)	3.69	
13	12	158	Waiatt Bay (N)	1.61	
13	12	159	Village Bay	3.06	
13	12	160	Village Bay	2.02	
13	12	161	Hjorth Bay	3.31	
13	12	162	Owen Bay	11.21	
13	12	163	Waiatt Bay (N)	3.73	
13	12	164	Waiatt Bay	1.86	
13	12	165	Waiatt Bay	1.20	
13	12	166	Octopus Island	7.63	
13	13	167	Open Bay	2.36	
13	13	168	Open Bay	6.11	
13	14	169	Rebecca Spit to Francisco Point	116.99	
13	17	170	Penn Island	1.65	
13	26	171	Cameleon Harbour	41.95	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
13	26	172	Thurston Bay	4.32	
13	3	173	Menzies Bay	16.03	
13	3	174	Menzies Bay	3.37	
13	3	175	Mt. Lolo Bay	9.10	
13	11	176	Small Inlet	21.21	
13	25	177	Charles Bay	14.25	
13	25	178	Bickley Bay	5.10	
13	37	179	Jackson Point	1.04	
13	26	180	Hemming Bay	1.50	
13	26	181	Hemming Bay	2.22	
13	26	182	Hemming Bay	2.24	
13	29	183	Knox Bay	11.91	
13	32	184	Vere Cove	2.10	
13	37	185	Haswell Point	34.78	
13	37	186	Topaze Harbour	28.94	
13	38	187	Douglas Bay	2.05	
13	38	188	Forward Harbour	16.11	
13	43	189	Mcbride Bay	52.18	
13	43	190	Mcbride Bay	15.59	
13	43	191	Frazer Bay	23.78	
17	20	396	Nanoose Bay (Head)	56.28	
17	19	397	Richard Point	0.94	
17	19	398	Nanoose Breakwater to Blunden Point	75.24	
17	19	399	Datum Rock Breakwater	6.24	
17	20	400	Arbutus Grove to Fleet Point	9.49	
17	12	401	Ada Island	2.11	
17	12	402	Winchelsea Islands	1.09	
17	12	403	Winchelsea Islands	1.39	
17	4	404	Shingle Point	17.10	
17	4	405	Blackberry Point	6.73	
17	5	406A	Kulleet Bay	18.25	
17	5	406B	Kulleet Bay	8.55	
17	5	406C	Kulleet Bay	13.28	
17	5	407C	Kulleet Bay	12.90	
17	5	407A	Kulleet Bay	23.59	
17	5	407B	Kulleet Bay	8.65	
17	4	408	Yellow Point (N)	2.84	
17	5	409	Yellow Point (S)	1.23	
17	4	410	Boat Harbour	2.90	
17	4	411	Kulleet Bay (N)	1.17	
17	4	412	Kulleet Bay (N)	0.78	
17	4	413	Kulleet Bay (N)	1.49	
17	4	414	Kulleet Bay (N)	1.59	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
17	17	415	De Courcy Island	1.84	
17	7	416	Ladysmith (Head), A	7.29	
17	7	417	Ladysmith (Head),B	3.86	
17	7	418	Holland Bank	12.24	
17	8	419	Crescent Bay	6.46	
17	21	420	Lagoon Hd (S)	1.52	
17	13	421	Protection Gap	9.60	
17	13	422	Descanso Bay	2.51	
17	21	423	Icarus Point	49.12	
17	21	424	Hammond Bay	1.58	
17	21	425	Hammond Bay	5.07	
17	10	426	Lock Bay	4.18	
17	2	428	Montague	3.07	
17	2	429	Fernwood	20.37	
17	6	430	Lamalchi Bay	10.78	
17	6	431	Telegraph Harbour	10.74	
17	6	432	Telegraph Harbour	4.72	
17	6	433	Tent Island	3.81	
17	6	434	Augustus Point	0.65	
17	9	435	Booth Bay	19.16	
17	6	436	Boulder Point	24.32	
17	8	437	Clam Bay	3.13	
17	8	438	Clam Bay	1.28	
17	8	439	Clam Bay	7.81	
17	8	440	Clam Bay	5.00	
17	8	441	Clam Bay	8.48	
17	8	442B	Kuper Island (E)	11.87	
17	8	442C	Kuper Island (E)	27.63	
17	8	442A	Kuper Island (E)	21.95	
17	6	442E	Tent Island (E)	2.35	
17	6	442D	Tent Island (N)	18.21	
18	3	443	Ganges Harbour	16.57	
18	3	444	Ganges Harbour	25.83	
18	3	445	Cusheon Creek	7.55	
18	5	446	Irish Bay	6.58	
18	5	447	Winter Cove	4.28	
18	5	448	Winter Cove	7.06	
18	5	449	Hope Bay	2.86	
18	5	450	Horton Bay	6.66	
18	5	451	Bennett Bay	11.57	
18	5	452	Navy Channel	4.92	
18	5	453	Navy Channel	1.96	
19	3	454	Wier Beach	7.39	
19	5	455	Cowichan Head (N)	8.21	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
19	6	456	Sidney Spit	76.86	
19	6	457	James Island	3.89	
19	8	458	Bamberton Park	15.37	
19	8	459	Mcphail to Verdier Point	6.88	
19	8	460	Coles Bay	3.67	
19	8	461	Patricia Bay	3.46	
19	8	462	Indian Bay	3.03	
19	8	463	Saanich Inlet (38'45")	0.43	
18	5	464	Port Browning	1.13	
18	6	465	Portland Island	5.63	
18	6	466	Portland Island	5.44	
18	6	467	Moresby Island	4.46	
18	6	468	Moresby Island	2.51	
18	6	469	Moresby Island	3.02	
18	10	470	Fulford Harbour	12.15	
18	6	471	Louisa Rock	8.66	
18	7	472	Boatswain Bank	21.16	
18	7	473	Musgrave Point	1.70	
18	7	474	Satellite Channel	3.95	
18	7	475	Satellite Channel	1.99	
18	7	476	Satellite Channel	9.46	
18	5	477	Narvaez Bay	3.09	
18	11	478	Cabbage Island	22.12	
18	11	479	Tumbo Island	4.19	
18	4	480	Boat Nook	0.72	
18	5	481	South Pender Island	0.97	
18	5	482	South Pender Island	2.00	
18	5	483	South Pender Island	0.79	
18	5	484	South Pender Island	1.06	
13	17	529	Robertson Lake	1.29	
13	17	530	Evans Bay (Head)	10.54	
13	33	531	Kelsey Bay	12.68	
13	33	532	Kelsey Bay	12.81	
14	1	533	Wall Beach	8.03	
14	4	534	Columbia Beach	31.26	
14	4	535	Columbia Beach	56.04	
16	10	536	Green Bay	2.09	
16	10	537	Green Bay	3.75	
16	16	538	Alexander Point	2.52	
17	16	539A	Percy Anchorage to Ramp	19.14	
17	16	539B	Shaw River to Ramp	26.12	
17	16	540	Mudge Island (S)	6.28	
17	16	541	Mudge Island (E)	2.60	
17	16	542	Link Island	2.85	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
17	16	543	Dodd Narrows - Round Island	11.13	
17	13	544	Newcastle Island	1.42	
15	5	582	Gloucester Point	1.73	
13	15	583	Gorge Harbour	0.67	
13	15	584	Gorge Harbour	0.44	
13	15	585	Gorge Harbour	0.16	
13	17	586	Von Donop Inlet	2.72	
13	17	587	Von Donop Inlet	1.52	
13	17	588	Von Donop Inlet	0.25	
13	17	589	Von Donop Inlet	0.26	
13	17	590	Von Donop Inlet	6.48	
13	17	591	Von Donop Inlet	3.35	
13	17	592	Von Donop Inlet	1.03	
13	17	593	Von Donop Inlet	10.48	
15	5	594	Junction Point (S)	2.05	
15	5	595	Junction Point (S)	1.02	
15	5	596	Boulder Point	2.25	
15	5	597	Boulder Point	0.98	
15	4	598	Scott Point	0.41	
15	4	599	Scott Point	1.45	
15	4	600	Scott Point	0.80	
15	4	601	Isabel Bay	0.56	
15	4	602	Moss Point	0.49	
15	5	603	Lewis Channel	13.46	
13	18	604	Rendezvous Island	2.36	
13	18	605	Rendezvous Island	1.12	
13	18	606	Rendezvous Island	2.01	
13	18	607	Rendezvous Island	3.28	
13	18	608	Rendezvous Island	1.90	
13	18	609	Rendezvous Island	2.50	
13	18	610	Rendezvous Island	1.04	
13	23	611	Big Bay	0.53	
13	13	612	Hyacinthe Bay	2.01	
13	13	613	Hyacinthe Bay	0.58	
13	13	614	Hyacinthe Bay	0.56	
16	19	620	Jedediah Island	5.59	
14	3	621	Lasqueti Island (S)	10.24	
14	3	622	Lasqueti Island (S)	17.44	
14	3	623	Lasqueti Island (S)	23.07	
16	19	624	Squitty Bay	2.96	
