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**BIOLOGICAL SAMPLING MANUAL FOR SALMONIDS-
A STANDARDIZED APPROACH FOR THE PACIFIC REGION**

by

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ABSTRACT

Shaw, W. 1994. Biological Sampling Manual For Salmonids - A Standardized Approach For The Pacific Region. Can. Tech. Rep. Fish. Aquat. Sci. 1998: xiii + 167 p.

This sampling manual presents a standardized approach to collecting biological information from salmonids in the Pacific Region. It represents a consolidation of various sampling manuals currently used throughout the Region. This manual is intended to be used by DFO workers as a reference source, for first time groups initiating their own sampling programs, and by various contract agencies. The manual contains keys and descriptions for identifying adult salmonids; a complete list of the biological attributes to be sampled along with the procedures for handling a biological sample; an outline indicating how the data are to be coded; and directions for data verification and handling.

RESUME

Shaw, W. 1994. Biological Sampling Manual For Salmonids - A Standardized Approach For The Pacific Region. Can. Tech. Rep. Fish. Aquat. Sci. 1998: xiii + 167 p.

Ce manuel d'échantillonnage présente une méthode normalisée de recueil d'information biologique sur les salmonidés de la région du Pacifique. Il s'agit d'une synthèse de divers manuels d'échantillonnage actuellement utilisés dans la région, destinée à servir de document de référence au personnel du ministère des Pêches et des Océans (MPO), à ceux qui entreprennent une campagne d'échantillonnage pour la première fois et aux divers contractuels effectuant des travaux d'échantillonnage. Ce manuel contient des descriptions et des clés pour l'identification des salmonidés adultes, une liste complète des caractéristiques biologiques à recenser et les méthodes de manipulation des échantillons biologiques. Il explique enfin comment les données doivent être codées et comment procéder à la vérification et au traitement des données.

FORWARD

Biological sampling refers to the activity of collecting biological information (eg. scales for ageing, length and weights, etc.) from a collection, or sample, of animals. This sample maybe drawn from juveniles or adults, fishery catches or spawning areas, from different gear types in a fishery, and from the numerous different species and stocks of Pacific salmon. Pieces of this type of information have now been collected for over a hundred years; starting simply from how many salmon it takes to produce a case of cans and progressing to the information intensive fishery management of today. The history of maintaining this type of data, however, involves many different groups of people, periods of varying consistency of collection and methodology, and rather fragmented records of the data.

Biological sampling information is essential to both responsible assessment and management of the Pacific salmon resource, and progress in fishery science. Unfortunately, the importance of basic biological information is sometimes not appreciated or understood, both in funding to maintain the data collection or in the need to maintain good historical records.

The author, William Shaw, first became involved with salmon biological data when he prepared a PSARC paper and a Technical report (Shaw 1994) that inventoried all the biological sampling data within the Department. During this task he discovered numerous data formats, codes, and data systems and realized that in order for this information to be useful to the Department as a whole, the information must be standardized. This report is the result of extensive cooperation within the Department of Fisheries and Oceans. We believe that this report, and the cooperation that it represents, is a major achievement for the Department, and that it represents a major step in developing the consistency of collecting and recording biological sampling data. We hope that it stimulates cooperation and provision of data recorded in a standardized way, and that it begins to highlight the importance of maintaining this essential information. Future resource managers and the health of our salmon heritage relies on the data that we collect today. The onus is on us now to ensure responsible information collection and availability.

Without work of this type it is impossible for us to function in a unified way.

Louis Lapi
Head Assessment Data

Dr. Brian Riddell
Head Production Assessment

Salmon Division
Biological Sciences Branch



logo from Haig-Brown (1974)

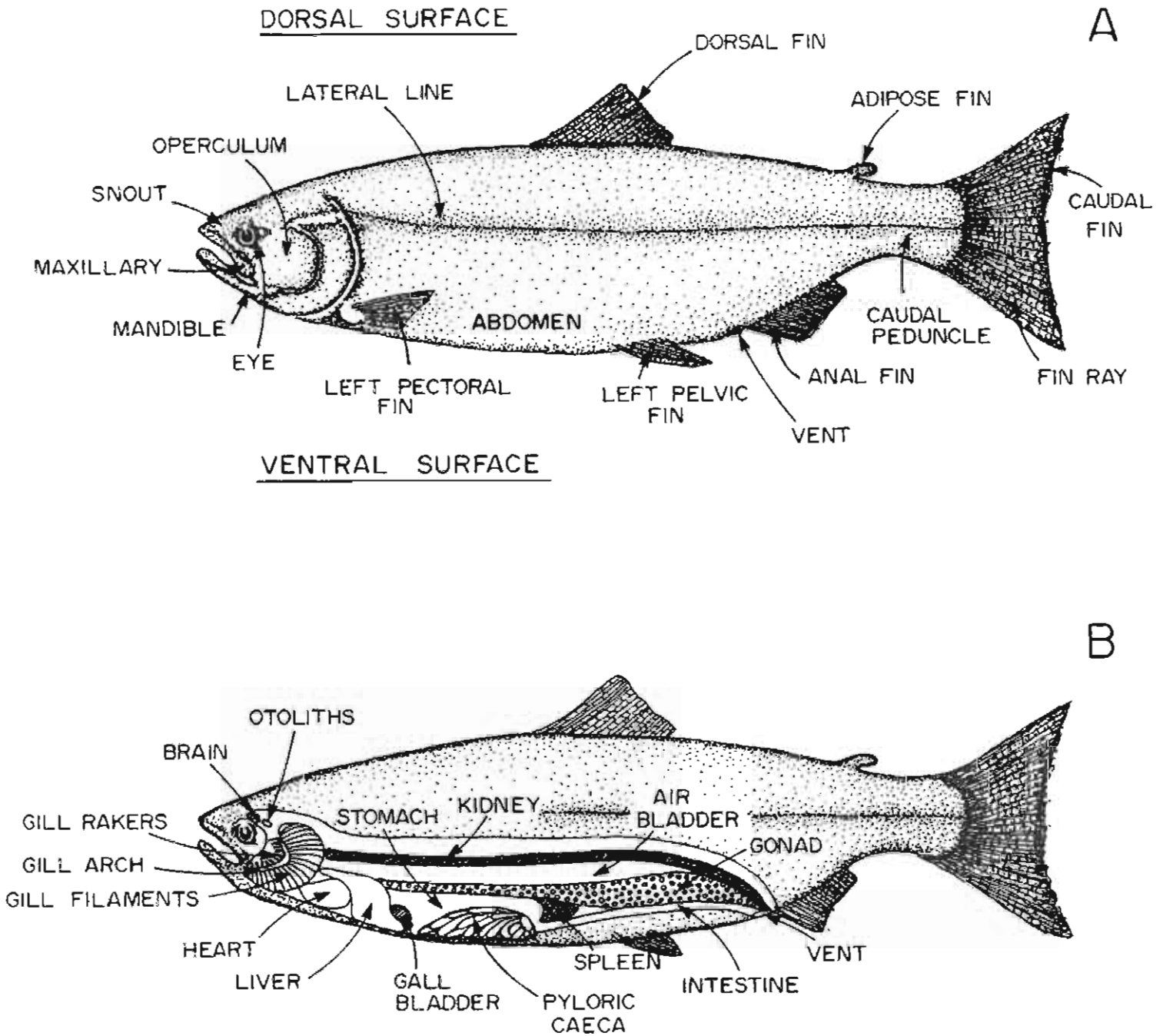


Figure 1. Illustrations of **A)** external anatomical features, **B)** internal anatomical features for a typical salmonid.

KEY

The following key is intended to be as useful as possible in the field so fish can be returned to the water alive after capture, examination, and identification. However, in some instances, you may have to resort to examining characteristics which involve killing and dissecting the fish. The key is presented with a series of choices in the form of couplets, numbered in the left-hand margin. When a decision is made on which statement in a couplet applies to the fish in question, the user follows the directions along the right-hand margin to turn to the appropriate page or proceed to the next step in the key.

ANAL FIN WITH 12 OR LESS RAYS.....**TROUT**

ANAL FIN WITH MORE THAN 12 RAYS.....**SALMON**

TROUT

See **GLOSSARY** for description of terms.

A. Caudal fin distinctly marked with radiating rows of black spots; body never with red spots; adipose fin often with black margin; scale rows 120-180 B.

or

A. Caudal fin usually unspotted, but never with regular rows of black spots; reddish spots sometimes on body; scale rows usually 110-130 C.

B. Red or orange-red dash on lower jaw, along inner border of mandible; minute basibranchial teeth usually present at base of tongue **Coastal cutthroat trout**

or

B. No red colouration present on lower jaw; minute basibranchial teeth at base of tongue absent, radiating rows of black spots of caudal fin (pg. 8) **Steelhead trout**

C. No spots on tail, but black spots often X-shaped on side of fish limited to above the lateral line. Gill cover usually with 2 or 3 large spots; maxillary seldom far behind eye; branchiostegals usually 12; dorsal fin rays usually 11; vomerine teeth not well developed; no red on adipose fin (pg. 9) **Atlantic Salmon**

or

C. Spots on tail and along body spreading below lateral line; spots often surrounded with a lighter ring or halo; gill cover usually with many spots; maxillary extending well beyond eye; branchiostegals usually 10; dorsal fin rays usually 10; vomerine teeth well developed; rust red spots sometimes on adults and often on margin of adipose fin **Brown trout**

INTRODUCTION

The key to assessment of fish production is knowledge of stock composition; taxonomy, number of individuals, sex, size and year-class composition, rates of growth, mortality, recruitment, health condition, and suitability for consumption. Such knowledge is obtained from sampling fish in the catch, commonly referred to as a "Biological Sample". In this report a biological sample represents a portion of the catch or population of salmon either from a commercial, sport, or native fishery, from spawning grounds, and other research activities. Spawning ground sampling is very important since it is the only source of stock specific data for salmon. Depending on requirements, a biological sample consists of a variable combination of a set of measurements, observations, and tissues collected from individual fish. Measurements generally relate to length and weights of individual fish, or parts of those fish. Observations generally relate to sex, skin and flesh colour, degree of sexual maturity, industrial grade, external damage, parasite infestation, and pathological changes (disease). Tissues to be collected generally include muscle, heart, liver, eye, blood, eggs, stomach contents, scales, fins, and otoliths. Data bases are developed from biological samples for use in in-season management and long-term stock assessment of salmonids. In the Pacific Region, biological samples are collected from six species of Pacific salmon (**chinook**, *Oncorhynchus tshawytscha*; **coho**, *Oncorhynchus kisutch*; **chum**, *Oncorhynchus keta*; **pink**, *Oncorhynchus gorbuscha*; **sockeye**, *Oncorhynchus nerka*) and **steelhead trout**, *Oncorhynchus mykiss*; and from **Atlantic salmon** (*Salmo salar*). A number of sampling guides have been produced by Department of Fisheries and Oceans (DFO) or associated with DFO through contract agencies, that provide instructions on how and what to collect from the various salmonids (Hyatt et al. 1984; Steer et al. 1988; Bocking et al. 1982; Cross 1990; Nichols and Hillaby 1990; Gazey and English 1990). Those guides are limited to specific activities and species. For the numerous unpublished guides, there have been problems in obtaining complete sampling guidelines, little attempt to standardize methodologies, inconsistent data formats, and loss of information as a result of incorrect procedures. With the increasing use of personnel from outside of DFO to collect biological samples it is necessary to try to consolidate all of the available literature on sampling procedures for salmonids. The standards presented in this manual originated from the MARK RECOVERY PROGRAM (MRP). In addition, sampling methodologies, recording and coding standards used by numerous DFO salmon sampling programs within the Pacific Region were reviewed and included in this report.

There is an ever increasing need to ensure that the information collected on various salmonid stocks is both relevant and of high quality. This will be more evident, in the future, as the demand for data accountability and quality control of biological data increases to meet the objectives of salmon stock assessment. The purpose of this biological sampling manual is to provide a comprehensive, standardized guide to the identification, sampling, and recording of data for adult and sub-adult salmonids in the Pacific Region. Due to the high degree of variability in species characteristics of juvenile salmonids, a generalized description is not presented in this report.

This report is presented in four sections. The first section covers identification of adult salmon, complete with keys, descriptions, colour illustrations and schematic diagrams that identify important characteristics, along with a list of references for dealing with any identification problems. The second section outlines all of the biological attributes and their description, procedures for conducting the work, and a list of codes for encoding the data. The third section deals with sampling of tagged fish. The last section deals with the data format and describes how the information should be encoded onto data forms. Recording of data in this way will facilitate a better use of the data across all user groups.

CHAPTER 1 - ADULT SPECIES IDENTIFICATION

The Family SALMONIDAE is composed of freshwater and anadromous salmon, trout, char, whitefish, and grayling. The subfamily SALMONINAE is composed of the salmon, trout, and char. It is the intent of this manual to deal only with identification of salmon and trout species. This chapter provides a key for the identification of salmon and some commercially important trout. However, full descriptions are limited to pink, sockeye, chum, chinook, coho, steelhead trout and Atlantic salmon. The full descriptions are limited to these 7 species because they are important to the fishing industry of British Columbia and they are routinely sampled for biological information.

Pacific salmon are in the genus *Oncorhynchus* which include pink, sockeye, chum, chinook, and coho salmon. In 1989, steelhead (rainbow) trout and cutthroat trout (*Oncorhynchus clarki*) were included into the genus *Oncorhynchus* (Smith and Stearly 1990; Robins et al. 1991; Gillespie 1993). Previous authors had placed these into the genus *Salmo*. Atlantic salmon and brown trout (*Salmo trutta*) are still in the genus *Salmo*.

Atlantic salmon, steelhead trout, coastal cutthroat trout, and brown trout are distinguished readily from the 5 species of Pacific salmon by the presence of 8 to 12 rays in the anal fin, teeth on the head and shaft of the vomer, and black spots (Clemens and Wilby 1961). On the other hand, Pacific salmon have a comparatively large anal fin with 13 to 19 rays, contain black spots, and poorly developed vomerine teeth. When counting fin rays in the anal fin exclude the first two smaller rays at the anterior portion of the fin, as illustrated in the trout key on page 6. Refer to Figure 1 for an illustration of the external and internal anatomy of salmon. It is interesting to note that some external physical characteristics can be used to distinguish between the sexes of trout and salmon. For example, in fish larger than 35 cm, males have larger adipose fins, heads, and longer jaws than females (Beacham and Murray 1983; 1986).

Refer to the GLOSSARY for an explanation of terms used in this manual. The following is a list of the references used to produce the keys and species descriptions for both TROUT and SALMON:

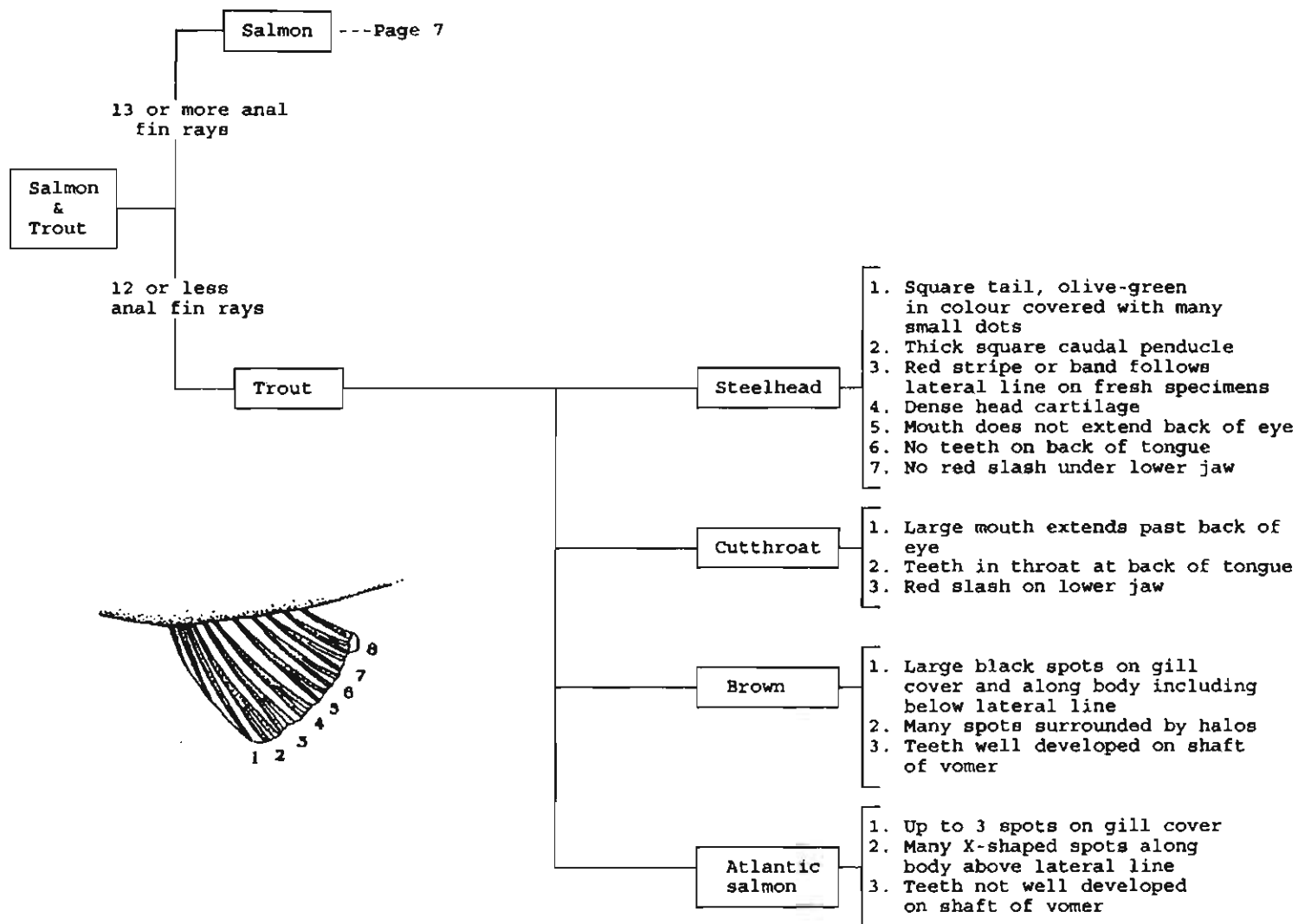
- Pacific Fishes Of Canada Hart (1973)
- A Field Guide To Pacific Coast Fishes Eschmeyer (1983)
- Fishes Of The Pacific Coast Of Canada Clemens and Wilby (1961)
- Coastal Fishes Of The Pacific Northwest Lamb and Edgell (1986)
- Freshwater Fishes Of Northwestern Canada And Alaska McPhail and Lindsey (1970)
- Atlantic Fishes Of Canada Scott and Scott (1988)
- Synopsis Of Biological Data On The Chum Salmon Bakkala (1970)
- Freshwater Fishes Of Canada Scott and Crossman (1973)
- Fishes Of The Atlantic Coast Of Canada Leim and Scott (1966)
- Key To British Freshwater Fishes Maitland (1972)
- Native Trout Of The Genus *Salmo* Of Western North America Behnke (1979)
- The fresh-water fishes of British Columbia Carl et al. (1967)
- Pacific Salmon Management For People Ellis (1977)
- Key To Field Identification Of Anadromous Juvenile Salmonids
In The Pacific Northwest McConnell and Snyder (1972)

The contribution of these researchers to the knowledge of salmonid taxonomy is greatly appreciated.