16	19	625	Clio Island (SE)	1.30	
16	6	626	Storm Bay,A	13.17	
16	16	627	Hidden Basin	0.94	
16	17	628	Quarry Bay	19.84	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
28	3	629	Mcnab Creek	13.78	
29	1	630	Sargeant Bay	3.35	
16	5	631	Porpoise Bay	19.41	
16	1	632	Thormanby Island	7.99	
16	1	633	Thormanby Island	2.22	
16	9	634	Skookumchuk Narrows (NW)	1.61	
16	10	635	Agamemnon Channel	5.33	
14	11	636	Willemar Bluff	40.24	
14	11	637	Boat Ramp	42.14	
14	15	638	Union Bay (S)	5.28	
14	13	639	Kitty Coleman to Little River	102.44	
14	13	640	Miracle Beach Rd (S) to Kitty Coleman	95.44	
17	20	641	Nanoose Harbour Creek Mouth	10.09	
17	20	642	Arbutus Grove	2.26	
17	20	643	Arbutus Grove (W)	12.18	
17	6	644	Willy Island	5.85	
17	2	645	Walker Hook	15.34	
17	2	646	Gray Pen	3.58	
18	5	647	Whaler Bay (Outer)	0.71	
18	7	648	Paddy Mile Stone	2.02	
18	7	649	Burgoyne Bay	15.85	
18	7	650	Sansum Point (N)	1.99	
18	7	651	Sansum Narrows	0.49	
18	7	652	Sansum Narrows	0.29	
18	7	653	Sansum Narrows	0.32	
19	7	654	Towner Bay	4.40	
19	8	655	Patricia Bay (N)	13.33	
19	8	656	Verdier Point (N)	3.89	
19	8	657	Mcphail Point	2.98	
18	4	658	Bedwell Harbour	6.96	
18	4	659	Bedwell Harbour	1.83	
18	4	660	Shark Cove	1.22	
18	4	661	Shark Cove	1.56	
18	6	662	Saanich Inlet (N.Tip)	0.99	
18	6	663	Saanich Inlet (N.Tip)	0.58	
20	7	664	Kellet Point (N)	0.37	
20	7	665	Roche Cove	1.35	
20	7	666	Anderson Cove	0.45	
20	7	667	48 22'06" (1) Sooke Basin	0.31	
20	7	668	48 22'21" (5) Sooke Basin	0.82	
20	7	669	123 38'40" (3) Sooke Basin	0.71	
20	7	670	123 40'30" (4) Sooke Basin	0.37	
20	7	671	48 21'48" (2) Sooke Basin	0.32	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
15	5	690	Melanie Cove	2.23	
15	5	691	Copplestone Point	0.46	
15	5	692	Prideaux Haven	3.04	
15	5	693	Eveleigh Island	0.60	
15	4	700	Tenedos Bay	0.47	
13	17	713	Evans Bay	7.27	
16	10	714	Anis Bay	0.98	
16	12	715	Elephant Point (N)	0.87	
16	12	716	Elephant Point (N)	0.32	
20	7	717	Hutchinson Cove	0.72	
13	17	730	Bird Cove	16.28	
13	11	731	Kanish Bay	1.99	
13	26	732	Hemming Bay	0.60	
14	3	740	Richardson Cove	2.86	
14	3	741	Prowse Point Area	1.74	
16	11	742	Hardy Island	3.73	
15	1	743	Albion Point	15.76	
15	2	744	Atrevida Reef (Near)	15.75	
13	37	745	Jackson Bay	54.39	
17	6	746	Crescent Point	7.62	
13	28	863	Turn Island, A	1.27	
13	28	864	Turn Island (NW), B	4.89	
13	28	865	Walkem Islands, A	5.65	
13	28	866	Walkem Islands (NW), B	6.37	
13	12	869	Crescent Channel, A	1.15	
13	12	870	Crescent Channel, B	0.80	
13	12	871	Crescent Channel, C	1.57	
14	1	872	Northwest Bay	4.36	
15	3	874	Cortes Island (E)	2.22	
15	4	875A	Hare Point (S)	1.50	
15	4	875B	Kakaekae Point (N)	1.37	
15	4	875C	Kakaekae Point (S)	1.72	
16	21	877	Davis Bay	6.10	
15	1	878	North East Bay	2.68	
15	3	879	Redonda Bay (SW)	0.78	
16	4	880	Francis Point	4.13	
16	4	882	Storm Bay, B	1.37	
16	11	883B	Sykes Island, B	2.55	
16	11	883C	Sykes Island, C	0.77	
16	12	883A	Sykes Island, A	1.02	
20	6	891	Whiffin Spit	10.98	
18	3	892	Annette Inlet (Outer Point)	2.66	
18	3	893	Selby Cove	2.32	
18	3	894	James Bay	2.59	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
18	2	895	Otter Bay	4.54	
17	2	896	Secretary Islands	1.76	
17	2	897	Southey Point	7.23	
17	10	898	Degnen Bay	16.37	
17	9	899	Grave Point (N)	7.57	
13	6	900	Harriot Island	7.07	
16	3	905	Pender Harbour	12.27	
16	5	909	Tuwanek Point	1.56	
16	6	910	West Sechelt Inlet	1.76	
16	8	911	West Highland Point	7.66	
16	6	912	North Highland Point	2.09	
16	16	913	Nile Point	3.23	
16	16	914	West Agamemnon #1	1.25	
16	16	915	West Agamemnon #2	1.88	
16	9	916	Skookumchuk Narrows, D	2.35	
16	9	917	Sechelt Rapids, B	5.06	
16	9	918	Rapid Inlet	0.95	
16	8	919	Highland Point	0.77	
16	11	920	East Vanguard Bay	4.14	
16	11	921	Alexander Point	1.91	
16	16	922	Clio Islands, C	1.23	
16	11	923	St. Vincent Bay	3.60	
16	11	924	Nelson Island (N)	1.97	
16	12	925	Hotham Sound (E)	1.22	
16	13	926	Samarez Bluff (S)	1.34	
16	13	927	Trear Creek (S)	1.87	
16	15	928	Chatterbox Falls	1.85	
16	19	929A	Jervis Island, A	2.34	
16	19	929B	Jervis Island, B	2.58	
16	19	930	North Long Bay	1.59	
16	19	931	Boho Bay	7.37	
16	19	932	Davie Bay (N)	10.44	
17	17	942	Gabriola Island (S) 1	3.13	
17	17	943	Gabriola Island (S) 2	6.60	
28	3	944	Walter Bay	1.35	
17	7	945	Wedge Point to Page Point	5.01	
17	7	946	Dunsmuir Island	3.63	
17	7	947	Davis Lagoon	3.50	
18	3	948	Sailing Club Beach	3.49	
19	12	950	Goldstream Flats	14.70	
20	6	951C	Sooke Harbour	1.64	
20	6	951B	Sooke Harbour	0.44	
20	6	951A	Sooke Harbour	30.19	
20	6	951D	Sooke Harbour	2.91	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
20	7	952G	Sooke Basin	2.67	
20	7	952B	Sooke Basin	7.84	
20	7	952D	Sooke Basin	1.33	
20	7	952A	Sooke Basin	1.56	
20	7	952F	Sooke Basin	1.73	
20	7	952H	Sooke Basin	2.53	
20	7	952I	Sooke Basin	0.43	
20	7	952J	Sooke Basin	0.24	
20	7	952C	Sooke Basin	4.96	
20	7	952N	Sooke Basin	0.30	
20	7	952Q	Sooke Basin	0.09	
20	7	952S	Sooke Basin	0.35	
20	7	952T	Sooke Basin	0.05	
20	7	952P	Sooke Basin	3.84	
20	7	952O	Sooke Basin	1.63	
20	7	952R	Sooke Basin	0.20	
20	7	952K	Sooke Basin	2.88	
20	7	952U	Sooke Basin	0.24	
20	7	952E	Sooke Basin	5.61	
20	7	952M	Sooke Basin	0.07	
20	7	952V	Sooke Basin	0.21	
20	7	952L	Sooke Basin	1.46	
19	8	953	Mill Bay	1.83	
17	8	954	Pennalukut Spit	14.63	
15	5	960A	Squirrel Cove #1	0.08	
15	5	960B	Squirrel Cove #2	0.14	
15	5	960C	Squirrel Cove #3	0.85	
15	5	960D	Squirrel Cove #4	0.12	
17	12	961	Page Lagoon	6.35	
17	12	962	Horsewell Bluff	2.18	
17	13	963	Pacific Biological Station	0.56	
17	13	964	Departure Bay	2.99	
17	13	965	Shaft Point to Tyne Point	2.23	
17	13	966	Millstone Estuary	3.16	
20	1	989	Carmanah Creek	37.91	
20	2	990	Thrasher Cove	50.92	
17	14	991B	Nanaimo River Estuary	22.78	
17	14	991C	Nanaimo River Estuary	5.11	
17	14	991A	Nanaimo River Estuary	65.09	
19	7	993	Deep Cove	7.25	
17	2	994	Retreat Cove	3.16	
14	14	995	Royston	37.07	
13	13	996	Drew Harbour	190.72	
18	6	997A	Piers Island	0.74	