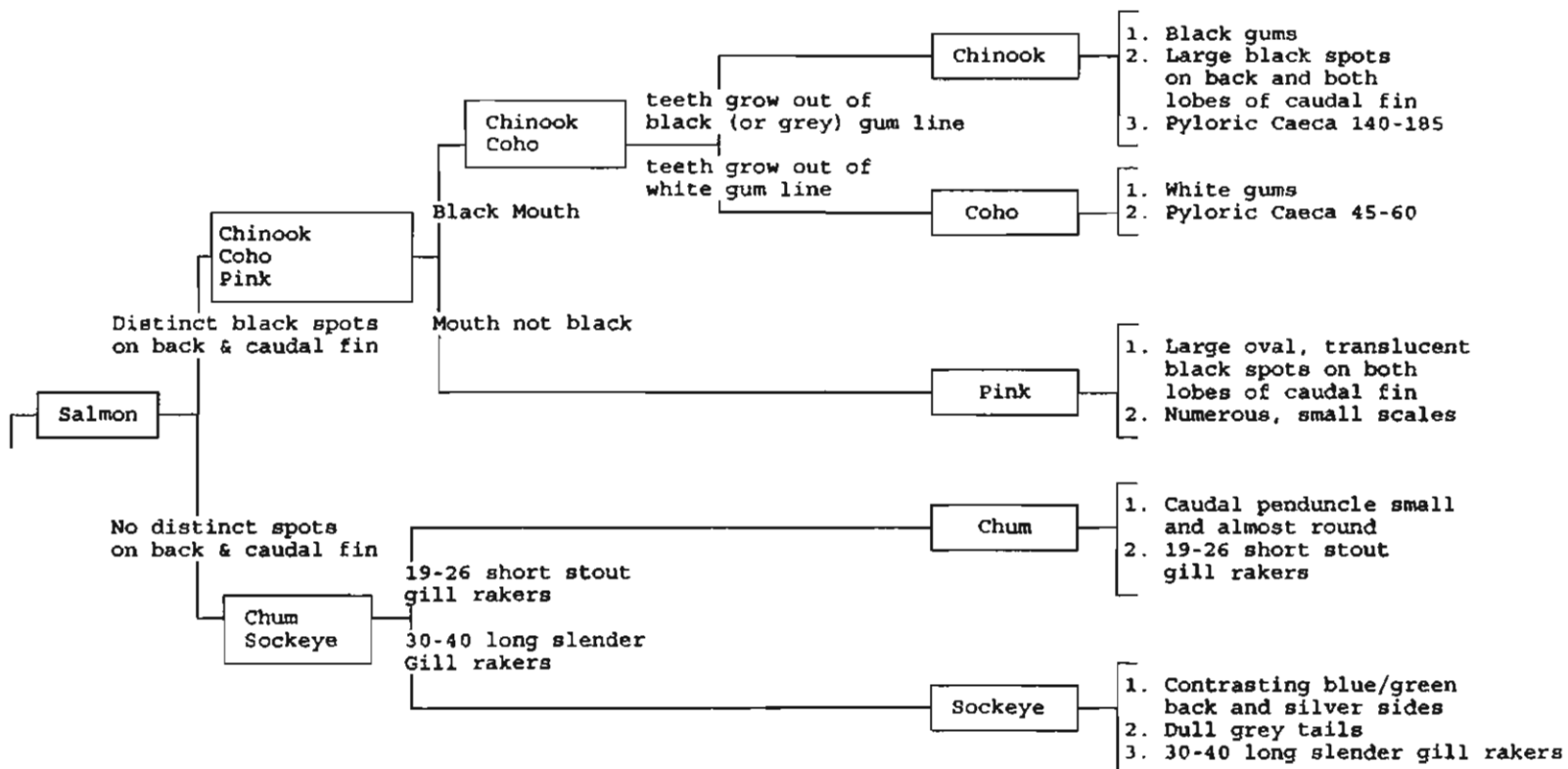
SALMON

See **GLOSSARY** for description of terms.

- A. Very small scales, average two millimetres across in diameter on adult fish. Large, oval spots on back and throughout the tail (pg. 14) **Pink Salmon**
- or
- A. Scales are not small in size, on adult fish they are generally three millimetres or more across in diameter **B.**
- B. Tail is black or dark, no silver streaks or colour. There are no spots on the tail, tail is deeply forked. Long, slender gillrakers, closely spaced, 30-40 on first gill arch, indicative of a plankton feeder (pg. 10) **Sockeye Salmon**
- or
- B. Tail has some silver coloration **C.**
- C. Large pupil, is predominately noticeable - the iris is less so. Peduncle is slender. No spots on tail or back. Short, stout gillrakers, widely spaced, 19-26 on first gill arch. Scales are round, not oval, and circuli are only on one-half of scale (pg. 11) **Chum Salmon**
- or
- C. Pupil is not particularly large. Scales are oval and circuli cover approximately two-thirds of scale. Spots are present on tail and back **D.**
- D. Black spots on the back and usually on both lobes of the tail. Black pigment along bases of teeth. Pyloric caecae 120 or more (pg. 12) **Chinook Salmon**
- or
- D. Tail characters, gum colour, pyloric caecae count not as above **E.**
- E. Black spots are on the back and only on the upper lobe of the tail. There may be some black in the mouths but the gums at the base of the teeth are white. The number of pyloric caecae are fewer than 100 (pg. 13) **Coho Salmon**
- or
- E. **Still stuck?** If you have reached this point and are still not sure then either follow the **SCHEMATIC KEY TO TROUT AND SALMON** on the following pages, or use the references listed at the start of this chapter, or talk to someone who knows how to identify fish.



SCHEMATIC KEY TO TROUT



Steelhead Trout *Oncorhynchus mykiss*

Colour plates of STEELHEAD TROUT are on Pages 16, 20, 28, 36, and 44.
Schematic drawings of the colour plates are on Pages 17, 21, 29, 37, and 45.

Alternate Names

The common name steelhead distinguishes the anadromous from the nonmigratory forms of the rainbow trout. Other names are coastal rainbow trout, hardhead, metalhead, ironhead, halfpounder, Gairdner's trout, Kamloops trout, and salmon trout.

Recognition

Steelhead are recognized from other salmonids and trout by the absence of a bright red dash from the under side of the lower jaw, a short head, absence of teeth from the back of the tongue, small white mouth, light edges on the dorsal, anal, and pelvic fins, and the serial arrangement of small spots on the back, dorsal fin, and caudal fin. There are no spots on the gill cover. The caudal peduncle is stout and the tail is square shaped.

Colour

The back in sea-run specimens is dark, metallic blue with the sides and underparts silvery to white below the lateral line. The back, dorsal, adipose, and caudal fins have bold dark spots. Those on the caudal are usually in radiating rows. The adipose is bordered either by a black continuous margin or by several black spots. The dorsal and pelvic fins are often with white or orange leading edges. Usually no red hyoid streaks are seen on the underside of the jaw. In breeding males, there is a continuous deep pink to red band along each side of the body that is more vivid than in females.

Description

The body is elongate, depth about 4 into standard length, and moderately compressed. Head length is short, about 3.8 into standard length. Mouth is terminal, with the maxillary extending to point below, or slightly behind the posterior margin of the eye (especially in males). Snout is blunt, and lips are fleshy. Teeth are small, conical shaped, and well developed. Teeth are located on both jaws, on the head and shaft of the vomer, palatines, and front of the tongue (no teeth on back of the tongue). The interorbital space is convex and smooth, and its width about 2.9 into length of the head. Eye diameter is about 5.2 into head length. Gill membranes are free of each other and of the isthmus. Branchiostegals range from 10 to 15. Caudal peduncle is stout and moderately compressed, its least depth is about 8.5 into standard length. Pyloric caecae range from 27-80. On the first gill arch are 17 to 21 gill rakers. Scales are cycloid with 115 to 161 scales located above the lateral line. Adipose fin is small-based and fleshy. The number of rays in each of the fins are: dorsal, 10-12; anal, 8-12; pectorals, about 15; and, pelvics about 10 (each of the abdominal fins have a free tipped fleshy appendage above its insertion). The caudal fin is shallowly forked.

Sexual Dimorphism

There are no striking external differences between sexes. However, spawning males have a more vivid red lateral band as compared with females. Males often have a more pointed or hooked snout.

Atlantic Salmon *Salmo salar*

Colour plates of ATLANTIC SALMON are on Pages 16, 20, 28, 36, and 46.
Schematic drawings of the colour plates are on Pages 17, 21, 29, 37, and 47.

Alternate Names

Ouananiche, black salmon, sebago, grilse, kelt, and landlocked salmon.

Recognition

Atlantic salmon may be distinguished from brown trout by the shorter maxillary on the salmon, narrower peduncle, lack of red on the adipose fin, larger scales, and the 2-3 black spots on the gill cover on the salmon; from the rainbow trout (steelhead) by the absence of serial rows of black spots on caudal fin; and from brook trout (*Salvelinus fontinalis*) by the black spots, larger scales, and teeth located on the shaft of the vomer. It is important to mention that the numerous black spots on Atlantic Salmon are often X-shaped. The spots are sometimes found on the dorsal, adipose and anal fins.

Colour

Pre-spawning adults are light brown to green on the dorsal surface. There are numerous black spots, usually X-shaped, scattered along the body, more numerous above the lateral line than below. There are a few similar black spots on the head (such as 2-3 large spots on the gill cover).

Spawning adults lose the silvery appearance and become darker. Spotting on the gill cover is greatly increased (hence the confusion with brown trout). Pectoral and caudal fins become blackish. During spawning both sexes take on an overall bronze-purple coloration and may develop reddish spots on the head and body. After spawning both sexes become very dark, hence the name "black salmon".

Description

The body is elongate, depth about 4.5 into standard length, and moderately compressed. Head length is short, about 4.3 into standard length, and pointed. Mouth is terminal with the maxillary extending slightly beyond the posterior margin of the eye (only in large adult males), otherwise the maxillary extends to below the eye. The upper jaw is slightly longer than the lower jaw. They have well developed teeth in the jaws. Usually a few teeth are found in a single row on the shaft of the vomer (not head), palatines, and are large on the tongue. The interorbital space is convex, its width about 3.2 into head length. Eye diameter is about 4.2 into head length. Gill membranes are free of each other and of the isthmus. Branchiostegals range from 11 to 12. Caudal peduncle is moderately compressed, its least depth about 13 into standard length. Pyloric caecae range from 40-74. On the first gill arch are 15 to 20 gill rakers. Scales are cycloid with 109 to 124 scales on the lateral line. Adipose fin is slender. The number of rays in each of the fins are: dorsal, 11-12; anal, 8-12; pectorals, about 14; and, pelvics about 10 (each of the abdominal fins have a free tipped fleshy appendage above its insertion). The caudal fin has a distinct but shallow fork.

Sexual Dimorphism

Breeding males will develop a pointed snout and a hook or kype on the tip of the lower jaw. The kype is not present in spawning females.

Sockeye Salmon *Oncorhynchus nerka*

Colour plates of SOCKEYE SALMON are on Pages 16, 22, 30, 38, and 48.

Schematic drawings of the colour plates are on Pages 17, 23, 31, 39, and 49.

Alternate Names

Red salmon, blue back, sox, and blueback salmon. The permanent freshwater form of this species are kokanee, kickinnee, little redfish, land-locked sockeye, Kennerly's salmon, silver trout, and yank.

Recognition

Sockeye salmon are distinguished from other salmonids by the 28-40 long, slender, closely spaced, serrated gill rakers on the lower limb of the first gill arch. Also, there is a fine, black speckling on the back, but no black spots on the back or caudal fin. The pyloric caecae count is <120.

Colour

In pre-spawning adults there are no distinct black spots on the back or caudal fins (kokanee sometimes have a few dark marks on the dorsal fin). The dorsal surface of the head and body is a brilliant steel-blue to green-blue with fine, black speckling. The sides are bright silver and the ventral surface is white to silver. The dorsal fin sometimes contains a few dark marks; other fins are clear to dusky on membranes. The flesh is a rich red colour.

In spawning males the head to lower jaw is pale green to olive with black on the maxillary and snout. The lower jaw is white to grey. The back and sides are a bright red to dirty red-grey, and dirty-red to grey on the ventral surface. The dorsal, adipose and anal fins are red and the pectoral, pelvic, and caudal fins are green to black. Females are similar but the body is a darker grey-red colour. In some freshwater populations, and in rare anadromous populations, the spawners are dull green to yellow without the prominent red colouring. There is little difference between kokanee and sockeye salmon, except for the smaller size for kokanee.

Description

The body is elongate, depth about 4 into standard length, deepest below the origin of the dorsal fin, and moderately compressed. Head length about 4.5 into standard length. Mouth is terminal, large, and slightly oblique. The upper jaw extends beyond the posterior margin of the orbit (in breeding males the jaws become larger and hooked). Snout is bluntly pointed, and lips are fleshy. Teeth are small and well developed in both jaws and on the head and shaft of the vomer, palatines, and tongue; no teeth on the basibranchials. The interorbital space is high, wide, and rounded, its width about 2.8 into head length. Eye diameter is about 6.6 into head length. Gill membranes are free of each other and of the isthmus. Branchiostegals range from 10 to 15. Caudal peduncle is moderately compressed, its least depth about 11 into standard length. Pyloric caecae range from 60 to 115. On the first gill arch are 28 to 40 gill rakers. Scales are cycloid with 125 to 143 scales above the lateral line, and 125 to 145 on the lateral line. Adipose fin is small, slender, and fleshy. The number of rays in each of the fins are: dorsal, 11-16; anal, 13-18; pectorals, about 16; and, pelvics about 11 (each of the abdominal fins have a free tipped fleshy appendage above its insertion). The caudal fin is moderately forked.

Sexual Dimorphism

In spawning males the upper jaw forms an elongate hooked snout with enlarged teeth, and a slight hump forms behind the head.

Chum Salmon *Oncorhynchus keta*

Colour plates of CHUM SALMON are on Pages 16, 22, 30, 38, and 48.

Schematic drawings of the colour plates are on Pages 17, 23, 31, 39, and 49.

Alternate Names

Dog salmon, fall salmon, keta, calico, gumboot, and qualla.

Recognition

Chum Salmon is recognized by the absence of large black spots on the body and the fins. Instead, there are fine black specks on the back. They have a slender caudal peduncle, and the tips of all fins are tinged with black except the dorsal fin. Fins are mostly dusky with the edges of the pelvic and anal fins usually pale in mature fish. The caudal fin has silver streaks extending from the caudal peduncle and encompassing about half of the fin. They are noted for the 18-26 short, smooth, widely spaced gill rakers on the lower limb of the first gill arch.

Colour

In pre-spawning adults there are no distinct black spots on the back and fins, although fine speckling is occasionally present. The dorsal surface is a metallic blue with a black tinge on the tips of pectoral, anal, and caudal fins. The flesh is a pale pink.

At spawning time males are dark above, dirty red or purple on the sides (several vertical red or purple bars), and dusky below. There are distinct greenish bars or dusky mottling on the sides, sometimes resembling paint that has run. In spawning females the colour is similar, but the red is less pronounced. The tips of the pelvic and anal fin are white. Females have a broad dark purple or purple-red stripe along body.

Description

The body is elongate, somewhat compressed, depth about 3.8 into standard length, and deepest behind tip of pectoral fin. The head is conical with head length about 4.4 into standard length. Mouth is terminal, large, and directed upward. The upper jaw reaches almost to the posterior margin of the orbit. Snout is narrowly rounded in profile (in spawning males the snout is greatly enlarged and hooked). Lips are fleshy with well developed teeth in both jaws, on the head and shaft of the vomer, palatines, and tongue. There are no teeth on the basibranchials. Teeth in both jaws become large and canine (fang-like) in spawning males (hence the vernacular name of dog salmon). Interorbital space is high, wide, convex, rounded, its width about 2.6 into head length. Eye diameter is about 6.7 into head length. Gill membranes are free of each other and of the isthmus. The first gill arch has from 18 to 26 smooth and widely spaced gill rakers. Caudal peduncle is moderately compressed, rather slender, its least depth about 14 into standard length. Pyloric caecae count is about 140. Scales are cycloid with 130 to 153 scales above the lateral line, and 126 to 151 on the lateral line. Adipose fin is small, slender, and fleshy. The number of rays in each of the fins are: dorsal, 10-13; anal, 13-17; pectorals, about 16; and, pelvics, about 10 (each of the abdominal fins have a free tipped fleshy appendage above its insertion). The caudal fin is slightly forked.

Sexual Dimorphism

In spawning males the upper jaw forms an elongated hooked snout and the teeth are enlarged. In spawning females the upper jaw is not strongly hooked.

Chinook Salmon *Oncorhynchus tshawytscha*

Colour plates of CHINOOK SALMON are on Pages 18, 24, 32, 40, and 50.
Schematic drawings of the colour plates are on Pages 19, 25, 33, 41, and 51.

Alternate Names

Spring, king, blackmouth, jacks, Columbia River salmon, Fraser River salmon, quinnat, hookbill, smilie, mild cure, and tyee.

Recognition

Chinook salmon is the largest of the salmon species. It is noted for the numerous black spots on the back, dorsal fin, and both lobes of the caudal fin. The bases of the teeth are black, and loose conical teeth are present in mature individuals. When the peduncle is grasped, the tail fin rays remain spread and do not collapse easily. Pyloric caecae count is >120. It is interesting to note that chinook salmon have a specific metallic odour, and smaller sized fish have more mucous surrounding the body compared to the other salmonids.

Colour

Pre-spawning adults are greenish blue to black on the dorsal surface, frequently with a faint reddish to rusty hue. They have numerous, moderately large, irregular black spots on the back, upper sides, dorsal fin and both lobes of the caudal fin. The bases of the teeth are black. The flesh colour ranges from red to white, occasionally pink, and sometimes mottled red/pink/white.

At spawning time the back and sides become very dark or bright red.

Description

The body is elongate, depth about 4 into standard length, deepest around tip of pectoral fin, and moderately compressed. Head length is about 3.7 into standard length. Mouth is terminal, large, and directed forward. The upper jaw extends beyond the posterior margin of the orbit. Snout is roundly pointed. Teeth in jaws are movable, moderately sharp, and become enlarged and hooked in spawning males. Teeth are also on the mandibles, premaxillaries, maxillaries, palatines, and on the anterior part of the tongue. The interorbital space is high, wide, convex, rounded, its width about 2.8 into head length. Gill membranes are free of each other and of the isthmus. The first gill arch has from 18 to 30 rough and widely spaced gill rakers. Branchiostegals range from 13 to 19. Caudal peduncle is moderately compressed, its least depth about 12 into standard length. Pyloric caecae range from 140 to 185. Scales are cycloid with 140 to 153 scales in rows above the lateral line, and 130 to 165 on the lateral line canal. Adipose fin is stout and fleshy. The number of rays in each of the fins are: dorsal, 10-14; anal, 13-19; pectorals, about 14; and, pelvics, about 10 (each of the abdominal fins have a free tipped fleshy appendage above its insertion). The caudal fin is moderately forked and the outer rays are stiff.

Sexual Dimorphism

In spawning males the upper jaw forms an elongated hooked snout and the teeth are enlarged. In spawning females the upper jaw is not so strongly hooked, except for very large females.

Coho Salmon *Oncorhynchus kisutch*

Colour plates of COHO SALMON are on Pages 18, 24, 32, 40, and 50.

Schematic drawings of the colour plates are on Pages 19, 25, 33, 41, and 51.

Alternate Names

Silver, hooknose, sea trout, and blueback (young only).

Recognition

Coho salmon have black spotting confined to the back and upper lobe of the caudal fin (which in most cases is absent). Also, there is the absence of black pigment along the base of the teeth in the lower jaw, however the tongue is black, teeth are needle-like and firmly set, and the 19-25 rough gill rakers are widely spaced.

Colour

Pre-spawning adults are metallic blue on the dorsal surface, silvery on sides, ventral surface, and the caudal peduncle. Irregular black spots on the back and upper lobe of the caudal fin. The flesh along the base of the teeth on the lower jaw is pale. Flesh colour is pink to red.

At spawning time the maturing males in freshwater exhibit a brilliant red stripe on the sides, bright green on the back and head, often dark on the belly. Females are less strongly coloured, usually bronze to pinkish red on the sides.

Description

The body is typically troutlike, elongated, depth about 4.1 into standard length, deepest behind the tips of the pectoral fins, and moderately compressed. Head length is about 3.4 into standard length. Mouth is terminal, large, and slightly oblique. The upper jaw extends beyond the posterior margin of the orbit. Snout is narrowly rounded (the upper jaw is strongly hooked in spawning males). Lips are fleshy. They have well developed teeth in both jaws, on the head and shaft of vomer, on the palatines, and tongue, however there are no teeth on the basibranchials. The interorbital space is high, wide, rounded, its width about 3 into head length. Eye diameter is about 6.3 into head length. Gill membranes are free of each other and of the isthmus. The first gill arch has from 18 to 25 rough and widely spaced gill rakers. The caudal peduncle is compressed, relatively deep, and its least depth is about 11 into standard length. Pyloric caeca range from 45 to 83. Scales are cycloid with 118 to 147 scales above the lateral line, and 121 to 140 on the lateral line. Adipose fin is small, slender, and fleshy. The number of rays in each of the fins are: dorsal, 9-13; anal, 13-16; pectorals, about 15; and, pelvics, about 11 (abdominal, each with a free tipped fleshy appendage above its insertion). The caudal fin is slightly indented.

Sexual Dimorphism

In spawning males the upper jaw forms an elongated hooked snout, and the teeth are enlarged. The female's jaw development is less extreme, except in very large females.

Pink Salmon *Oncorhynchus gorbuscha*

Colour plates of PINK SALMON are on Pages 18, 26, 34, 42, and 52.

Schematic drawings of the colour plates are on Pages 19, 27, 35, 43, and 53.

Alternate Names

Humpback, humpy, and slimy.

Recognition

Pink Salmon are recognized by the presence of large, black spots on the back, and the dark, elongate, oval blotches on both lobes of the tail. The scales are small in diameter. There are from 24-35 gill rakers on the lower limb of the first gill arch. They are soft bodied fish, rather limp in comparison to the other species.