Area	Subarea	Clam Beach #	Location	Beach Area (ha)	Clam Area (ha)
18	6	997B	Piers Island	1.52	
18	6	997C	Piers Island	0.80	
18	3	998	Long Harbour	1.11	
18	8	999	Cowichan Bay	15.02	
17	9	1000	Vesuvius Bay	1.12	
18	5	1001	Lyall Harbour	13.16	
18	5	1002	Boot Cove	5.51	
18	6	1003	Isabella Island	1.79	
19	3	1004	Esquimalt Lagoon	6.80	
19	3	1005	Esquimalt Lagoon	3.15	
19	3	1006	Esquimalt Lagoon	10.20	
Total Beaches:		533	Total Beach Area:	6844.56	

APPENDIX 7.

**HISTORICAL DESCRIPTIONS OF CLAM FISHERIES AND
FISHING LOCATIONS IN THE INSIDE WATERS OF
VANCOUVER ISLAND AND THE BRITISH COLUMBIA MAINLAND**

EXCERPTS FROM "THE REPORT OF THE COMMISSIONER OF FISHERIES"

By W.F. Thompson (1913)

CLAM-BEDS OF THE EASTERN SIDE OF VANCOUVER ISLAND

These beds are all easily reached by railroad, the Esquimalt and Nanaimo Railroad touching all the points on the coast from Nanoose Bay to the southern end of Saanich Inlet, and the Victoria and Sidney Railroad all those on the Saanich Peninsula. The beds are situated at Nanaimo Harbour, Kulleet Bay, Chemainus River Flats, Cowichan Harbour, Union Bay, and along Cordova Channel. They are thus all available for the supply of Victoria, as well as Vancouver and the smaller towns along the coast. The beds of value are almost all those of the "butter-clam", *Saxidomus giganteus*, and the "littleneck", *Paphia staminea*.

Departure Bay and Nanaimo Harbour

Departure Bay and Nanaimo Harbour are at the ends of the same body of water, that lying behind Newcastle and Protection Islands. Nanaimo is a town about seventy-three miles distant from Victoria and forty from Vancouver. It is the shipping point for many of the small beds of the surrounding islands and bays. The value of the beach along the water-front of the city is greatly impaired by the presence of the coal-docks and herring-saltries, as well as the sewage that is emptied over them from the town sewers. There is situated here a clam-cannery, as mentioned in a preceding part of the report, and clams are brought from False Narrows, Comox, and even Thetis and Kuper Islands.

The clam-beds in Departure Bay are those of *Paphia* and *Saxidomus*, lying in rather narrow beaches along the inner shore and the north-west edge of Newcastle Island. There are 4 acres, utilized by the Indians in part, which are good beds, and a considerable area which has sparse quantities of the other species. Those beds along the water-front of the city cannot be regarded as of value. At the mouth of the Nanaimo River there is an extensive area, with the cockle and the "otter-shell" clam, with an acre or so of *Mya arenaria*, the "mud-clam" beds, but they cannot be said to be valuable as a whole. They are not suitable for oysters, apparently, because of the character of the bottom and the fresh water of the river. It might be possible to build up a bed of eastern oysters, but the prospects are not bright for this. As a whole the beds in this immediate locality cannot be said to be of much value.

Kulleet Bay

Kulleet Bay is a small cove about three and a half miles from Ladysmith by water and three or four by land, to the north-east; exposed to a long stretch of straits to the north-east and east. At present an Indian village lies on the south-western shore, near a couple of lagoons. The clam-beds lie along the head and southern shore, covering about 2½ acres, more or less, and are formed of light gravel. *Paphia staminea*, the "little-neck" is most abundant, and *Saxidomus giganteus*, the "butter-clam" is next, with some *Cardium corbis*, the cockle. The second species is probably kept well gathered by the Indians. The beds are not of great value.

I was informed that *Ostrea lurida*, the native oyster, had been planted in one of the lagoons, but at the time that I was there were none to be observed. It is possible that these lagoons are suitable for them, but each is somewhat less than an acre in extent and too high.

The Saanich Peninsula

The Saanich Peninsula has a number of small beds along its northern end and along Cordova Channel, as well as in Union Bay. The shipping-point is Sidney, on the eastern side, eighteen miles from Victoria by the Victoria and Sidney Railroad. At Sidney is situated the cannery of the Sidney Trading Company, which is supplied by the beds to the north on the islands, as well as those on the shores of the peninsula.

The most extensive and productive clam-beds lie to the south of Sidney, but I was told that these were not utilized by the Indians to any great extent. They extend for about two miles along the shores of what is known as Bazan Bay. The beds are coarse gravel, and possess a moderately abundant supply of clams, covering at the most but 15 acres, of which probably a third is commercially valuable. *Paphia staminea* and *Saxidomus giganteus*, the "little-neck" and the "butter-clam", are found.

North of Sidney lies Shoal Harbour, which is the union of a number of small, shallow muddy bays, with but a small area of productive flats. Of these the greater part is soft, deep mud bottom, and not more than 2 or 3 acres show any clams whatever. These are *Paphia staminea* and *Saxidomus giganteus*. There is a small area in the southern portion which may be fit for the eastern oyster, but it cannot be said to be very promising. If the bottom were modified, it is probable that much more could be utilized.

Along the northern end of the peninsula there are scattered numerous small beds, composing about a twenty-fifth of the whole shore-line, and very narrow but of good quality. There may be about an acre of these, with the "little-neck and the "butter-clam".

On the west side of Saanich Peninsula are Deep Cove and Union Bay, portions of which might be utilized for native-oyster beds. *Paphia staminea* is found in abundance in the northern half of Deep Cove, about half an acre in extent, Union Bay has about 2 acres of clam-beds of *Paphia staminea* and *Saxidomus giganteus* in fair abundance, with about an acre of *Macoma secta* beds. Of the whole bay, it is possible that the southern half could be utilized for transplanted oysters, but their propagation, either native or eastern, could not be expected.

Cowichan Harbour

This is at the mouth of the Cowichan River, about four miles by road from Duncan, on the Esquimalt and Nanaimo Railroad, and about fifteen miles from Sidney by water. On its southern shore is the Cowichan Harbour wharf and a few houses, including those of a number of Indians. At the head of the harbour is the Koksilah Indian Reserve. There are about 350 acres of tide flats, of which 40 may be said to be productive. These are in a rectangular area at the mouth of the river. From this stretch there extends a long narrow strip along the shore of the southern

side as far as Boatswains Bank, three and a half miles from the wharf. In this piece there is approximately 40 acres of productive beds. Of the rectangular area at the river-mouth nothing but the edge and the southern angle is productive, the species found being *Cardium corbis* the "cockle", and *Schizothoerus nuttalli*, the "otter-shell". These are not often dug, as most of the diggers prefer the more densely populated beds along the southern edge of the harbour. Here is found for the most part *Saxidomus giganteus*, the "butter-clam", but *Paphia staminea* and *Schizothoerus nuttalli* are also found to some extent. It is one of the most popular of the clam-beds, and at all the low tides people may be seen digging clams here. This is especially true on Sundays. The Indians of the near-by reserve also make good use of the clams, both the cockle and the other species. I was informed that the canneries have also made use of the beds, but this I cannot vouch for, as I did not inspect the beds during the canning season. These beds are undoubtedly valuable.

Chemainus River Flats

The mouth of the Chemainus River is about fifty-two miles from Victoria by railroad, and forty from Vancouver by water. The total area of the flats is about two and a half square miles, of which somewhat more than one is productive of shellfish of some sort. At present nothing but oysters is marketed from the flats, and these are transplanted from Ladysmith. Crofton is distant a mile and a half, and Chemainus but half a mile to the north. Either of these places may be utilized for shipment, the former by water only.

The flats are of sedimentary formation, being, in fact, a delta. The river breaks at high-tide line into branches and spreads over the bottoms. Around the outer side of the delta there are a number of small islets, lying parallel to the coast and connected at half-tide with it. Between the islets and the shore the flats are high and non-productive for the most part, but at the northern end and outside of the islets there are large flats that are low and weed-covered, with some shellfish. As is usual with river-flats, there are extents of different bottom, weeded heavily or nearly bare, soft-bottomed or somewhat firm. At the southern end there is a considerable extent between the scattered islands of this end which is firm and somewhat sandy, bordered on the low-tide line by broad reaches of weeded flats. The latter are continued up the whole of the outer side of the islands and southward around the bend of Osborn Bay.

The species of clams found living in the flats are: *Mya arenaria*, the "soft-shell mud-clam"; *Schizothoerus nuttalli*, the "otter-shell"; *Cardium corbis*, the "cockle"; *Paphia staminea*, the "little-neck"; and a few of the "butter-clam," *Saxidomus giganteus*. They are placed somewhat in the order of their abundance, but from the standpoint of present utilization the cockle only is important. *Macoma secta*, the "white-sand clam," is found in the firm white sand of the southern end, but is not utilized. The cockle is found on the outer beaches, the soft-shell mud-clam on the higher flats in less than commercial abundance, the little-neck in small quantity in the northern end and in the gravelly parts of the southern, while the large otter-shell is found over the outer parts of the flats. The type of flat is much the same as that at Boundary Bay, and the enemies are the same.

At present there is an Indian family living on one of the outer islands, and they dig the cockle for their own use by primitive methods. As far as I was able to ascertain, they do not sell

much of their product. It cannot be said that at present these flats are to be regarded as very valuable, but they may become so if oysters are transplanted to them in greater quantity and the canneries begin to utilize other species of clams than is done at present.

The Clam-Beds of the Islands South-East of Vancouver Island

These islands, extending from Nanaimo on the north to Saanich Peninsula, seem to form irregular arcs of circles drawn with the mouth of the Fraser River as a centre, and the long axis of each island extends north-west to south-east. Vancouver is thirty miles from the nearest of them, while Victoria is fifteen from the southernmost and seventy-five from the northern end of the group. They are rocky, with stone or gravel beaches in great part, rough and hilly, with but few large bays or harbours, Ganges Harbour being the largest. It is unlikely that they will ever become densely inhabited save in the most favourable places. At present regular transportation service is by steamer once or twice a week to one or two of the islands. Numerous private launches and small boats are owned among the islands.