Colour

Pre-spawning adults are steel blue to blue-green on the dorsal surface, sides are silver, and the ventral surface white. The back and extreme upper sides have large black oval spots. The adipose fin and both lobes of the caudal fin have black spots, and those on the caudal fin are oval, with some as large as the eye. Colour and pattern are similar but less brilliant in permanent freshwater populations.

At spawning time males are darker on the head and back, sides pale red to yellow with brown to olive green blotches. Females are olive green on the sides of the body with dusky stripes.

Description

The body is elongate, depth about 4 into standard length, and moderately compressed. Head length is about 4 into standard length, and conical. Mouth is large and directed forward and upward. The upper jaw reaches beyond the posterior margin of the orbit. Snout is narrowly rounded in profile. Lips are fleshy. Teeth are small and weak in both jaws (teeth and snout undergo disproportionate growth in breeding males), on the head and shaft of the vomer, palatines, and the tongue, however there are no teeth on the basibranchials. The interorbital space is high, wide, convex and rounded, its width about 3.1 into the length of the head. Eye diameter is about 6.3 into head length. Gill membranes are free of each other and of the isthmus. Branchiostegals range from 10 to 15. Caudal peduncle is moderately compressed, its least depth about 12 into standard length. Pyloric caecae range from 165 to 195. The first gill arch has from 24 to 35 gill rakers. Scales are cycloid with 170 to 229 scales above the lateral line, and 150 to 205 on the lateral line. Adipose fin is small, slender, and fleshy. The number of rays in each of the fins are: dorsal, 10-15; anal, 13-17; pectorals, about 15; and, pelvics, about 10 (each of the abdominal fins have a free tipped fleshy appendage above its insertion). The caudal fin is slightly forked.

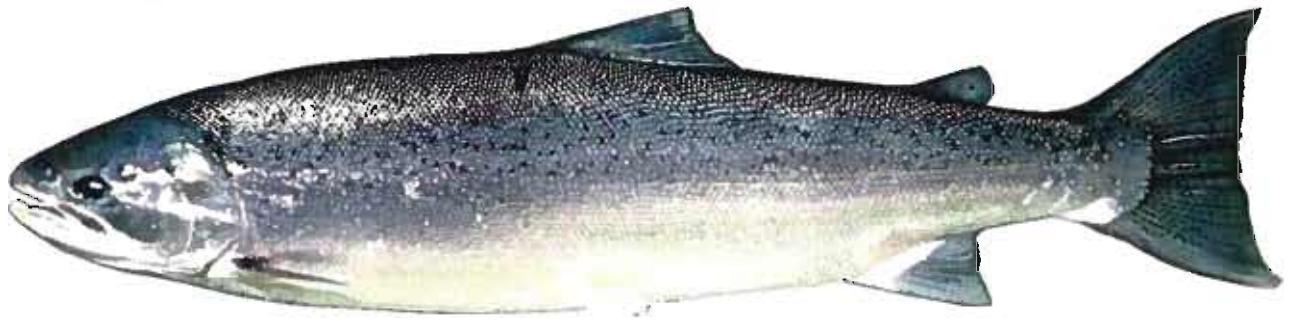
Sexual Dimorphism

In spawning males the snout becomes elongate and hooked, the teeth enlarge, and a prominent hump forms behind the head, suggesting the common name "humpback". In spawning females these characteristics are absent or weakly developed.

The following colour plates and schematic drawings of each of the seven species discussed in this report include side profile illustrations, close-up illustrations of the caudal fin, lower jaw and mouth, and side of the head. The reader should note that the corresponding schematic drawings for each of the colour plates have a series of lines pointing to important identification characteristics. Each of the characteristics are unique to a particular species and may assist the reader in identifying a particular species.

Note: The colour patterns of the spawning fish in the colour plates may vary between specific stocks, and at different stages of maturity.

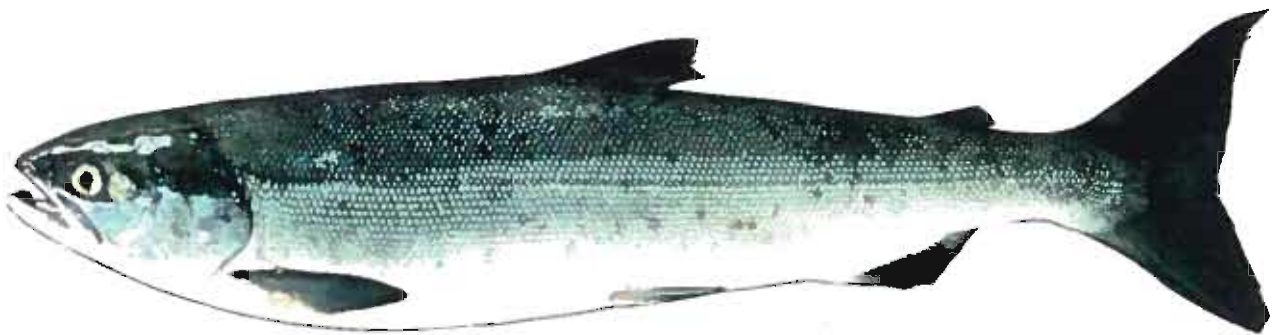
STEELHEAD TROUT



ATLANTIC SALMON



SOCKEYE SALMON



CHUM SALMON

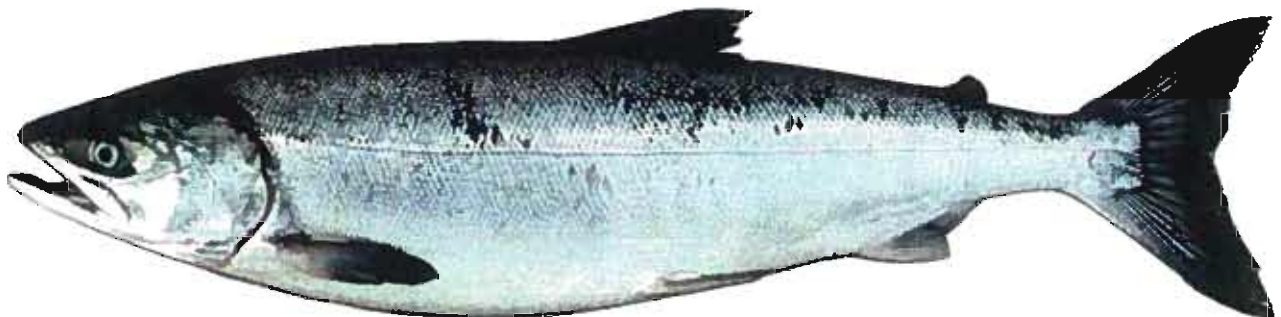
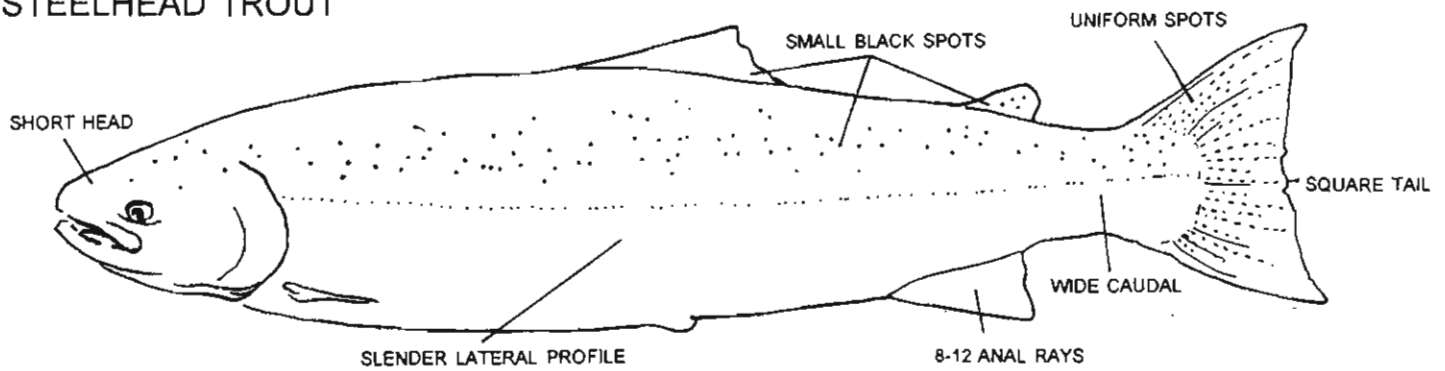
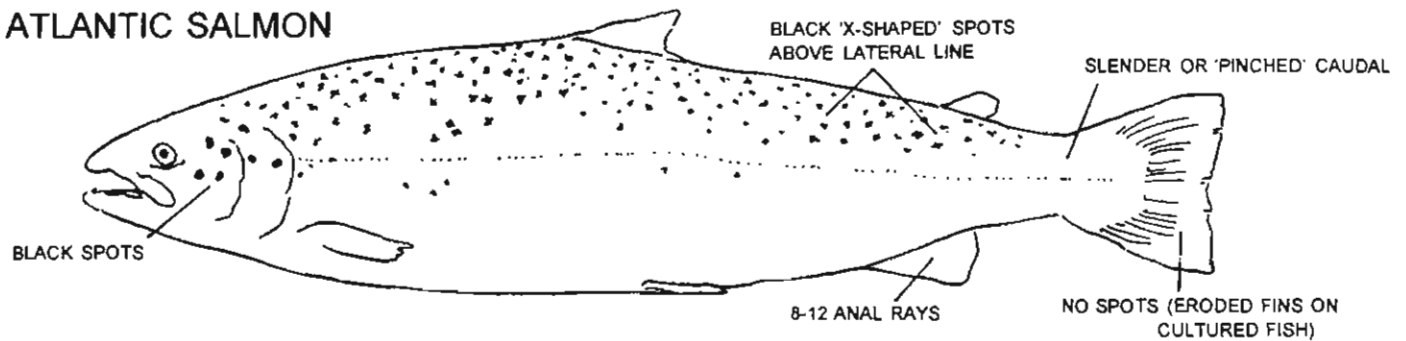


Plate 1. Side profiles of STEELHEAD TROUT, ATLANTIC SALMON, SOCKEYE SALMON, and CHUM SALMON. *Photographs by William Shaw and Tony Pletcher*

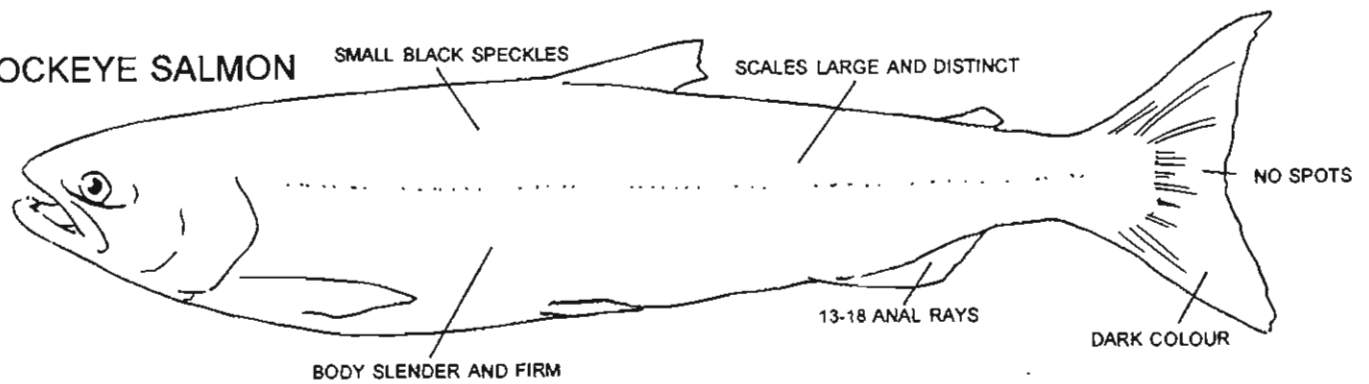
STEELHEAD TROUT



ATLANTIC SALMON



SOCKEYE SALMON



CHUM SALMON

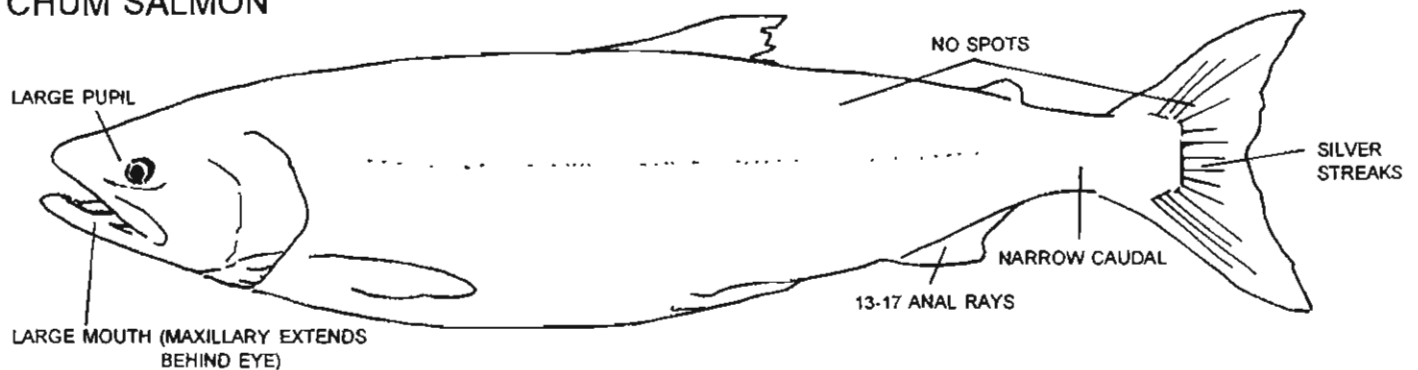


Figure 2. Schematic drawings of STEELHEAD TROUT, ATLANTIC SALMON, SOCKEYE SALMON, and CHUM SALMON from Plate 1 displaying important identification characteristics and description.

CHINOOK SALMON



COHO SALMON

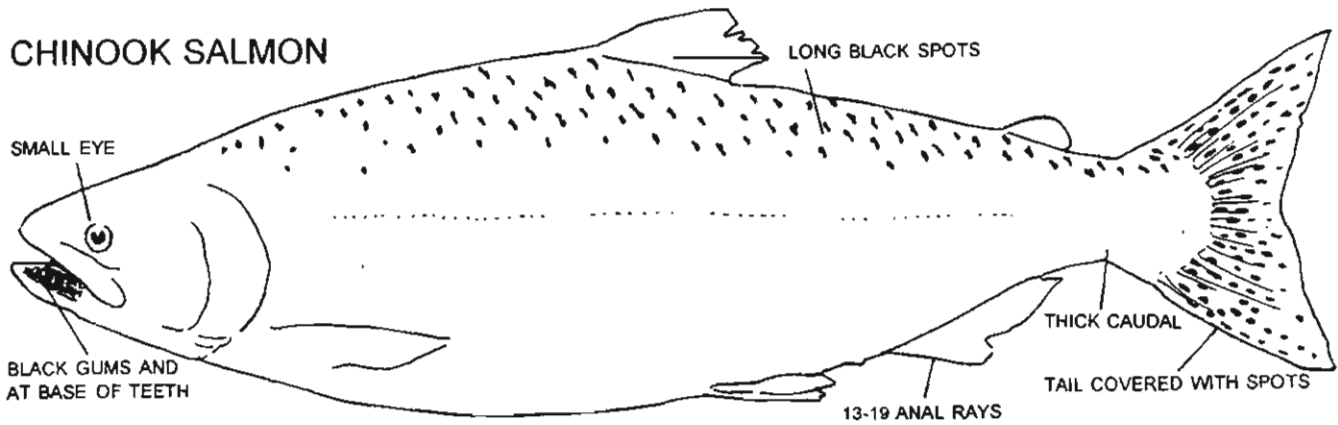


PINK SALMON

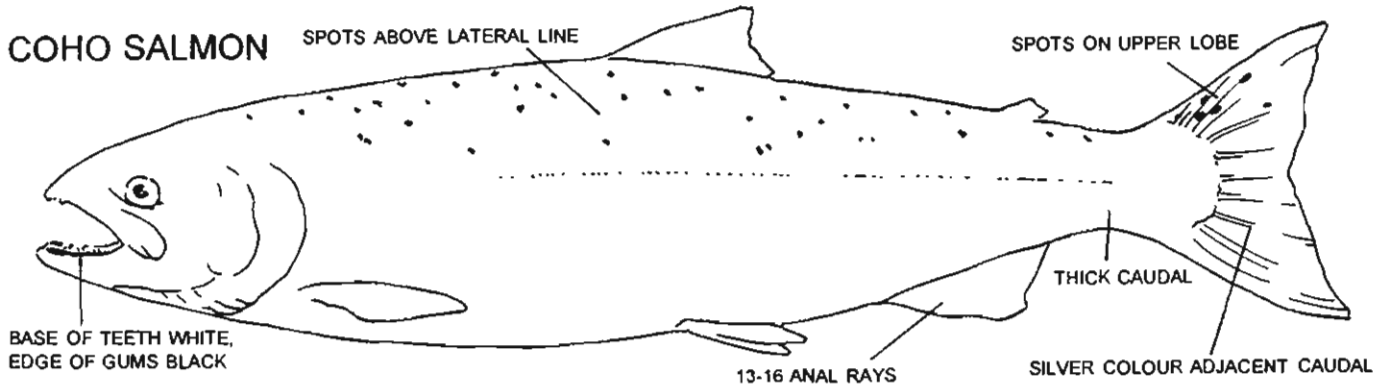


Plate 2. Side profiles of CHINOOK SALMON, COHO SALMON, and PINK SALMON. *Photographs by William Shaw and Tony Pletcher*

CHINOOK SALMON



COHO SALMON



PINK SALMON

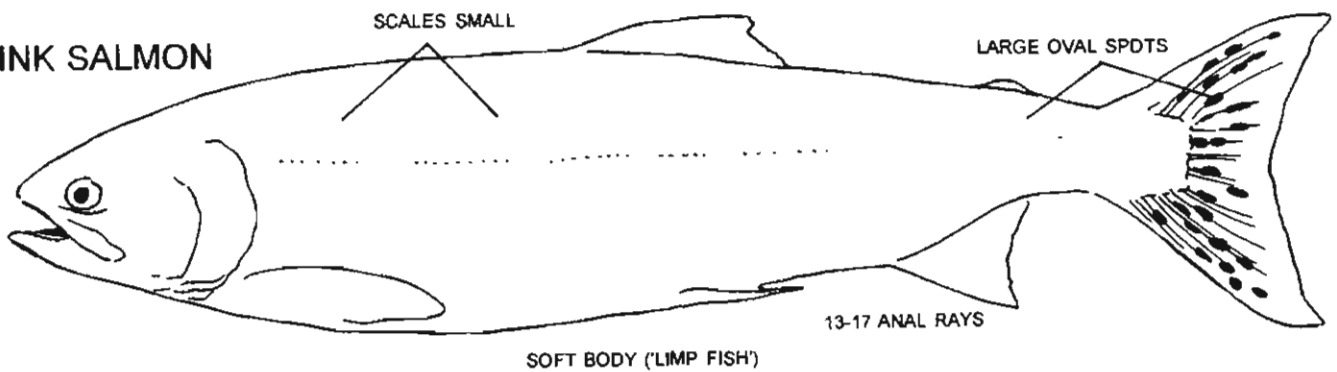
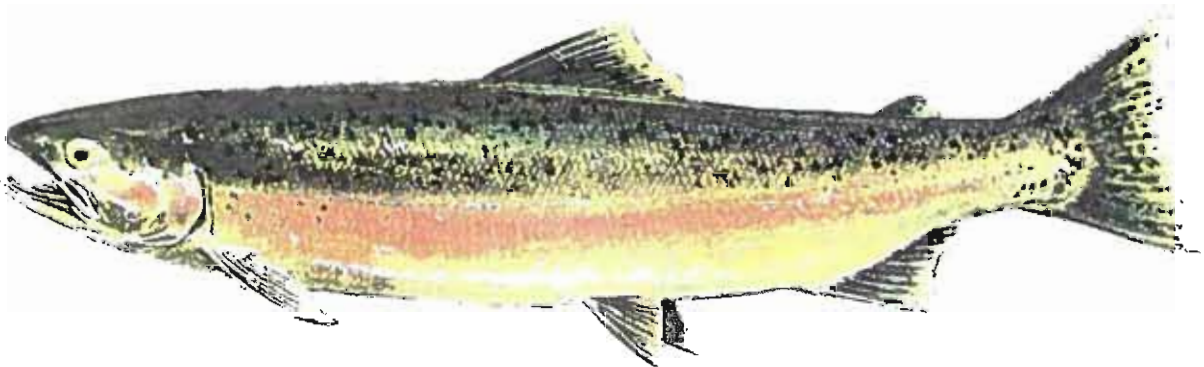


Figure 3. Schematic drawings of CHINOOK SALMON, COHO SALMON, and PINK SALMON from Plate 2 displaying important identification characteristics and description.

STEELHEAD TROUT



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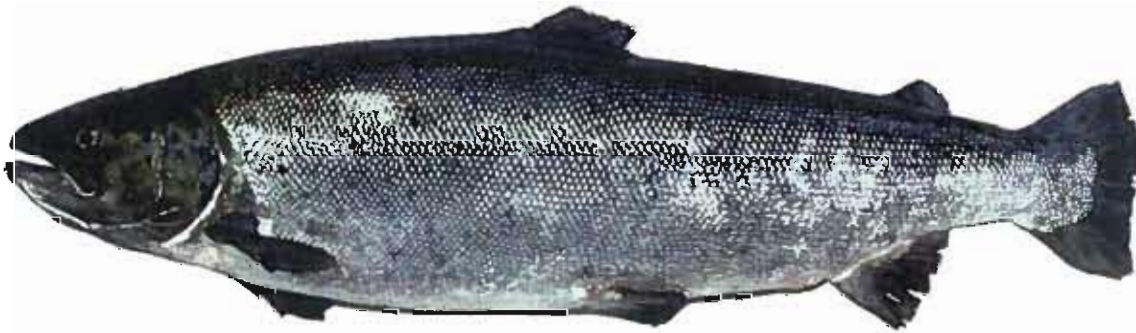


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ATLANTIC SALMON



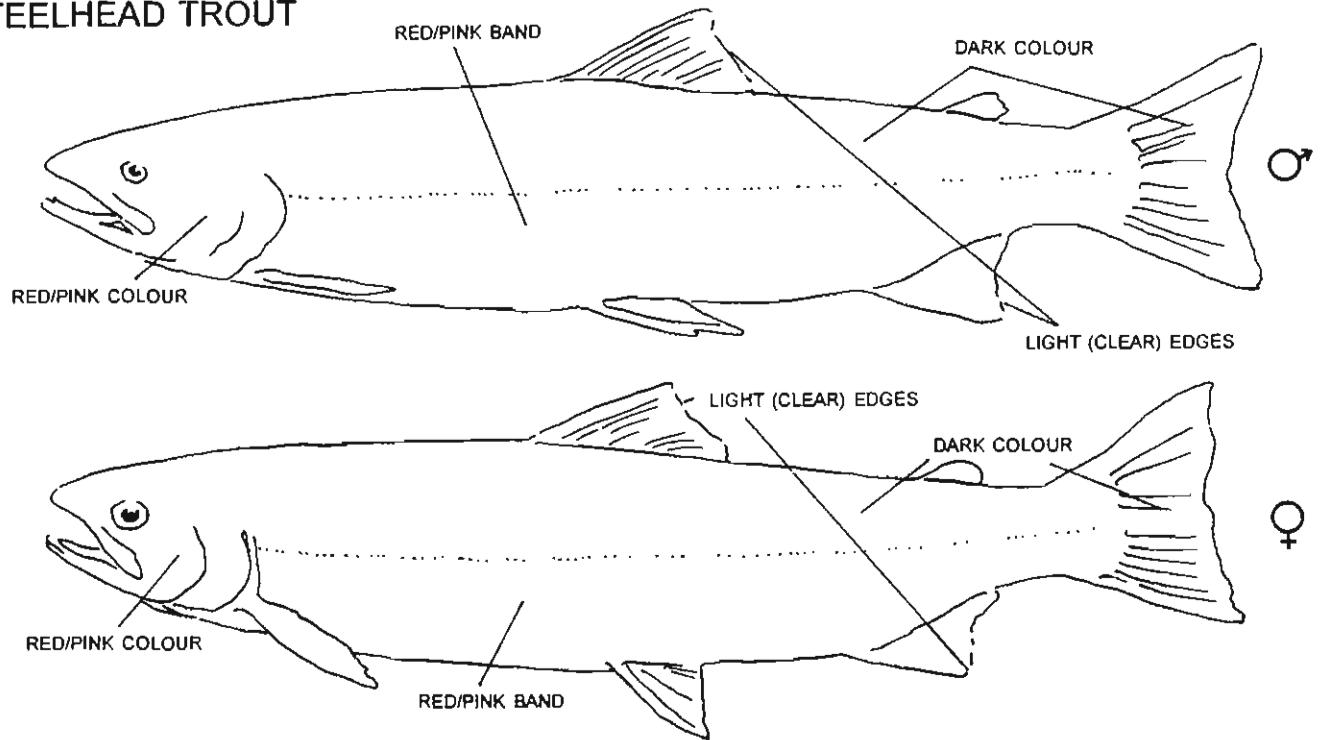
♂



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Plate 3. Spawning characteristics for male and female STEELHEAD TROUT and ATLANTIC SALMON. *Painting by H. Heine and photograph by William Shaw*

STEELHEAD TROUT



ATLANTIC SALMON

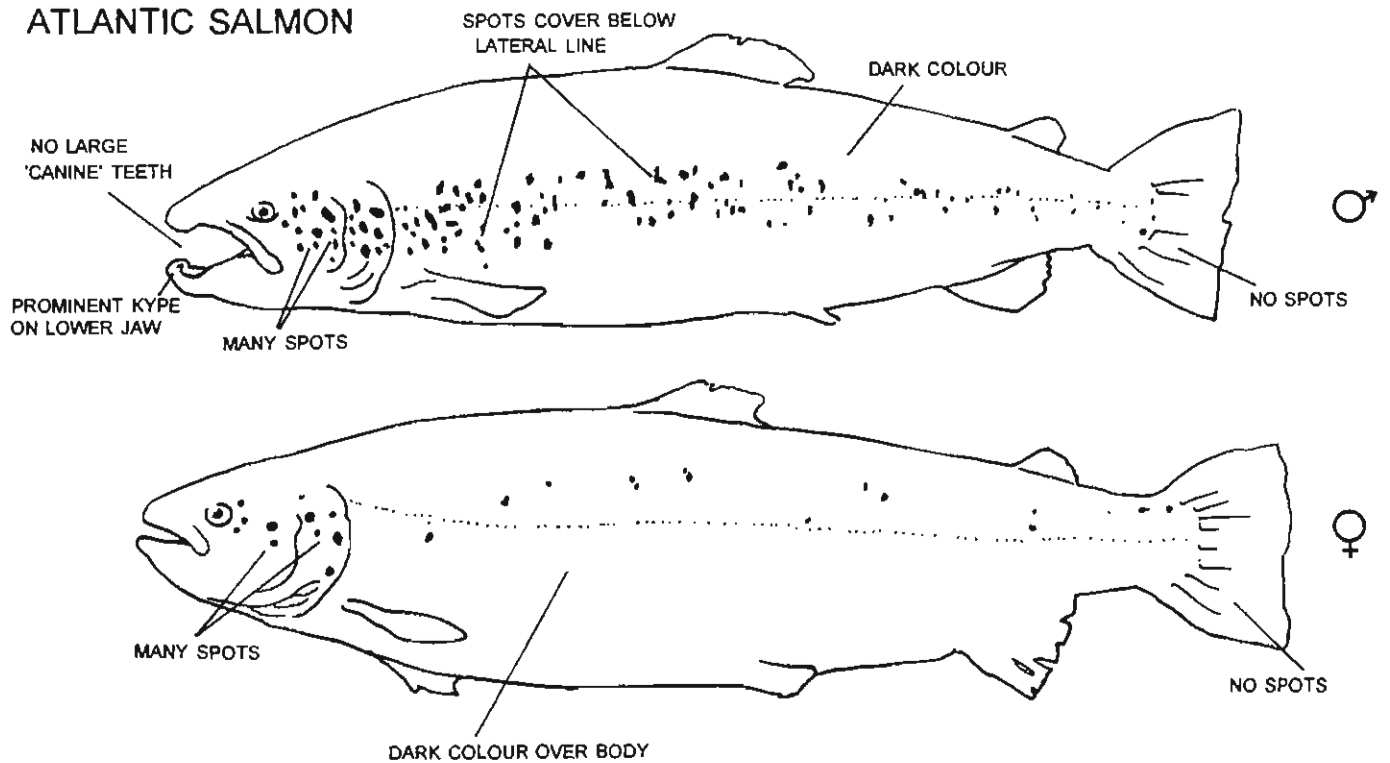
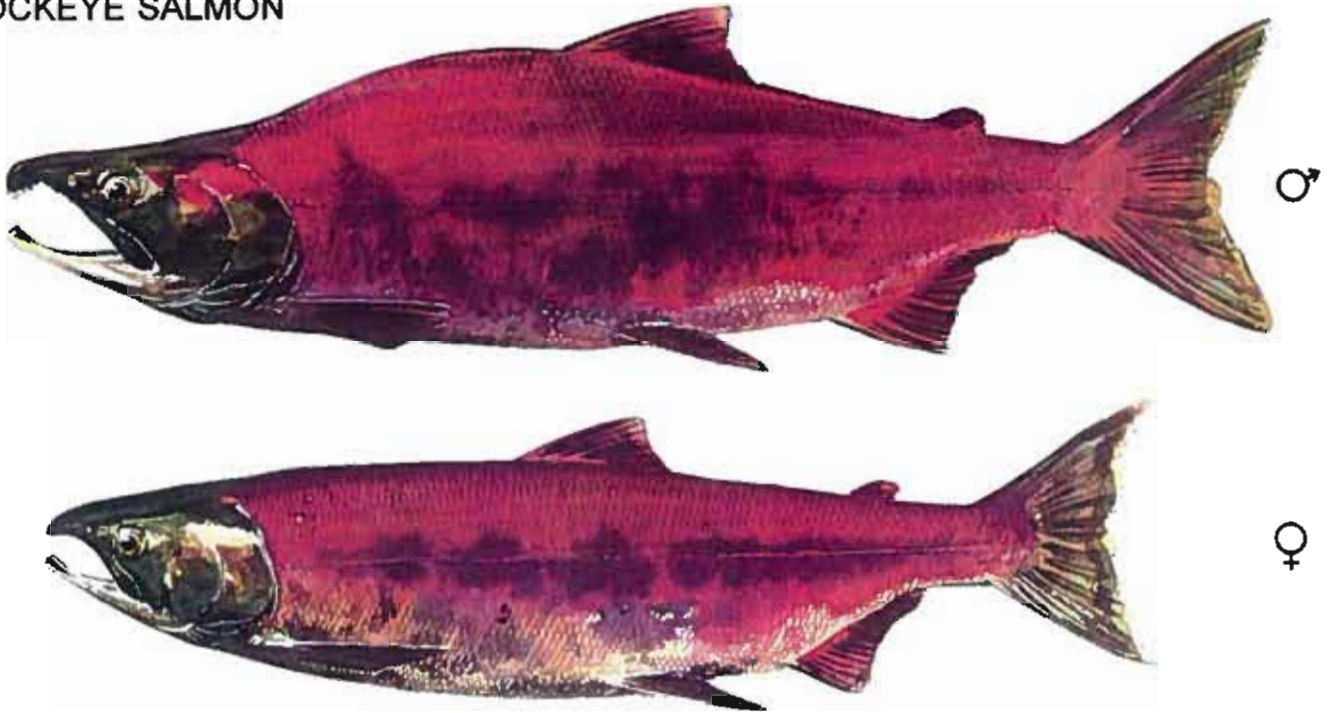


Figure 4. Schematic drawings of male and female STEELHEAD TROUT and ATLANTIC SALMON from Plate 3 displaying important identification characteristics and description.

SOCKEYE SALMON



CHUM SALMON

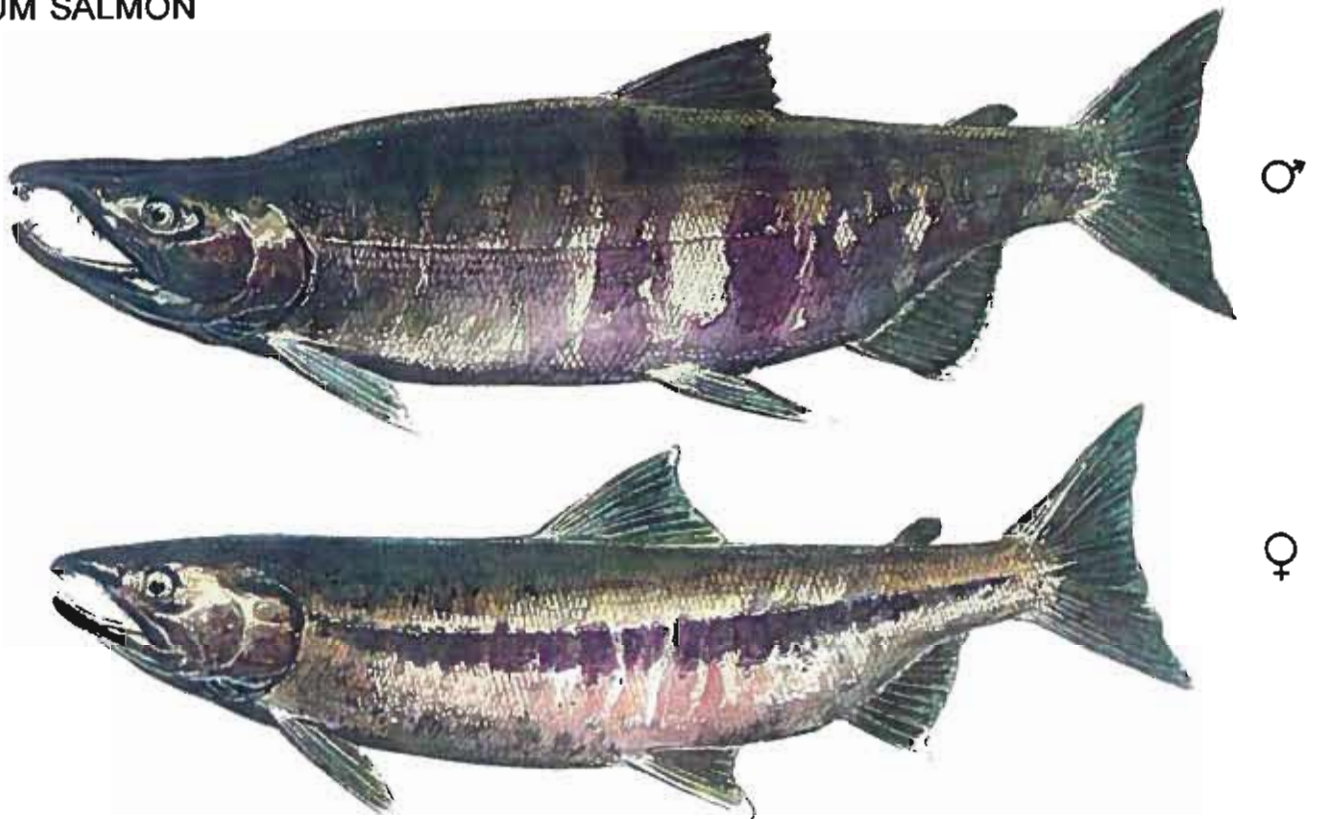
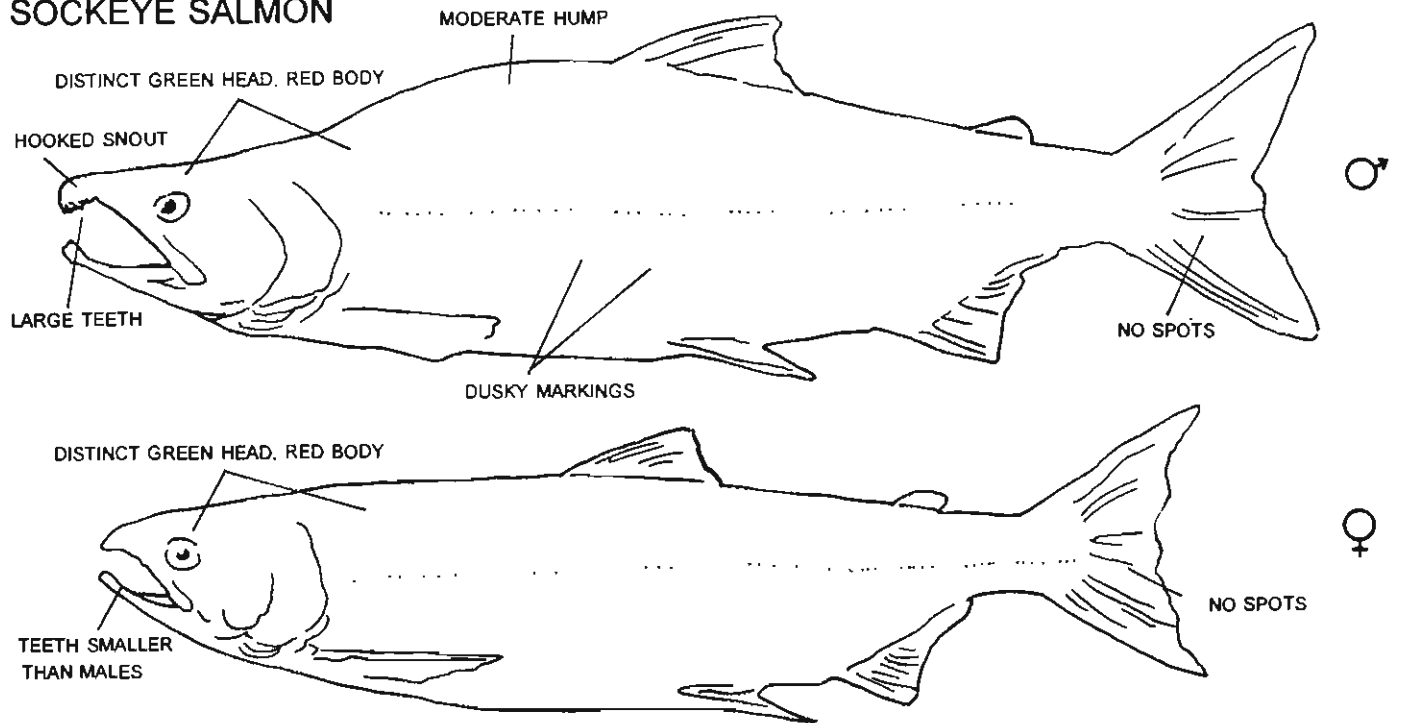


Plate 4. Spawning characteristics for male and female SOCKEYE SALMON and CHUM SALMON.
Paintings by H. Heine

SOCKEYE SALMON



CHUM SALMON

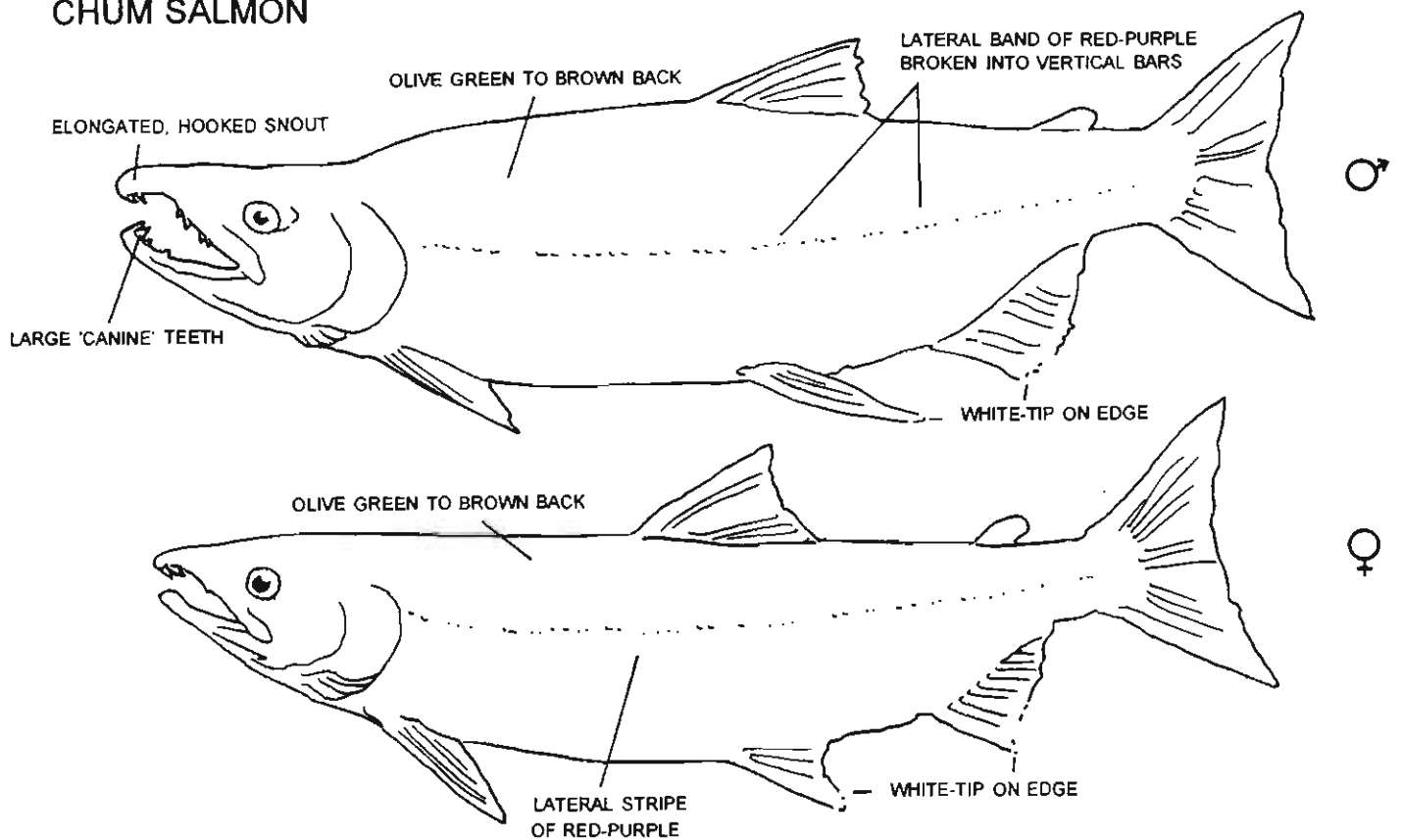


Figure 5. Schematic drawings of male and female SOCKEYE SALMON and CHUM SALMON from Plate 4 displaying important identification characteristics and description.