The shipping-points which would be made use of are Ganges Harbour, Sidney, Chemainus, Ladysmith, and Nanaimo. Ganges Harbour is on Salt Spring Island, about forty miles from Vancouver and thirty-five from Victoria. Chemainus, Ladysmith, and Nanaimo are on the Esquimalt and Nanaimo Railroad, and are respectively fifty-two, fifty-nine, and seventy-three miles from Victoria. Sidney is about eighteen miles from Victoria by the Victoria and Sidney Railroad. These places are the most convenient for the establishment of canneries. In treating of each island, its approximate position in regard to one of these places will be given. No other convenient method of subdivision for the treatment of the area presents itself save that of the islands.

As a general rule, the beds on the islands are of a different type than those of Boundary Bay, resembling to some degree those of Burrard Inlet. The species most generally found are the little-neck and the butter-clam, but the other species are occasionally found. The second-named species is the one used almost exclusively by the canneries and is at present the most highly valued. The beds of the first two are usually densely stocked.

Sidney Island

Between Saanich peninsula and San Juan Island lies Sidney Island. On its northern end is a long sandspit about a mile in length, a broad beach runs down the whole western side, and on the eastern there is a shallow bay. The sandspit has a small bed of *Saxidomus giganteus*, the "butter-clam" and *Paphia staminea*, the "little-neck" at its tip of not more than 2 acres in extent. Either side of the gradually broadening spit is typically fine gray sand on the lower third of the beach, heavy weeds above, and a gravel or sandy area at the highest level. In the fine gray sand are found large numbers of the white-sand clam, *Macoma secta*, probably an area of 8 or 9 acres. At the base of the spit, on the western side, is a large lagoon, which is utterly barren, probably because of its very soft bottom. At its entrance are small beds of *Paphia staminea* and *Mya arenaria*, less than an acre. At about the centre of the island is a moderately abundant bed of the large "otter-shell clam." The bay on the east coast is edged by gravel beach in which is a fairly

good bed of *Saxidomus* and *Paphia*, probably 3 acres. The total area of clam-beds of commercial importance may be placed at about 6 acres. They are "feeders" for the Sidney cannery.

Salt Spring Island

The principal beds of the island lie in Ganges Harbour, Long Harbour, and Fulford Harbour, while the smaller are found along the northern shores and in the shallower bays of the western side. Salt Spring is the largest of the islands and has the greatest extent of clam-beds.

Ganges Harbour

This is a bay on the east side of Salt Spring Island, at a distance of about sixteen miles from Sidney, and hence about thirty-two from Victoria, although five or six miles farther by the water route. The distance from Vancouver is about fifty miles. It is the principal wharf and post-office on the island, and roads connect it with all parts.

The most valuable bed in Ganges Harbour lies in the lagoon on the south-western side. It contains a great abundance of *Paphia staminea*, the "little-neck", and a fair proportion of *Saxidomus giganteus*, the "butter-clam". The total area of clam-bed in and near this lagoon is approximately 15 to 20 acres, a part of which lies on the outer side of the spit enclosing the lagoon, in a bed about 15 yards wide. The upper end of the lagoon is somewhat muddy, and the centre weeded. No oysters were present, although there is no apparent reason why they should not flourish here if transplanted. The spat would always be lost, however. A small stream of fresh water enters near the mouth of the lagoon, but during the summer did not provide a very large volume. *Mya arenaria*, the "soft-shell mud-clam", is found in slight abundance around its mouth. The lagoon is but a few minutes' run from Ganges Harbour, but does not seem to have been utilized very greatly by clam-diggers.

The beaches to the south of the lagoon are not of great extent, and are productive mainly of *Macoma secta*, the "white-sand clam. The beaches on the east side of the harbour are small, but occupied by *Paphia staminea* and *Saxidomus giganteus*.

Fulford Harbour

This is a southern inlet of Salt Spring Island, its head about eight miles from Sidney. It is bordered on both sides by very steep and high hills. There is no large settlement, a few residences being situated along the eastern side and a store at the head of the bay. The clam-beds are utilized by the Indians digging for the Sidney Trading Company, and I was informed by local residents that the beds were depleted to a considerable degree. They are the nearest beds to the cannery, and would, of course, be dug more extensively. The total area of productive beds is 4 or 5 acres, although probably double that is inhabited by clams.

Along the eastern side of the bay there are four small coves, on the western two fairly broad beaches, and at the head of the bay an extensive flat of light gravel. The coves possess beaches of very small area and no great value, although native oysters might be grown in them by transplantation. The beach at the head of the bay is apparently well fitted for native oysters,

and may be utilized for transplanted beds. At present *Tapes staminea* is found in very slight abundance over the whole, and in commercial abundance at the eastern side in an area of a quarter of an acre along the shore-line. The beaches of the western shore are two in number, the southernmost with less than an acre of gravel-bed with clams. The northern is an extension of that at the head of the bay, and has about an acre of good clam-beds at one end and slightly more at the other, making about 2 acres. It is covered in great part by log-booms and the beds thus rendered poorer.

Long Harbour

This is a long narrow inlet on the south-east side of Salt Spring Island, separated from Ganges Harbour by a long peninsula, the heads of the two harbours being but a short distance apart. Its width is but 400 or 500 yards at the most, and less than 100 at the head. The length of the harbour is between three or four miles. The greater portion of the inlet is bordered by rocky beaches until within less than a mile of the head. At this distance fairly extensive beaches are found on the eastern side, and farther toward the head there are also similar beaches found along the western side. The flats at the head of the inlet are of small extent, at a rough estimate about 15 to 20 acres being good oyster-ground. The population around the head of the harbour is at present small, but two or three families living there. The supply of fresh water is small and enters at the head of the flats.

The principal beds are those of the "small-clam" *Paphia staminea*, of the Vancouver markets, and these are as rich as any in the southern end of the Province. The clam is of good size and colour, and the beds should become of considerable commercial importance as soon as the species is sought for canning purposes. When rapid transportation to Vancouver is secured, there is no reason why that market should not be supplied in part from these beds. They are situated in the steeply sloping beaches on either side of the upper reaches of the inlet, particularly on the eastern side. The width of the bed is small on either side, as the soft-shell or mud-clam *Mya arenaria*, displaces them above. A crude estimate places the total area as about 3 or 4 acres of actual clam-bearing ground. I am inclined to place the value of these clams about that of the oysters at the head of the inlet. The character of the bottom in which they are found is the usual graveled sand, with an admixture of mud.

There is a considerable amount of the soft-shell or mud-clam found, the area of whose beds is very much less than that of the other species, but the value of those that exist is considerable. They are of good size and fair abundance. The "butter-clam", or *Saxidomus giganteus*, is found in very small quantity, and cannot be considered of very great value. The same is true of the cockle, *Cardium corbis*.

Booth Bay

This is an open inlet about two miles distance from the head of Ganges Harbour by land, but on the opposite side of the island. It is steep-shored, open to north-west winds, and the outer beaches are of doubtful value from a shell-fish standpoint. The Booth Canal opens into its head. There may be an acre of shell-fish beds here.

Vesuvius Bay

This is an open cove a mile and a quarter north of Booth Bay, with less than an acre of good clam-beds, for the most part *Saxidomus giganteus*.

Northern End of Salt Spring Island

The clam-beds are found here on small beaches at Fernwood Point, along Houston Passage, at Southey Point, and probably do not aggregate more than 10 acres. Of this the major portion is of low value. *Paphia staminea* and *Saxidomus giganteus*, the "little-neck" and the "butter-clam", are the most abundant.