CHINOOK SALMON



COHO SALMON

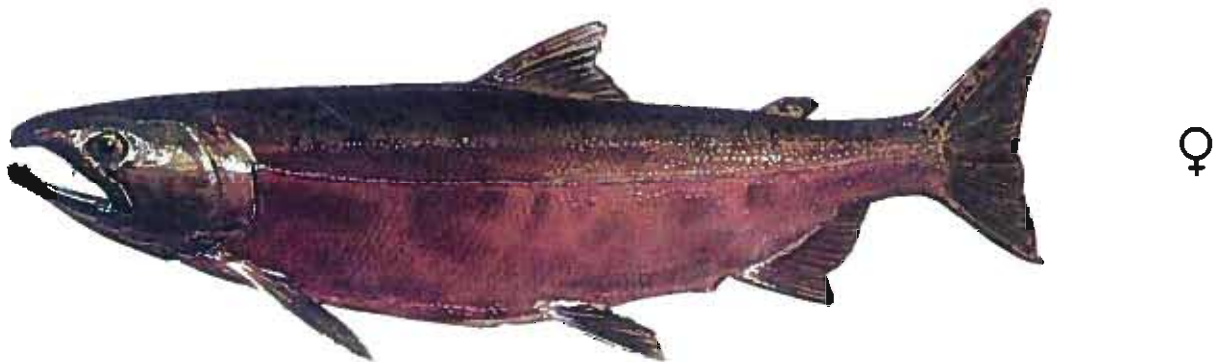
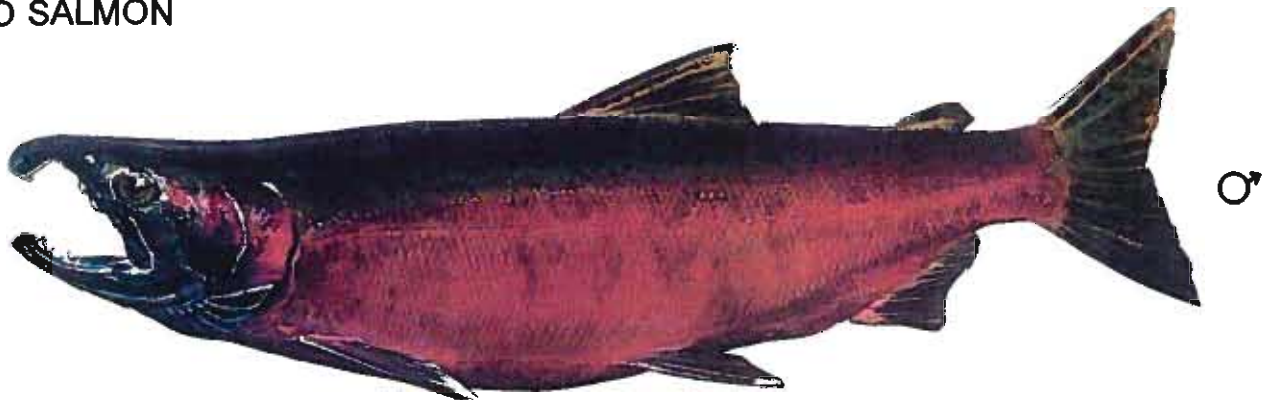
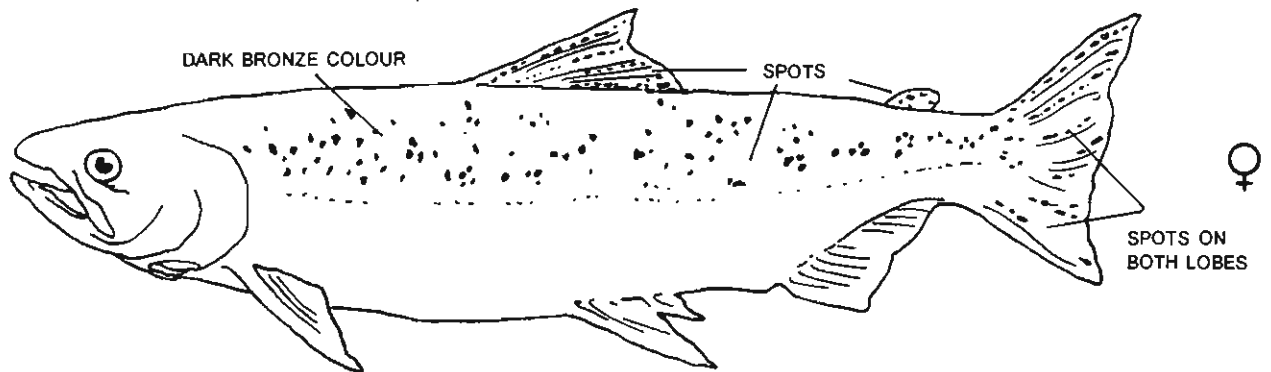
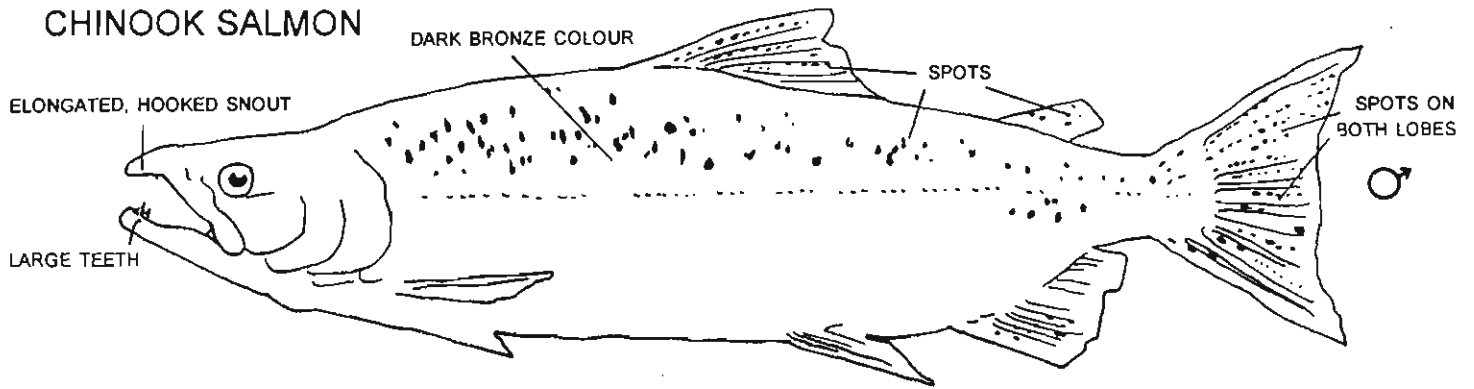


Plate 5. Spawning characteristics for male and female CHINOOK SALMON and COHO SALMON.
Paintings by H. Heine

CHINOOK SALMON



COHO SALMON

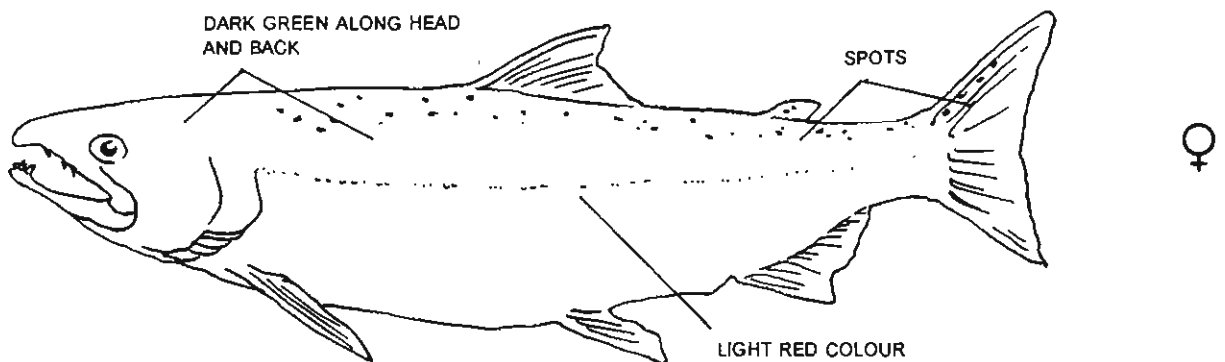
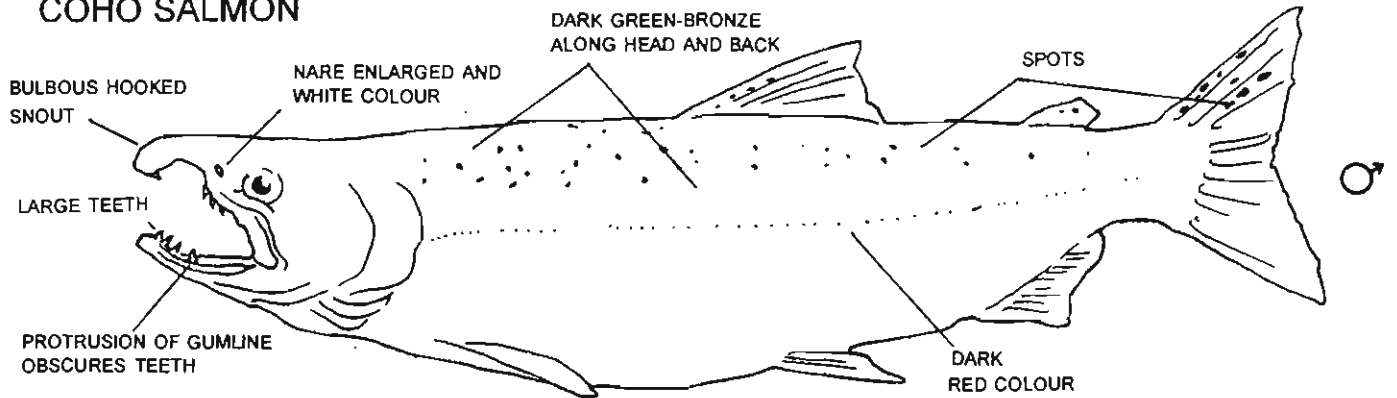


Figure 6. Schematic drawings of male and female CHINOOK SALMON and COHO SALMON from Plate 5 displaying important identification characteristics and description.

PINK SALMON



Plate 6. Spawning characteristics for male and female PINK SALMON. *Painting by H. Heine*

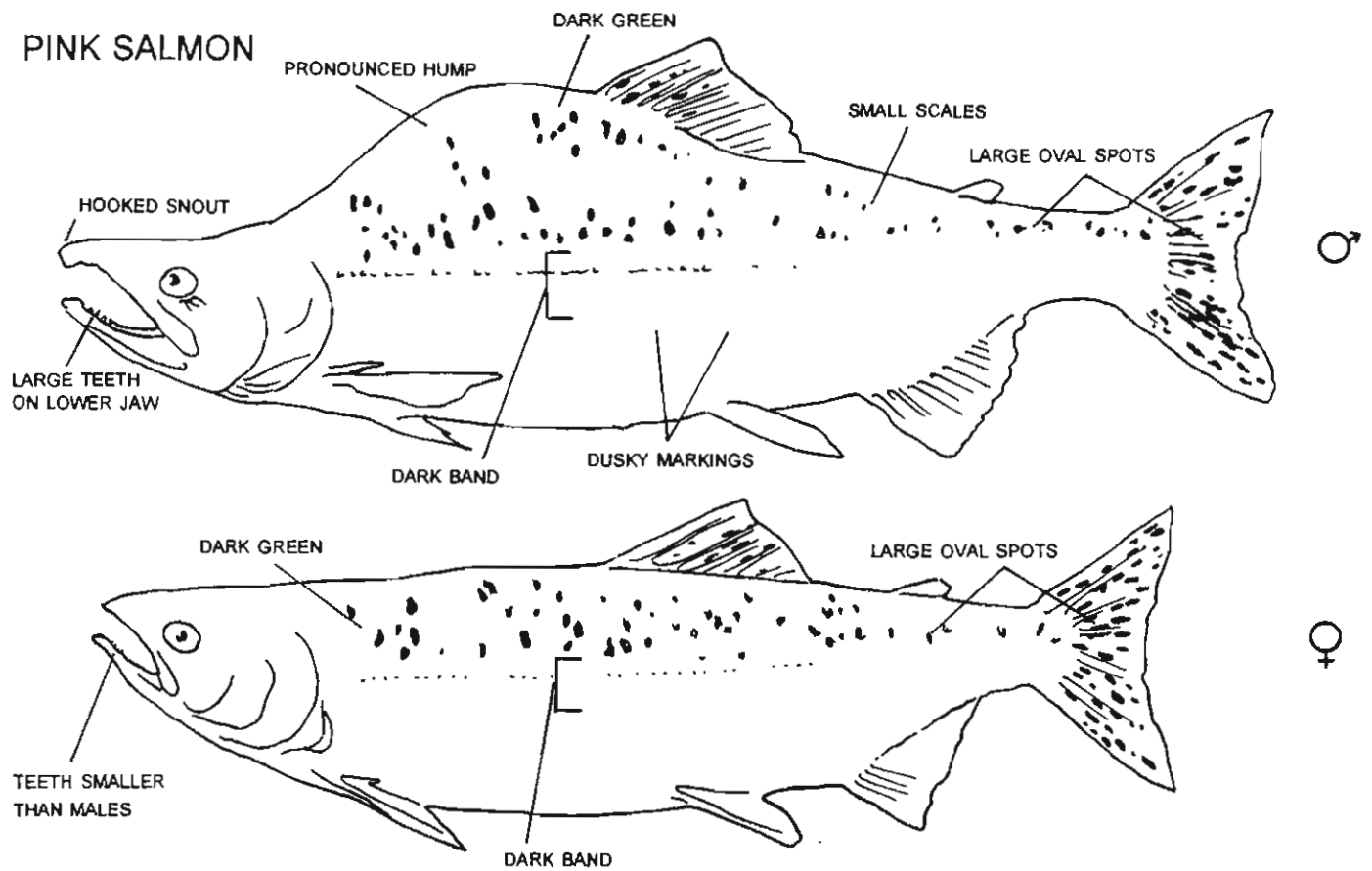
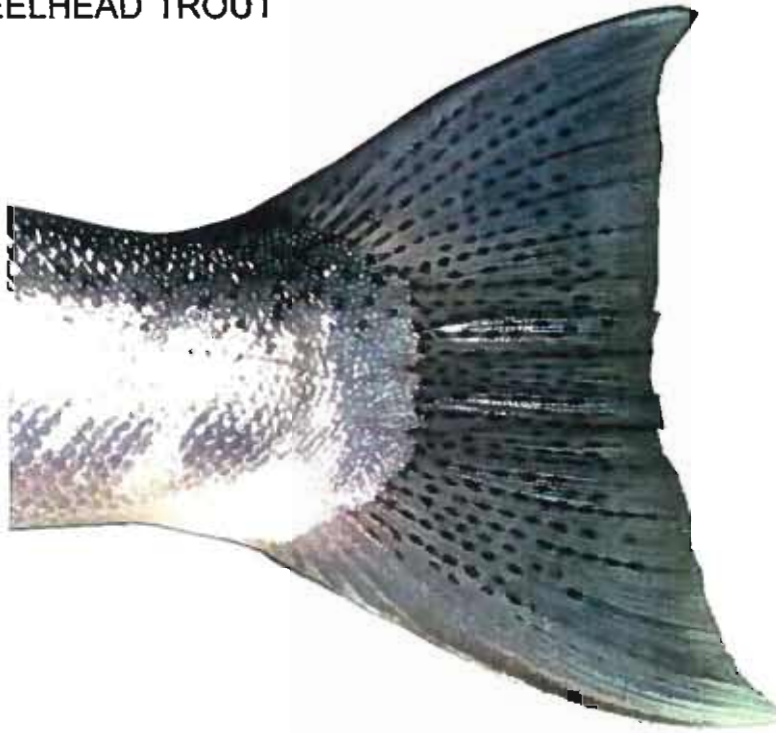


Figure 7. Schematic drawings of male and female PINK SALMON from Plate 6 displaying important identification characteristics and description.

STEELHEAD TROUT

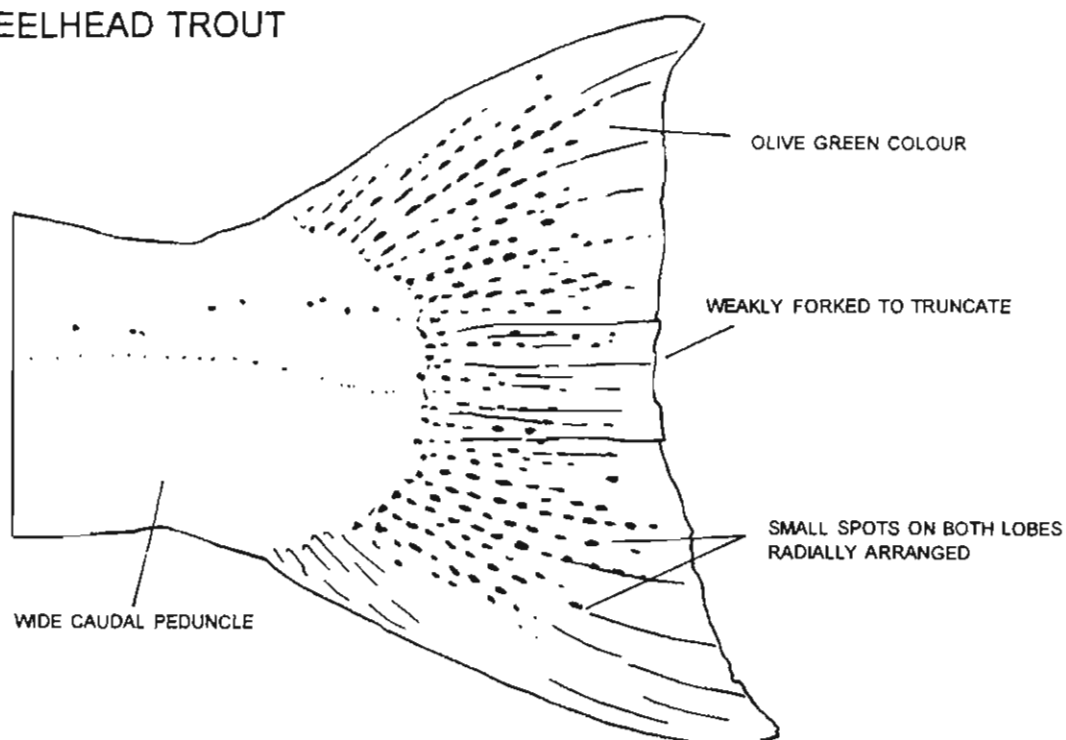


ATLANTIC SALMON



Plate 7. Caudal fins of STEELHEAD TROUT and ATLANTIC SALMON. *Photographs by William Shaw and Tony Pletcher*

STEELHEAD TROUT



ATLANTIC SALMON

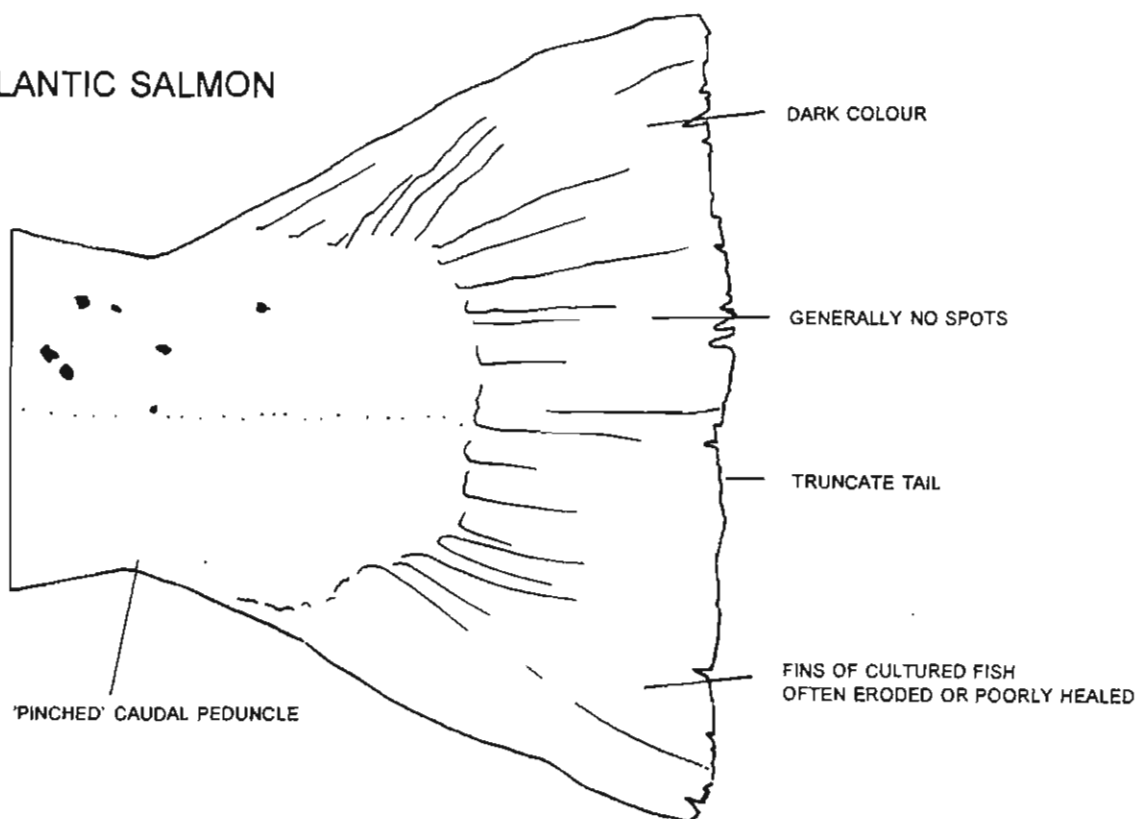


Figure 8. Schematic drawings of the caudal fins of STEELHEAD TROUT and ATLANTIC SALMON from Plate 7 displaying important identification characteristics and description.

SOCKEYE SALMON

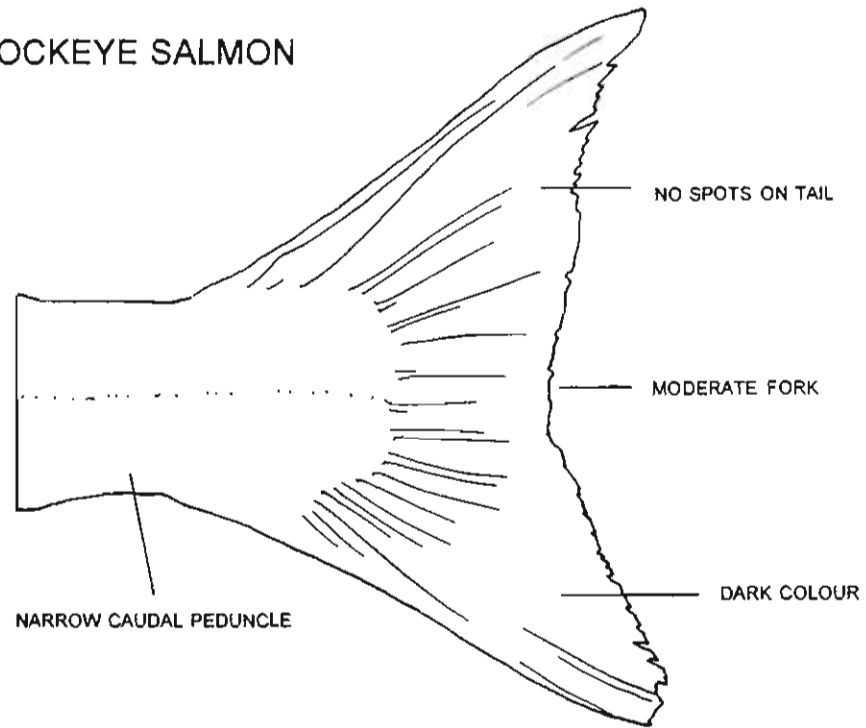


CHUM SALMON



Plate 8. Caudal fins of SOCKEYE SALMON and CHUM SALMON. *Photographs by William Shaw*

SOCKEYE SALMON



CHUM SALMON

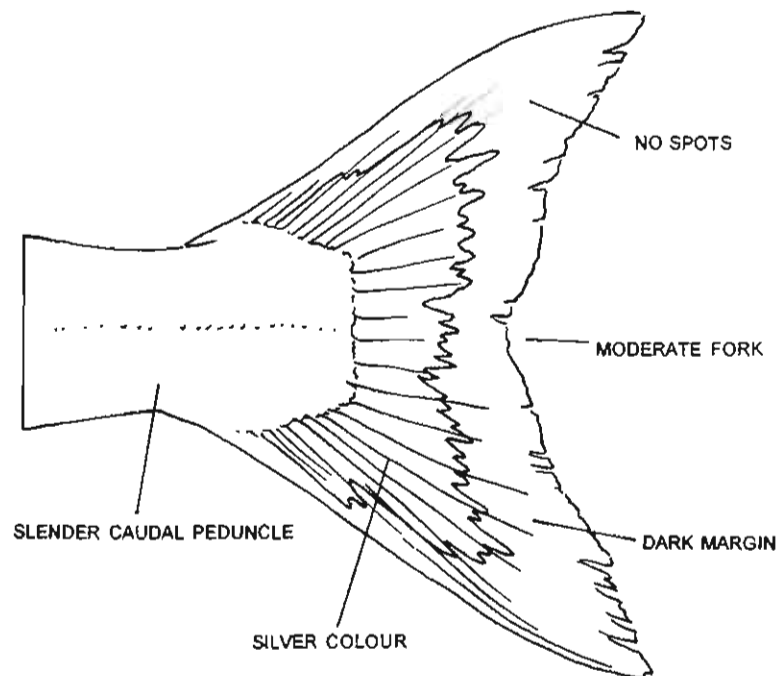
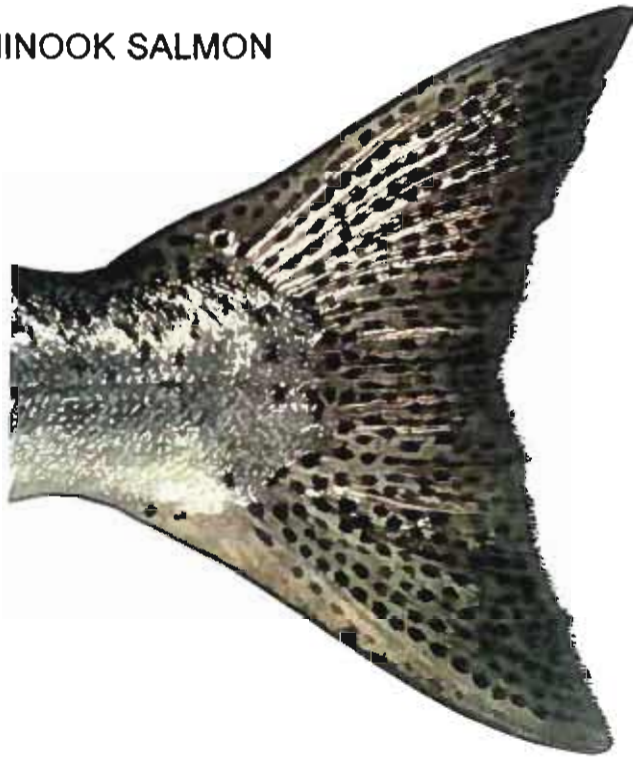


Figure 9. Schematic drawings of the caudal fins of SOCKEYE SALMON and CHUM SALMON from Plate 8 displaying important identification characteristics and description.

CHINOOK SALMON

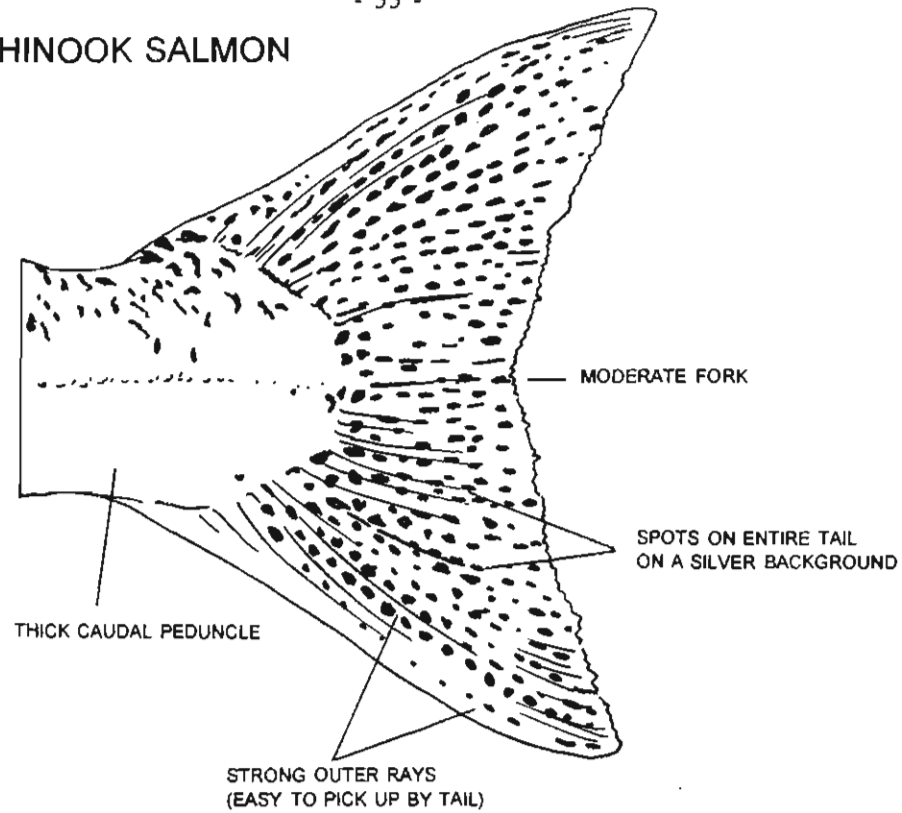


COHO SALMON



Plate 9. Caudal fins of CHINOOK SALMON and COHO SALMON. *Photographs by Tony Pletcher*

CHINOOK SALMON



COHO SALMON

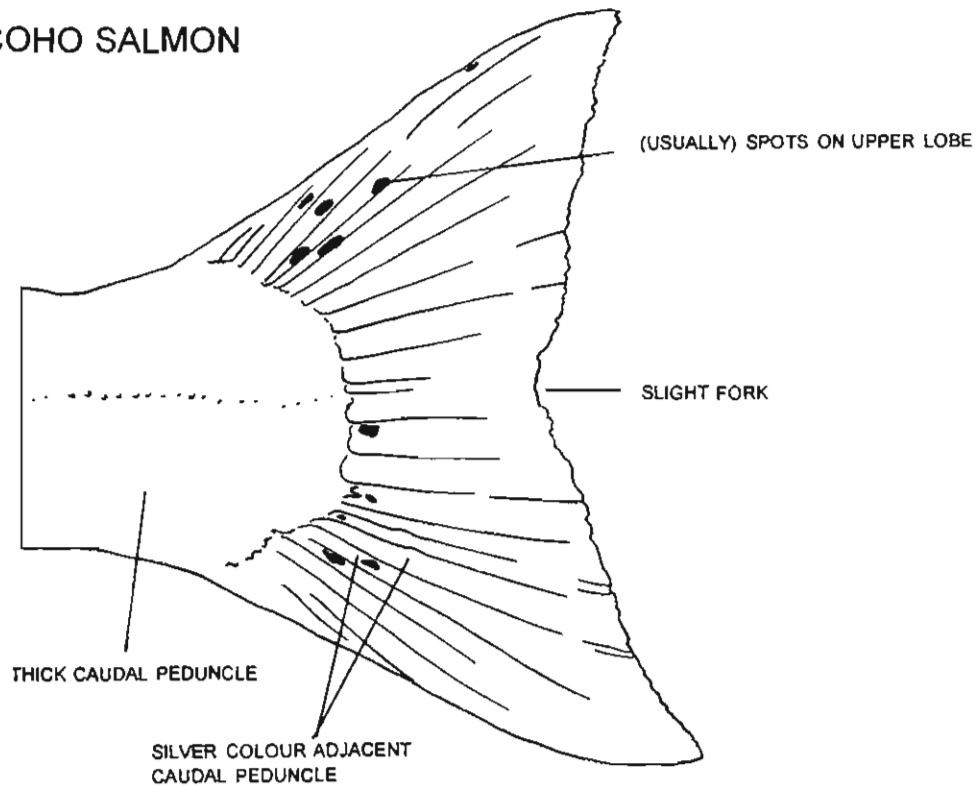


Figure 10. Schematic drawings of the caudal fins of CHINOOK SALMON and COHO SALMON from Plate 9 displaying important identification characteristics and description.

PINK SALMON

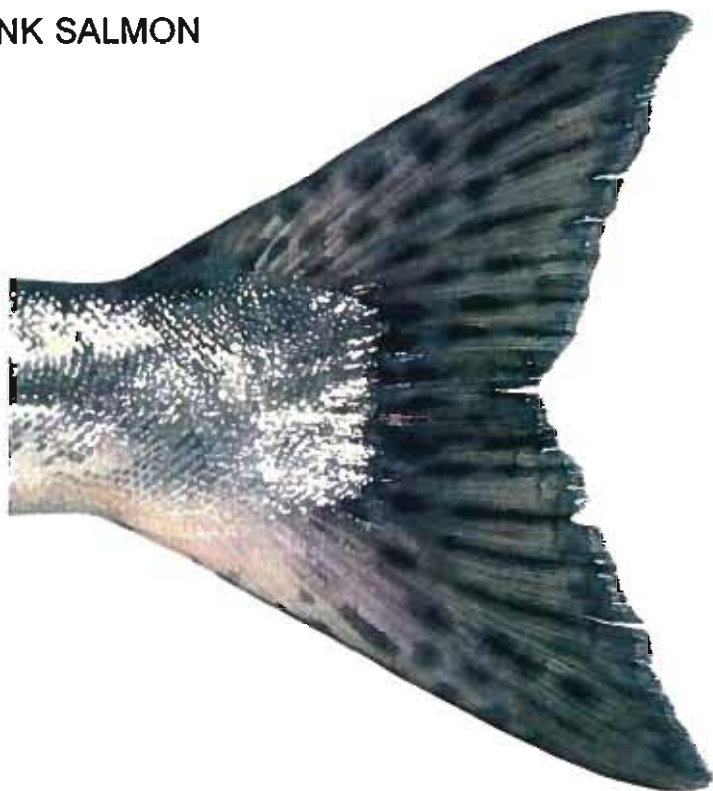


Plate 10. Caudal fin of PINK SALMON. *Photograph by William Shaw*

PINK SALMON

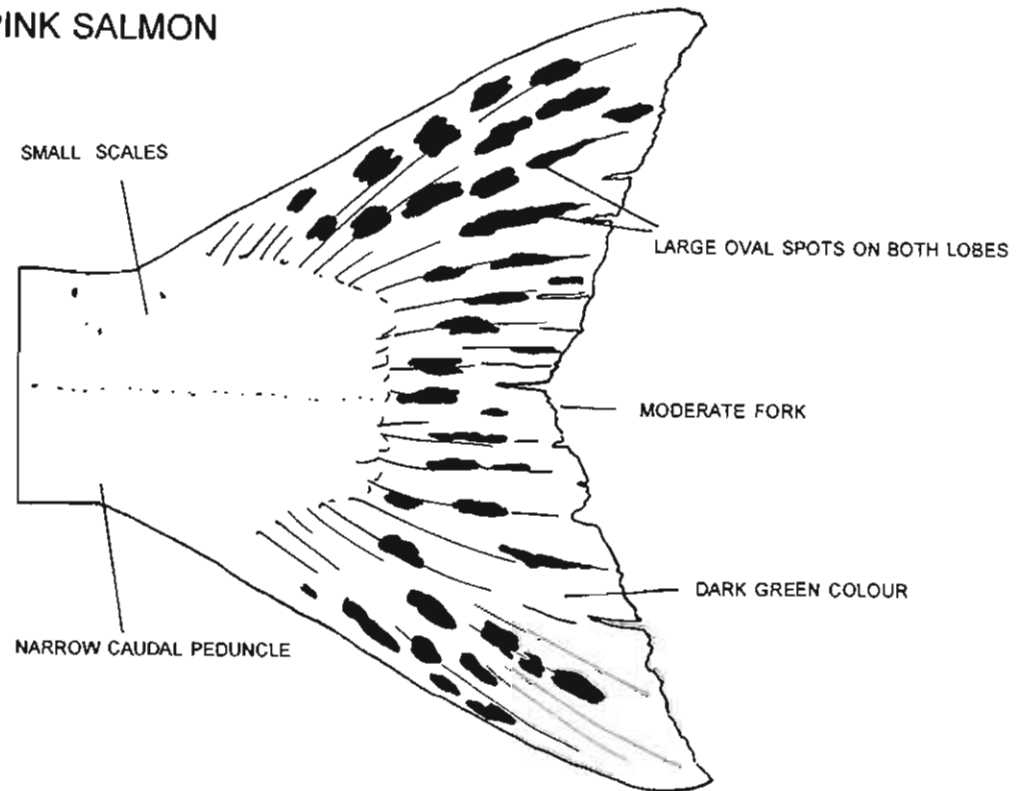


Figure 11. Schematic drawing of the caudal fin of PINK SALMON from Plate 10 displaying important identification characteristics and description.