Galiano Island

Montague Harbour and Retreat Cove contain practically all the clam-beds on the island. The former has gravel beaches containing a fair supply of *Paphia staminea* and *Saxidomus giganteus*, over a total area of at most 7 acres. Immediately to the north of the harbour is a small bed in a bight of the shore about an acre in extent, containing *Cardium corbis* for the most part. Retreat Cove has not more than an acre of good clam-bed, containing *Paphia staminea* and *Saxidomus giganteus*. Ganges Harbour is their nearest port, seven or eight miles in the case of Montague Harbour and about twelve in that of Retreat Cove. Their beds are important simply as parts of the numerous small ones available for the clam-canneries.

Prevost Island

This island lies just outside of the mouth of Ganges Harbour. There are about 2 acres of good clam-beds to the island. Annette Cove, on the northern side of the island, contains about 7 acres of muddy bottom, with very few clams. Parts of this might be available for oysters. James Bay, on the same side, contains slightly less than an acres of good clam-beds along the southern side and another at its head, making about 1 $\frac{3}{4}$ acres of *Paphia staminea* beds. A short beach lies on the western side behind a small island opposite the head of Annette Cove, with about a fifth of an acre of abundant *Paphia staminea*.

Pender Island

Pender Island is composed of two portions separated by a canal connecting two harbours, Bedwell and Browning. In the latter are the only beds on the islands worth consideration. They are thirteen or fourteen miles from Sidney. There are about 1 or 2 acres of good *Paphia staminea* and *Saxidomus giganteus* beds at the eastern mouth of the canal. At the northern end of the harbour there are three or four more, but with a less abundant supply.

Saturna Island

Saturna Island is just the other side of Pender Island from Sidney, a distance of half a mile. It is thirteen miles from Ganges Harbour. The clam-beds are situated at Winter Cove, Lyal Harbour, and Boot Cove, covering about 10 acres or more. The first has rocky shores,

interspersed with muddy gravel beaches containing *Paphia staminea* and *Saxidomus giganteus*, with some soft-shell clams, *Mya arenaria*. Lyal Harbour has the same type of beaches along the southern end and eastern side. Boot Cove is a well enclosed shallow bay with muddy beaches containing *Mya arenaria*. The only use to which the clams were being put in the latter place was a food for a herd of pigs which dug the clams out at low tide.

Secretary Islands

Between the two small Secretary Islands there is a small bed of *Paphia staminea* and *Saxidomus giganteus* of an acre and a half. It is fifteen miles from Ganges Harbour. The beds are well stocked and show traces of digging.

Gabriola Island

Gabriola Island is important chiefly because of the flats at the south-east end of False Narrows. This is about eight and a half miles from Nanaimo. The supply for the clam-cannery of Broder and Menairy at Nanaimo was said to have come from these beds during the year 1911-12. The "little-neck", *Paphia staminea*; the "butter-clam", *Saxidomus giganteus*; *Mytilus edulis*, the mussel; and a few of the other species of clams were found. These beds lie between Gabriola Island and Mudge Island, at the south-west end of a narrow passage, through which the tidal currents ebb and flow at about three or four knots. On the map accompanying, the *Saxidomus* beds are strippled. The mussel-beds are well stocked and should prove valuable if the species is ever utilized. The total area of productive flat is less than 50 acres, of which two-thirds may be termed good beds (in the past, in part). Their composition is a coarse gravel.

During the clam season, which extends from September to May, it is said that as many as a hundred Indians are digging at one time during the good tides, but this may be exaggerated somewhat. During the inspection of the beds there was no digging being done. This number of Indians means about forty families. Their shacks or tents are set up on the Mudge Island shore, and the clams are carried to the cannery in their canoes or in the launches. Two persons may manage to gather as many as six sacks at low tide, according to the local residents, but I think this a little high. A potato-fork or a spade is usually employed. It is obvious that this is too much of a strain on the beds, and as would be expected, they were exhausted, for the year at least. This area is one of the best of the island beds, and must be considered very valuable.

EXCERPTS FROM "THE REPORT ON SHELLFISH BEDS OF BRITISH COLUMBIA"

By W.F. Thompson (1914)

THE CHANNELS BETWEEN QUEEN CHARLOTTE SOUND AND THE GULF OF GEORGIA

The whole of this territory was not covered in the investigation because of the improbability of finding clam-beds in certain portions, and the attempt was made to ascertain the importance of them in those areas in which they were to be found. This excluded the inlets and certain of the channels, as those around the Redonda Islands, but in every case careful inquiry was made from men acquainted with them in order to corroborate the fact of their absence.

General Information

The southern end of this division is set at Cortes Island, which is nearly 100 miles from Vancouver, and the northern at Port Harvey, which is about fifty-five miles farther. It is composed entirely of channels, more or less narrow, through which the tide ebbs and flows very swiftly, reaching a speed of nine knots in some of them. The shores of the southern channels do not mount to great heights, especially on Cortes and Quadra Islands (500 to 600 feet), but as one passes towards the mouths of Toba and Bute Inlets they become more and more mountainous in character, reaching 3,000 or 4,000 feet. Nodales Channel, Johnstone Strait, and Discovery Passage have steep and rocky shores, but not of great height, while Cordero Channel has the typical inlet of shore-line on its northern side. The channels are seldom wider than a mile and a half.

Transportation is cared for by weekly boats from Vancouver, and at all parts where trade offers calls are made. Mansons Bay, Whaleton Bay, Drew Harbour on Quadra Island, Shoal Bay on East Thurlow, Port Neville and Port Harvey in Johnstone Strait, and the lumber camps are all given regular service at present. The population is not great, being for the most part loggers, save on Cortes Island, where there are a number of ranchers. The Indians have a village at Churchhouse, opposite Hole-in-the-Wall, one of the narrow passages between Maurelle and Sonora Islands. There are said to be others in the mouths of the inlets and one on Cape Mudge.

Species of Shell-fish and General Distribution

As elsewhere, the butter-clam is the most important species, with the little-neck (*Paphia staminea*) next in order of importance. The mussels (*Mytilus edulis*) are also found on most of the beds. There are no large beds of the soft-shell mud-clam (*Mya arenaria*), and there are none of the species characteristic of the outer coast-line. The best beds are found in the vicinity of Cortes Island; some are to be found near Port Harvey, Port Neville, and a few small beds in some of the channels, but these cannot be said to be of much importance save to the local inhabitants and to the Indians.

DETAILED DESCRIPTIONS OF THE BEDS

Port Harvey

The flats at the head of this harbour are muddy and without many clams. A white beach lies between Tide Pole Island and the mainland. Here a few clams may be obtained. Behind Mist Islands a large extent of ground runs dry, but there are not many clams to be found.

Havannah Channel

In this channel Boughey Bay is said to contain many clams by the local inhabitants which, in fact, it has in comparison to the rest of the beds in the region. There are two flats, one in each angle of the bay, each of which has two good beds of $\frac{1}{2}$ acre a piece, making 3 acres at the most. The butter-clam predominated, but the cockle and the little-neck were also present in small quantity. On the western shore a small point shelters a bed of two thirds of an acre in commercial abundance. White Beach Point, at the western entrance of the bay, has about 1 acre of similar beds.