STEELHEAD TROUT



ATLANTIC SALMON

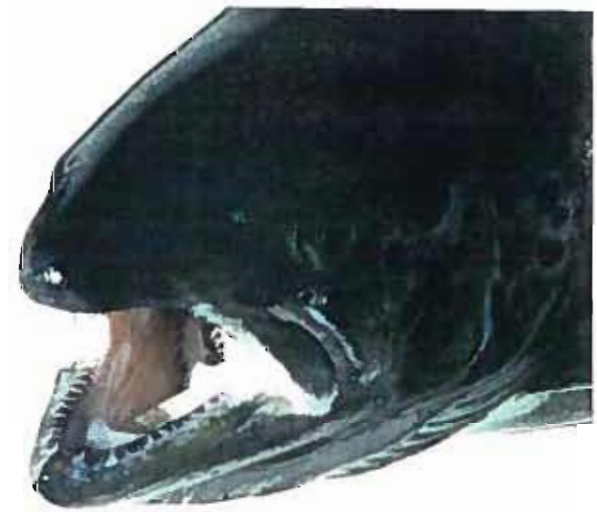
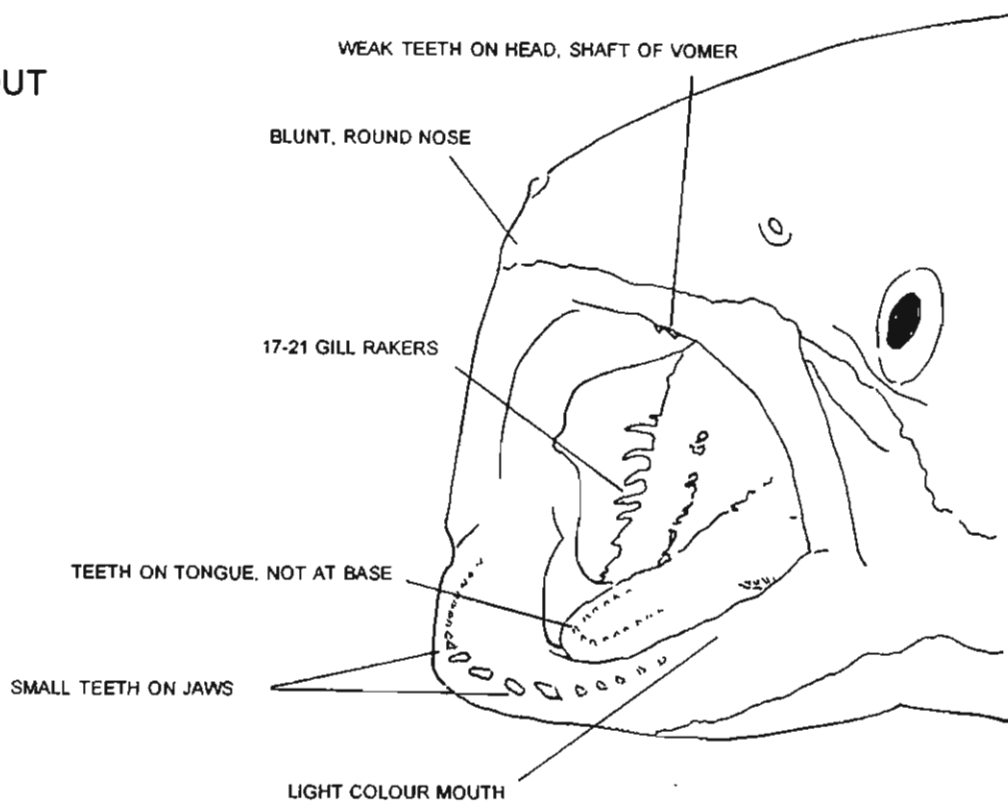


Plate 11. Lower jaws of STEELHEAD TROUT and ATLANTIC SALMON. *Photographs by William Shaw*

STEELHEAD TROUT



ATLANTIC SALMON

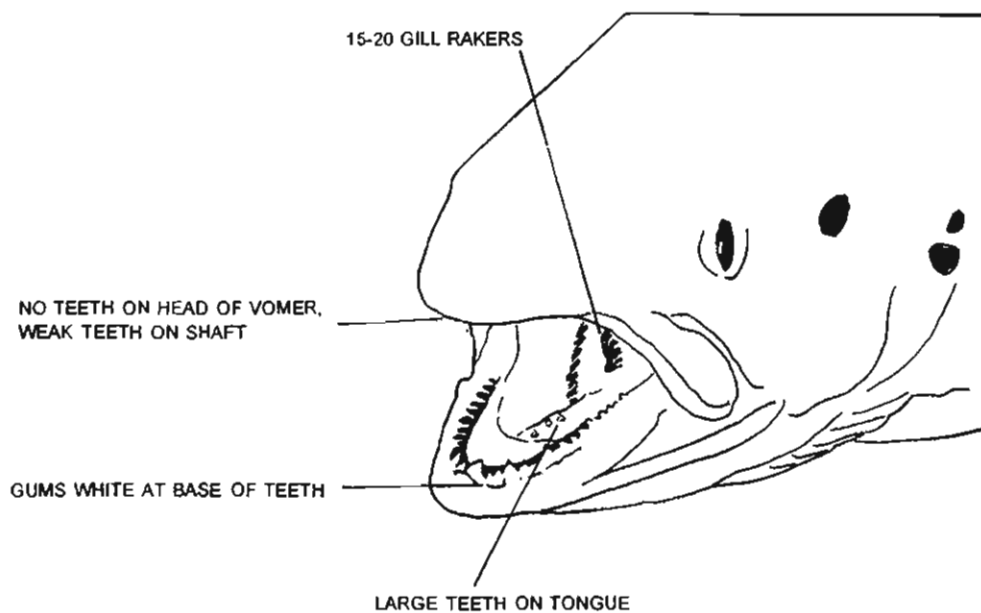


Figure 12. Schematic drawings of the lower jaws of STEELHEAD TROUT and ATLANTIC SALMON from Plate 11 displaying important identification characteristics and description.

SOCKEYE SALMON

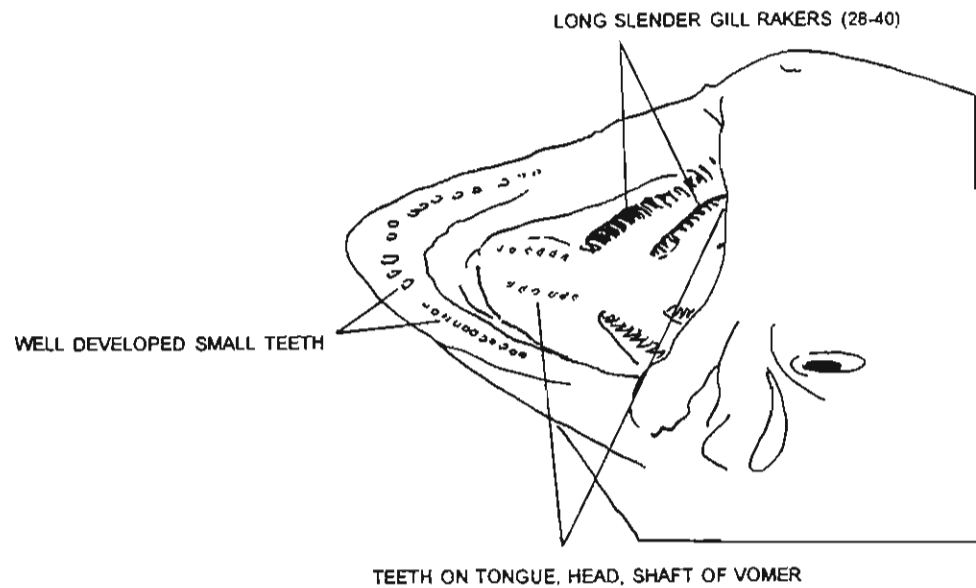


CHUM SALMON



Plate 12. Lower jaws of SOCKEYE SALMON and CHUM SALMON. *Photographs by William Shaw and Tony Pletcher*

SOCKEYE SALMON



CHUM SALMON

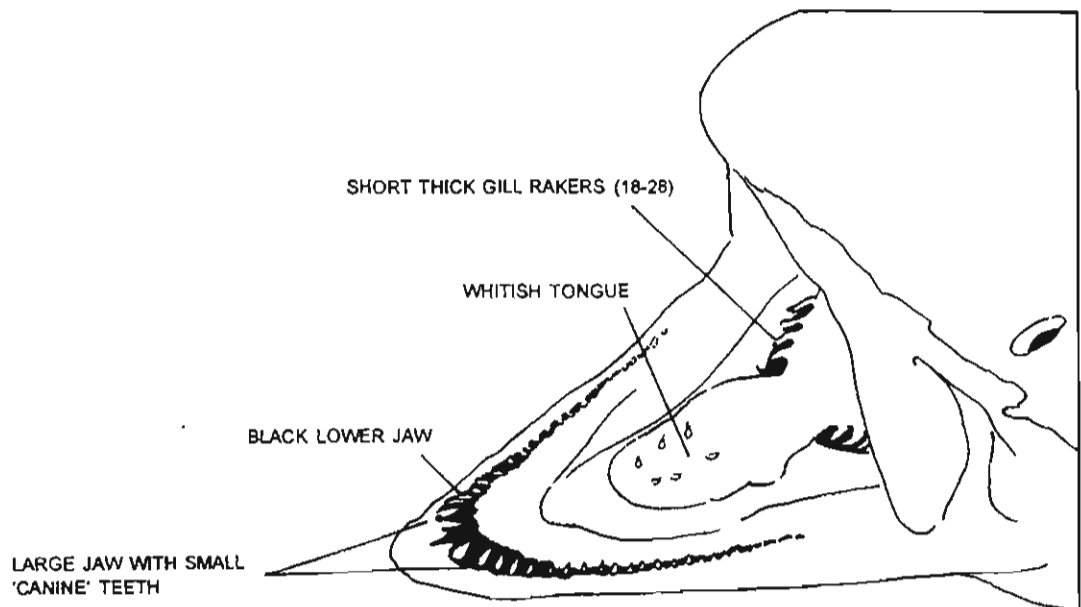


Figure 13. Schematic drawings of the lower jaws of SOCKEYE SALMON and CHUM SALMON from Plate 12 displaying important identification characteristics and description.

CHINOOK SALMON

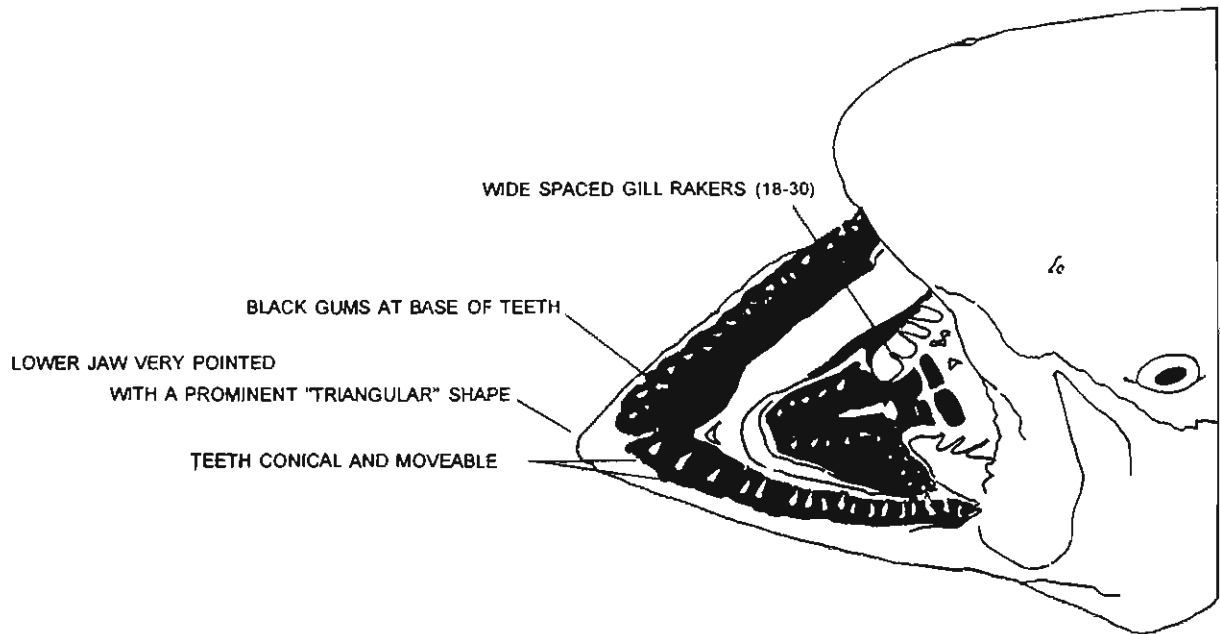


COHO SALMON



Plate 13. Lower jaws of CHINOOK SALMON and COHO SALMON. *Photographs by William Shaw and Tony Pletcher*

CHINOOK SALMON



COHO SALMON

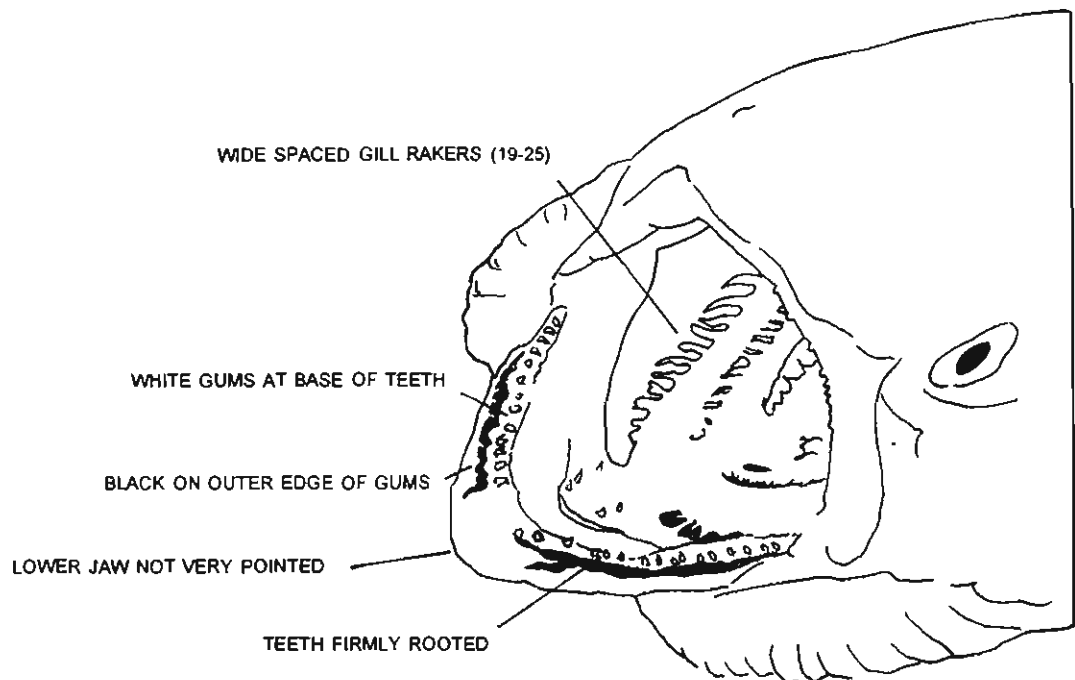


Figure 14. Schematic drawings of the lower jaws of CHINOOK SALMON and COHO SALMON from Plate 13 displaying important identification characteristics and description.

PINK SALMON



Plate 14. Lower jaw of PINK SALMON. *Photograph by William Shaw*

PINK SALMON

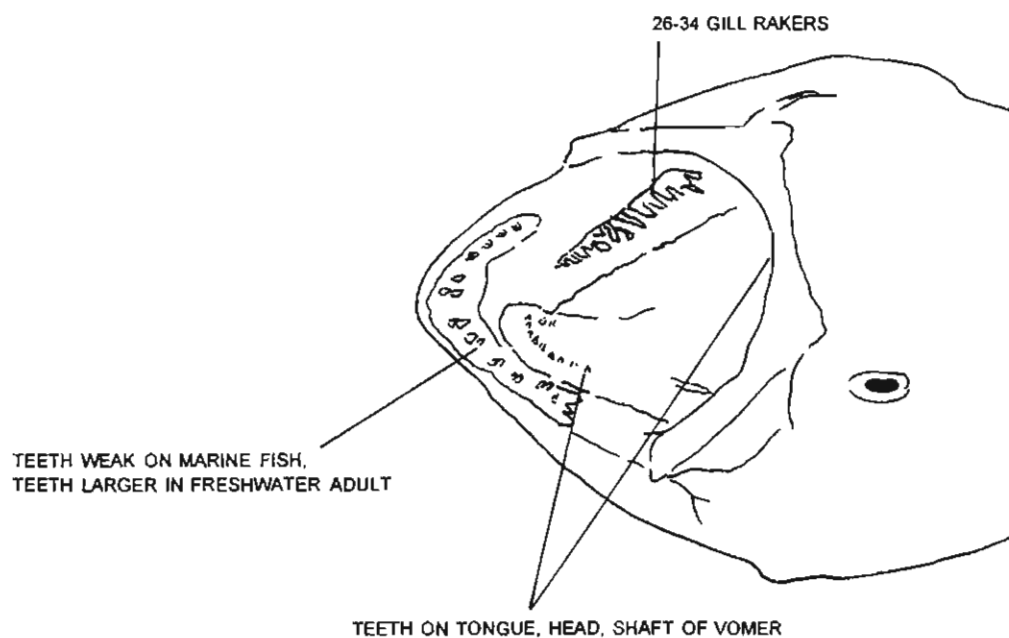


Figure 15. Schematic drawing of the lower jaw of PINK SALMON from Plate 14 displaying important identification characteristics and description.

STEELHEAD TROUT

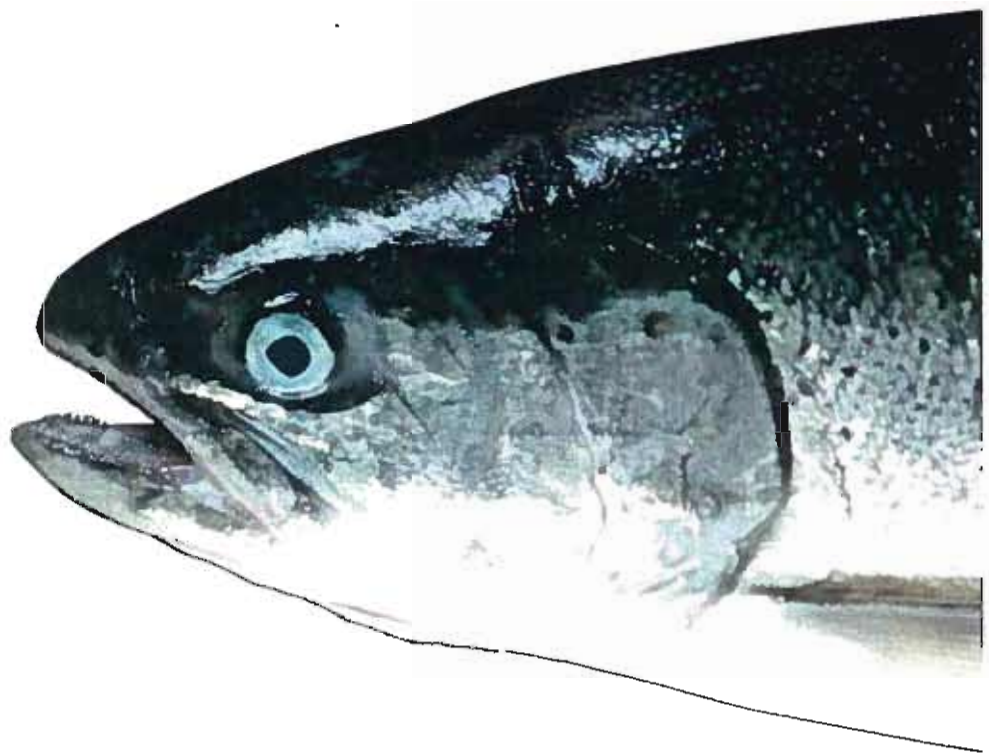


Plate 15. Side view of a STEELHEAD TROUT head. *Photograph by William Shaw*

STEELHEAD TROUT

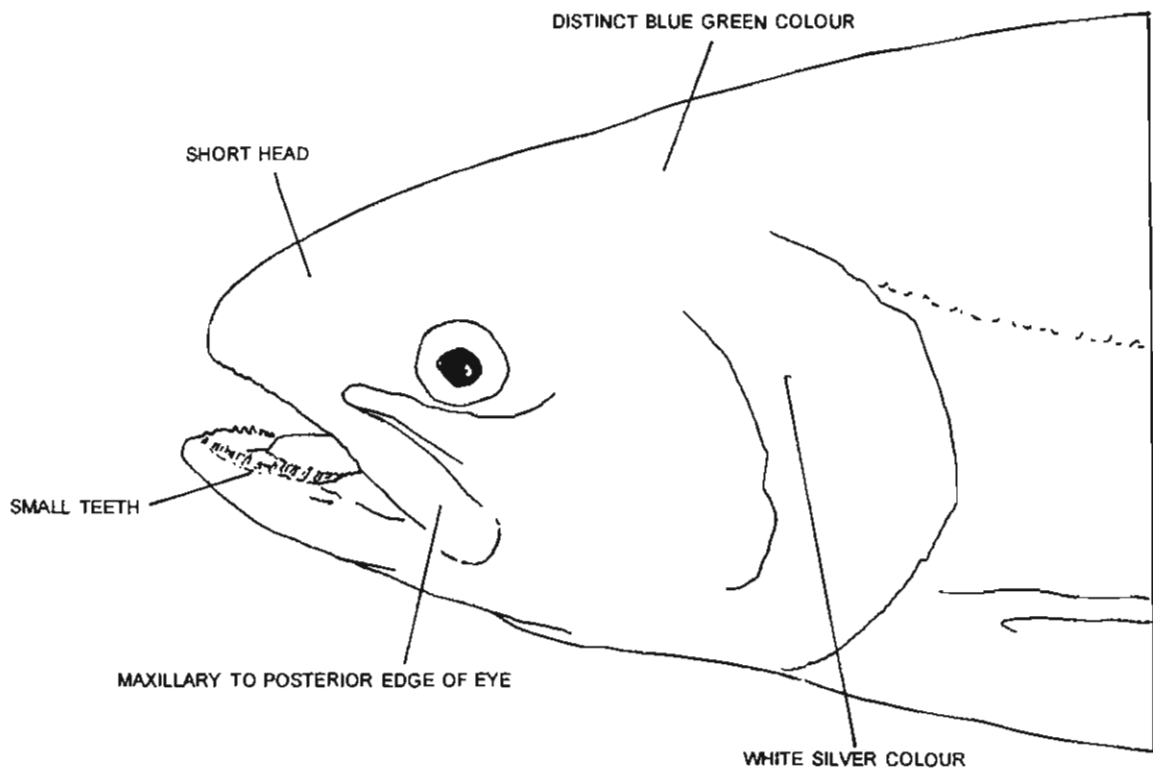


Figure 16. Schematic drawing of the head of STEELHEAD TROUT from Plate 15 displaying important identification characteristics and description.