Matilpi, an old Indian village site, behind two small islands, has a white beach with $1\frac{1}{2}$ acres of good butter-clam beds.

Chatham Channel and Call Creek

A white beach lies behind Low Island, of small area, which is said to be occasionally dug. Call Creek contains some of the large rock-oysters (*Hinnites giganteus*), and at one time a company was formed to utilize them and stock was said to have been sold. Nothing was done with them, however.

Port Neville

The flats at the head are muddy gravel, rather soft on the surface, with butter-clams in scattering numbers. No mud-clams were observed, but the location seems in many ways ideal for them. Fresh water is present at either angle of the head, and there is not very much weed to be found. Oysters might possibly be cultivated here. On the north-western side, less than half-way into the harbour, there is a small white beach at Robbers Nob, with fairly abundant butter-clams, and another sand inside of Boulder Point on the southern side, with cockles predominating, not abundantly.

Sunderland Channel

Jackson Bay is shoal and dries nearly completely. The flats are of a soft mud, firm enough to bear a man. No clams are found to any extent, although small mussels are abundant. At each of the outer angles of the flats a small bed of little-necks is found, one fifth of an acre each, in fair abundance, and a few butter-clams are found in the rocky entrance beaches. There are not enough clams for commercial digging, but the Indians formerly dug here. Topaze Harbour has beaches for the most part sand, with many weeds and occasional clams. Blinkinsop

Bay is in great part tide-flat, muddy and without many clams. There are two small beds in Forward Harbour near the entrance.

Cordero Channel

A small bed is found at the entrance to Phillips Arm, at Pieton Point, principally of the little-neck (*Paphia staminea*).

Nodales and Okisollo Channels

Clams have been reported as present in Chameleon Harbour and Waiatt Bay, but the beds are said to be of very small size in both.

Cortes and Mary Island and Vicinity

Butter-clams are found along the southern end of Cortes Island in a rocky beach from Reef Point to Salt Lagoon, opposite the Twin Islands, and others are found at Manson Bay. These beds are not well enough stocked to be of great value commercially. In the salt lagoon in Von Donop Creek a few native oysters are found at its head. The lagoon can be entered at high tide only, a considerable fall taking place in the channel, and the tidal range on the beds is small. The oysters are dredged up. At the channel entrance is a small but very heavily stocked bed of little-neck clams (*Paphia staminea*). Along the north-west side of the island a few clams can be found here and there, and may be of use to the ranchers and the campers.

The north end of Mary Island is continued as a spit about half a mile in length, extending nearly to the shore of Cortes Island. On it is the best clam-bed of the region, to which the Indians used to come to dry clams before the settlement of the surrounding region. It is somewhat sandy, with parts gravely, and the flats on either side are not wide except at its base. On the eastern side of the spit is the clam-bed, mostly butter-clams, in a belt between 10 and 20 yards wide for a distance of 600 yards; in all, about 2 or 2½ acres. The summer-clams are found in abundance over an area of 5 acres. In the shallow bay to the east cockles are found over sandy weeded ground. This is the only bed in the passages between Queen Charlotte Sound and the Gulf of Georgia which is distinctly well enough stocked to repay commercial digging, and it in itself would not be enough to maintain a cannery.

REPORT ON BAYNES SOUND (COMOX)

This forms properly a part of the report on the beds in the southern portion of the Gulf of Georgia, as it is one of the beds used by the canneries of that region. It is one of the best of the beds, although not as good as those in Burnaby Narrows.

General Information

The clam cannery at Nanaimo, according to its manager, will obtain its supplies for the year 1913-14 from these beds. They are about fifty-five miles north of Nanaimo, on the eastern

shore of Vancouver Island. Baynes Sound is the long stretch of water lying behind Denman Island and its long northern spit. Between this spit and the mainland there is an entrance crossed by a bar, but at the southern end there is a deep-water entrance through which the north-bound steamers pass. Outside of Denman Island, at its southern end, is Hornby Island, with Lambert Channel between the two. The width of Baynes Sound is a mile, or much less in parts, and it is everywhere bordered by sand or gravel beaches, save where the Courtenay River forms mud-flats.

There are two settlements of a considerable size, one at Union Bay and another at Comox, while a short distance up the Courtenay River is the town of Courtenay. Much coal is shipped from Union Bay and considerable agricultural land is found near Comox. Denman and Hornby Islands both have a number of inhabitants, and farms are found along the western side of the sound. To these places mail and passenger steamers come via Nanaimo, and ocean-going vessels frequently call for coal at Union Bay. Stores with good stocks are at both Comox and Union Bay

Detailed Description of Beds

The southern half of Baynes Sound is bordered on its western side by broad beaches of sandy gravel, especially broad in Deep Bay and Fanny Bay. But small parts of these are of any interest. The eastern shores on Denman Island are narrower and of coarse gravel, merging into sand at the northern end. The northern half of the western shore-line is in parts similar to that of Denman Island. The east shore of Denman and the inner beaches of Hornby Island are gravel, in some places rocky. The principal clam is throughout the butter-clam (*Saxidomus giganteus*), and none of the other species are found in much abundance.

Seal Islets

The principal beds in the sound are on these islets which form a part of the spit of Denman Island. The ground dries at low tide from Denman Island to these islets and beyond them, to a distance of two or three miles in all, and at places a width of half a mile. That portion between Sandy Island and Denman is sandy on the side of the sound, but for the most part rocky on the outer side. It is traversed obliquely by "reefs" of boulders and higher ground. The best beds lie north of these grassy islets, for the most part on the western side. In coarse gravel, where the ground is somewhat flattened and where they are sheltered to a certain degree from heavy waves. Portions of them lie high and are sometimes affected by the heat, and others parts are too rocky for easy digging. A total of 9 acres of clam-beds may be said to be available for commercial diggers, and although these are not, on the whole, as valuable as they are popularly considered, yet their value is great.

Between Sandy Island and the First of the Seal Islets

A narrow belt of soft-shell mud-clam, 1 acre or more in extent, is to be found, but it is not heavily stocked. The sandy base of the spit is without clams of any kind.

Goose Spit

At Comox, Goose Spit was said to have had clams on the inner side before the heavy log-booms were laid there by the logging companies. At present a few clams are found on its outer end and a few in the inner beaches near the Comox Wharf. There are not of much importance.

Remainder of the Sound

Along the inner beaches of Denman Island small butter-clam beds are met with on the points, each of 1 acre or so, with a small stock of clams, totaling about 4 acres in all, but most of the beach is too rocky. One bed of very small size is found on the southern end of Denman Island. On the western side of the sound, patches of 2 or 3 acres in all are found near the mouth of Baynes River and the near-by beacon. In places clam appear to be abundant, but the surface was shifting in character. At the inner side of Deep Bay beds are present, but are not of any importance.

The cockle (*Cardium corbis*) was not found in any numbers. Some were seen in the points on the inner shore of Denman Island and some on the outer coast of the Seal Islet Spit. The white-sand clam (*Macoma secta*) is found in a somewhat extensive flat (7 or 8 acres) outside the little-neck (*Schizotharus nuttalli* and *Paphia staminea*) are found throughout most of the clam-beds, but not in any great abundance in any of them.

Note: The native oyster (*Ostrea Lurida*) is found in spare numbers in shallow channels in Fanny Bay, but is always of small size.

EXCERPTS FROM "THE REPORT ON THE PRELIMINARY CLAM SURVEY OF THE AREA FROM DODD NARROWS TO SIDNEY, BC (DECEMBER, 1937)"

By D.B. Quayle

DESCRIPTION OF THE BEDS

1. Southern Area

One of the largest and most productive of the beaches in the southern district below Sansum Narrows is the one extending from Cowichan Bay wharf eastward to Cherry Point, a distance of about three miles. Thompson (1912) describes the beach as having an area of 40 acres. There are several different soil compositions on the beach, each comprising a separate area. The eastern section near Cherry Point is hard gravel ground with many stones and boulders. The digging is difficult but the yield is quite good. A large number of the clams are dying here, causing an obnoxious stench which coupled with the yard digging seems to deter the diggers, all of whom are Indians. Dying or dead clams have been observed on a number of beaches, usually in areas that have not been dug for some time. It may be that clam beds require cultivation, but this point requires investigation.

The central part of the beach is of closely packed black sand with a slight growth of eel grass, indicating it has not been dug for some time, but the diggers are now beginning to exploit it. Both "butter" and "horse" clams are quite abundant with a sprinkling of *Mya* (mud clam) and *Paphia* ("little neck"). A striking feature of this part of the beach was the small number of the lower age groups. The average length of the butter clams was three to three and a half inches. The meats were very clean and white, although taken from closely packed black sand.

The third part of the beach, closest to the Cowichan Bay wharf, is composed of a mixture of sand and gravel. This has been thoroughly dug over and is now practically neglected by the diggers. There were seventy workers, all Indian, on this beach at the time it was visited. This number of workers represents approximately thirty diggers, as Indian clam diggers usually work in pairs, one of whom digs while the other picks. The average catch for two workers on this particular night was slightly over two sacks. The tide however was a short one, not lasting more than four hours. The number of diggers on the beach, as well as the average catch, became greater as the tides became lower.

Approximately ninety tons of clams ("butter" and "horse") were dug from this beach during the month of December. This was the result of eleven night tides. Of this amount about thirty tons were exported to the United States. Considering the proximity of the beach to a large Indian Reservation, depletion is not as great as might be expected, or as great as local opinion would have it.

The beaches inside Saanich Inlet are relatively small in area. Both from my own observations and from the opinion of Indian and white diggers, the beaches are badly depleted. All the clam areas here are readily accessible and are close to the cannery. At this time there

were about eighteen diggers operating in the area and the average catch even on the long tides did not average over two sacks.

In the district between the southern tip of Saltspring Island and Sydney, where the clam cannery is located, the number of diggers varies a good deal, and, as might be expected from their proximity to the cannery, most of the beaches are in a condition where digging is scarcely profitable. It is only in the more inaccessible and rocky places where digging is difficult, such as on Cape Keppel, and an area on the tip of the Saanich Peninsula, near Colbourne Passage, that reasonable catches are made. The digging in the last two places mentioned is confined to white diggers, as very few Indians in this district now have power boats. The beds south of Sydney were not visited, but according to information received in the neighborhood of Sydney, there has been a marked depletion in these beds.

Fulford Harbour was visited but no diggers were working there at the time, and later reports indicated that the beaches in this bay are completely dug out. Thompson (1912) reported that the beds were somewhat depleted then. My own observations from sample diggings showed that all species, but especially "butter" clams are very scarce indeed. (A few acres at the head of the harbour seem to have the requisites of good oyster ground.)

The south-eastern section of this district, including Ganges Harbour, Pender Island, and Prevost Island, probably has the best stocked beds in the area below Sansum narrows. There are not many large beaches and most of the clam ground is made up of small pockets. A large beach near Cushion cove, at the mouth of Ganges Harbour was the most productive beach of any visited during the survey. Ten white diggers were working this beach. Their catches averaged four to five sacks per day, but it must be remembered, however, that the tides during the survey were the lowest of the year, giving access to the lower parts of the beaches which are seldom touched. Naturally the number of hours that digging was possible was greatly increased.

There are numerous pockets inside Ganges Harbour. In Long Harbour there is apparently little of any value. Two or three acres near the head of the harbour might yield a worthwhile quantity of "little neck" clams.

The clam beds of Prevost Island are made up of numerous small "pocket" beaches. In Annette Creek on the western tip of Prevost Island were found the largest specimens of *Paphia* and *Saxidomus* observed during the survey. One specimen of *Paphia* exceeded in size by a considerable amount, the largest specimen recorded in the literature.

In the region of the canal between North and South Pender Island, which connects Port Browning and Bedwell Harbour are well known clam beds which are dug regularly. They still produce on the average, two sacks per digger. On the Port Browning side of the canal is a "little neck" bed where the clams are still quite abundant.

2. Northern Area

The northern area of the district covered by the survey, that from Sansum narrows to False and Dodd Narrows, was unfortunately investigated at a time when the canneries were not

operating, consequently there were no diggers working. The investigation of this region was thus considerably curtailed, and only a few beaches were visited. At Penelakut Spit on the north-eastern tip of Kuper Island the depletion is very marked, as indicated both from my own observations and the reports of the diggers.

In Ladysmith Harbour, where the clam bearing area is quite large, the beds are almost exhausted and the diggers have resorted to working on hard stony ground where no one has previously thought it profitable to dig. Information indicates that Preedy Harbour and the Kulleet Bay regions are practically exhausted.

The only other important beach in this area is at False Narrows between Mudge and Gabriola Islands. There Mr. W. N. Shaw has leased 27.5 acres of the approximate 35 acres. This area was leased to Mr. Shaw in July 1933. Four years previous to this the beds had been closed down by order of the Department of Fisheries for three years. After the re-opening, the beds were thoroughly dug over. Mr. Shaw then obtained the lease and he closed it down for three years to allow it to recover with the intention of farming it piece by piece, by rotating the digging of a number of portions of the bed. He found, however, that if the beds were not dug annually they would become covered by a heavy growth of barnacles and mussels, which he considered to utilize a large proportion of the available food, as well as tending to smother the clams. so he proceeded to dig the beds annually, selecting the diggers (Indians) and carefully controlling the size of the clams, keeping minimum size limit at slightly over two inches. Mr. Shaw does not seem willing to disclose any figures regarding his operations. For the year August 1, 1935, to August 1, 1936, royalty was paid to the government on fourteen tons of clams. For the same period, 1936-1937, royalty was paid on fifty-four tons of clams. The most recent figures are not yet available.

This area was closed to digging for six years out of seven previous to the first digging by Mr. Shaw in the winter of 1935-1936. A yield of fifty-four tons from twenty-five acres in one year from such a bed is rather low, for in the single month of December, 1937, the beach from Cowichan Bay to Cherry Point, consisting of not more than forty acres (Thompson, 1912), yielded ninety tons. This beach had never been closed to my knowledge. Conclusions can be drawn regarding either the advisability of closing down beaches for rehabilitation or the necessity for an improved method of gathering statistics.