ATLANTIC SALMON
PRE-SPAWN STAGE



SPAWN STAGE

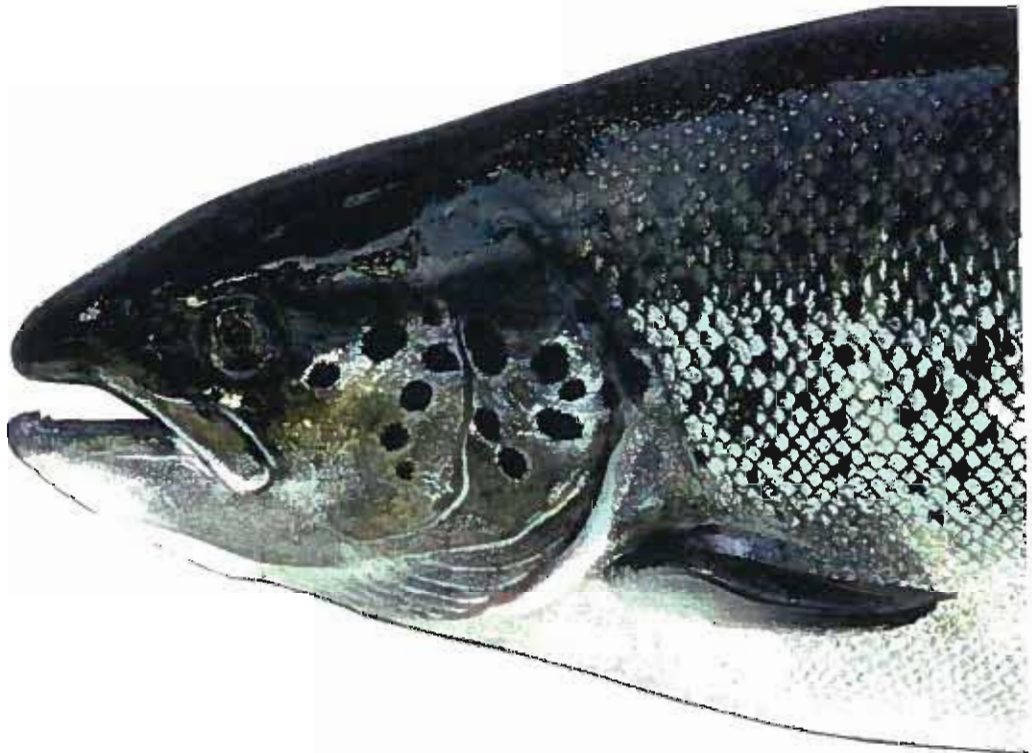
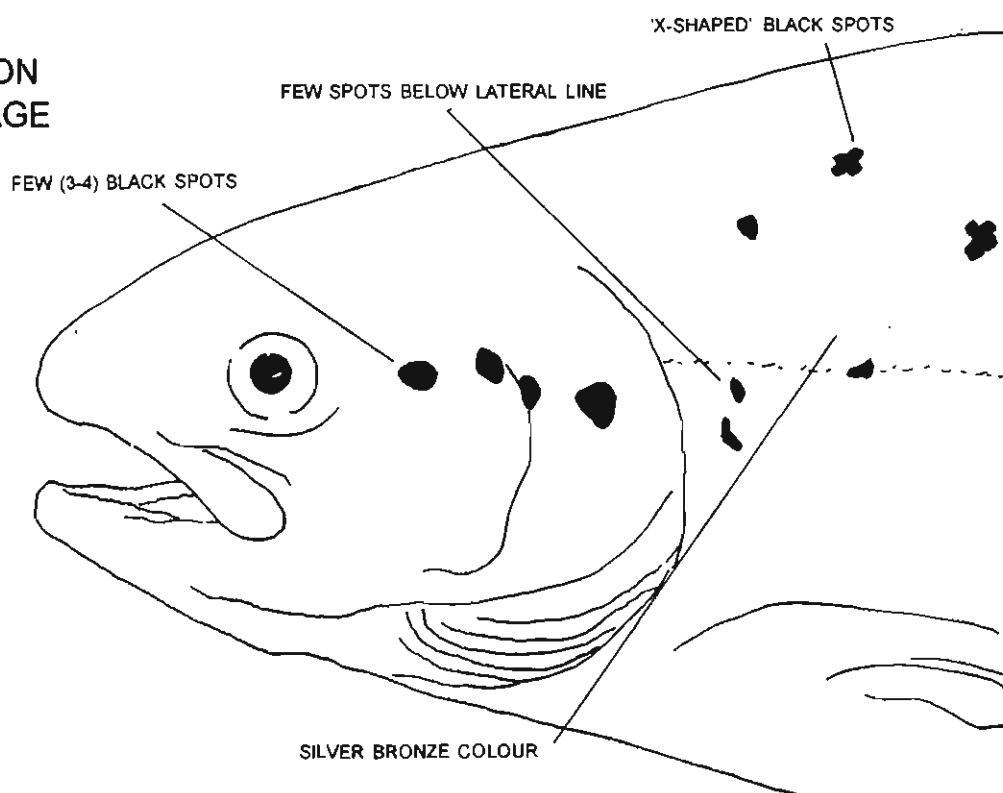


Plate 16. Side view of ATLANTIC SALMON heads indicating pre-spawning and spawning characteristics. *Photographs by William Shaw*

ATLANTIC SALMON PRE-SPAWN STAGE



SPAWN STAGE

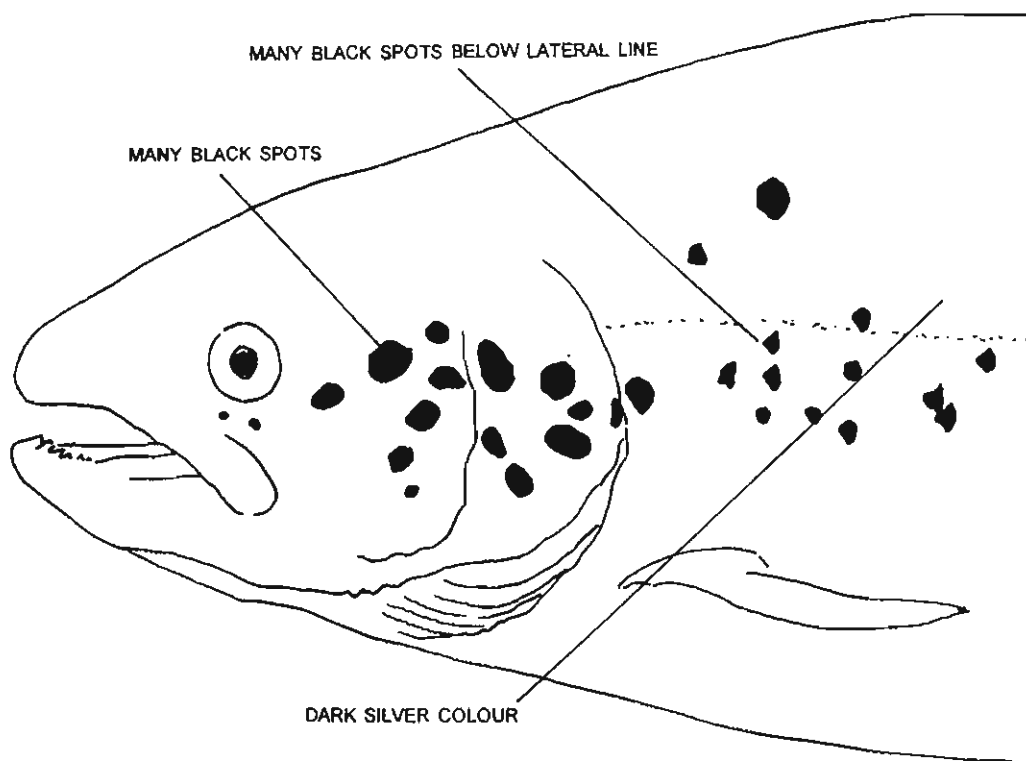


Figure 17. Schematic drawings of heads of ATLANTIC SALMON from Plate 16 displaying important identification characteristics and description.

SOCKEYE SALMON



CHUM SALMON

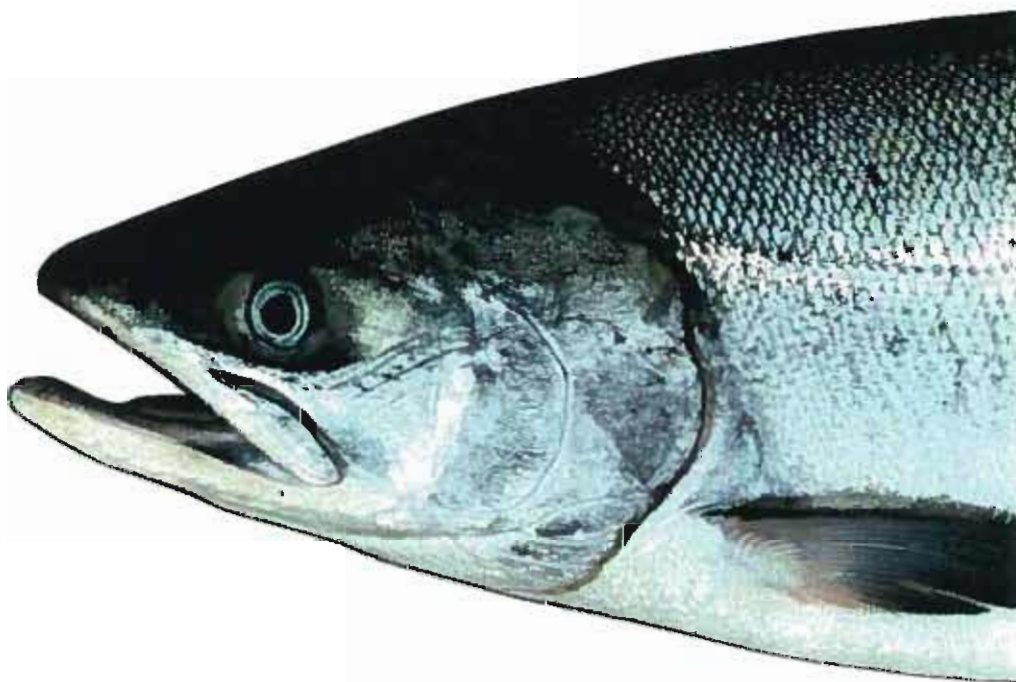
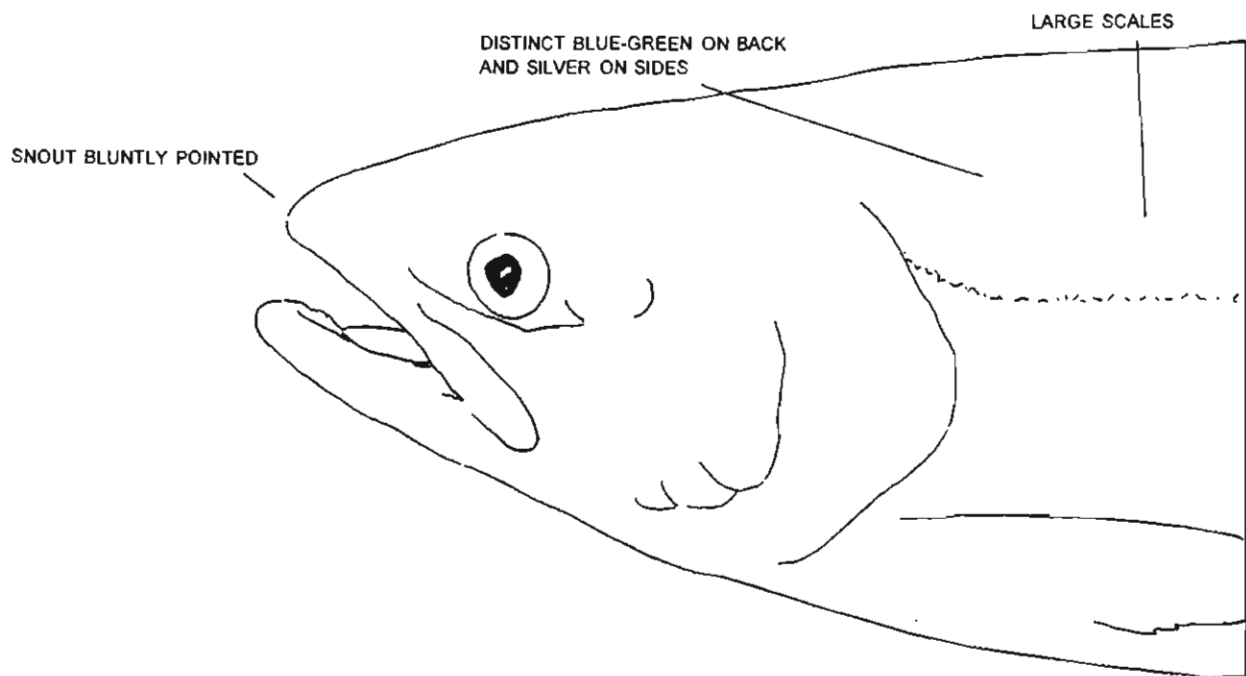


Plate 17. Side view of SOCKEYE SALMON and CHUM SALMON heads. *Photographs by William Shaw*

SOCKEYE SALMON



CHUM SALMON

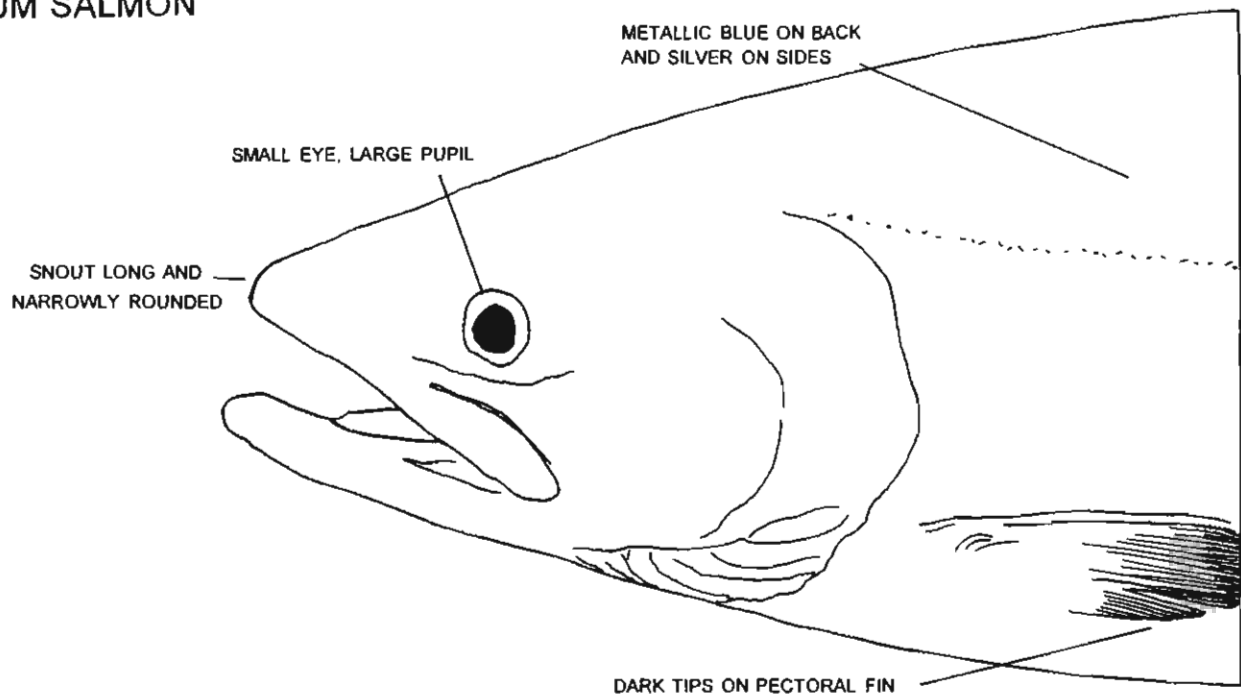
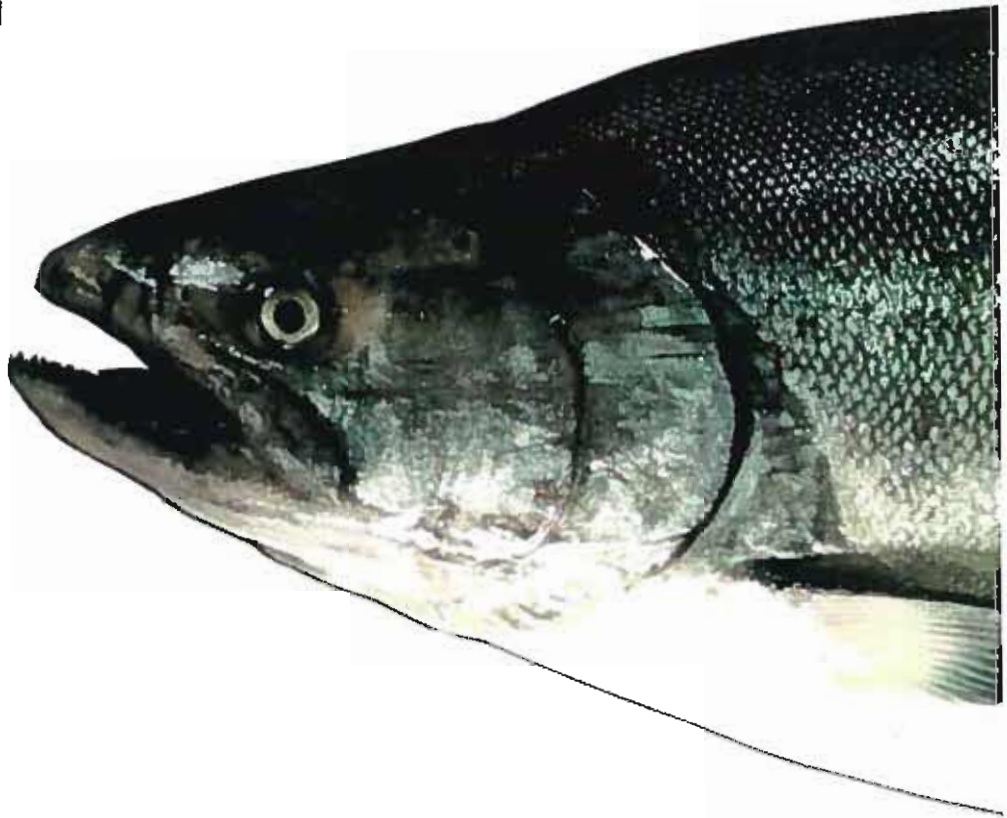


Figure 18. Schematic drawings of heads of SOCKEYE SALMON and CHUM SALMON from Plate 17 displaying important identification characteristics and description.

CHINOOK SALMON



COHO SALMON

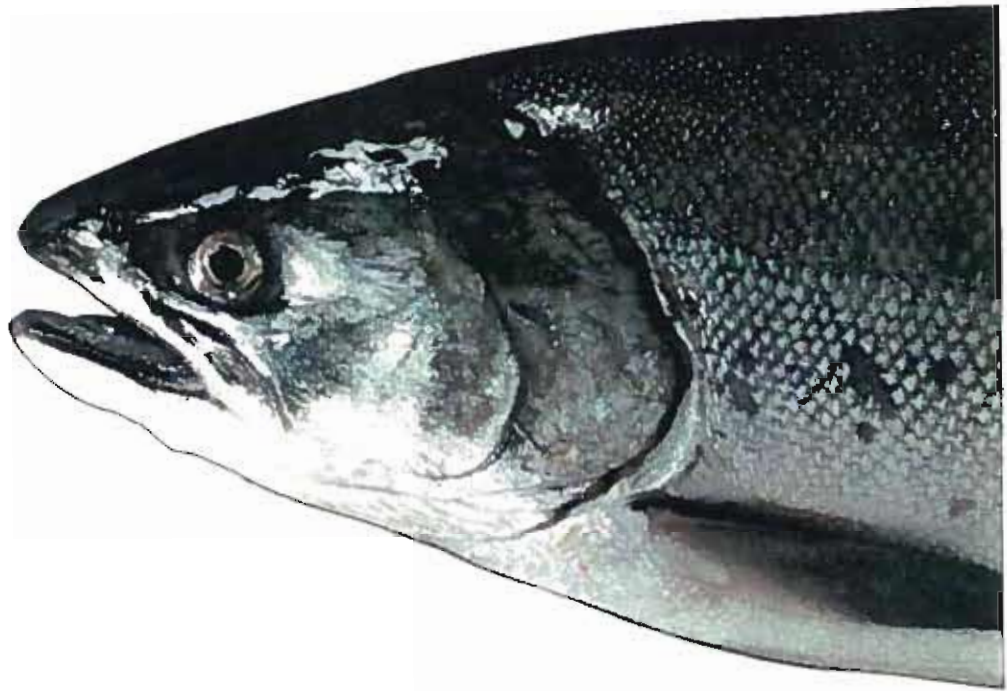
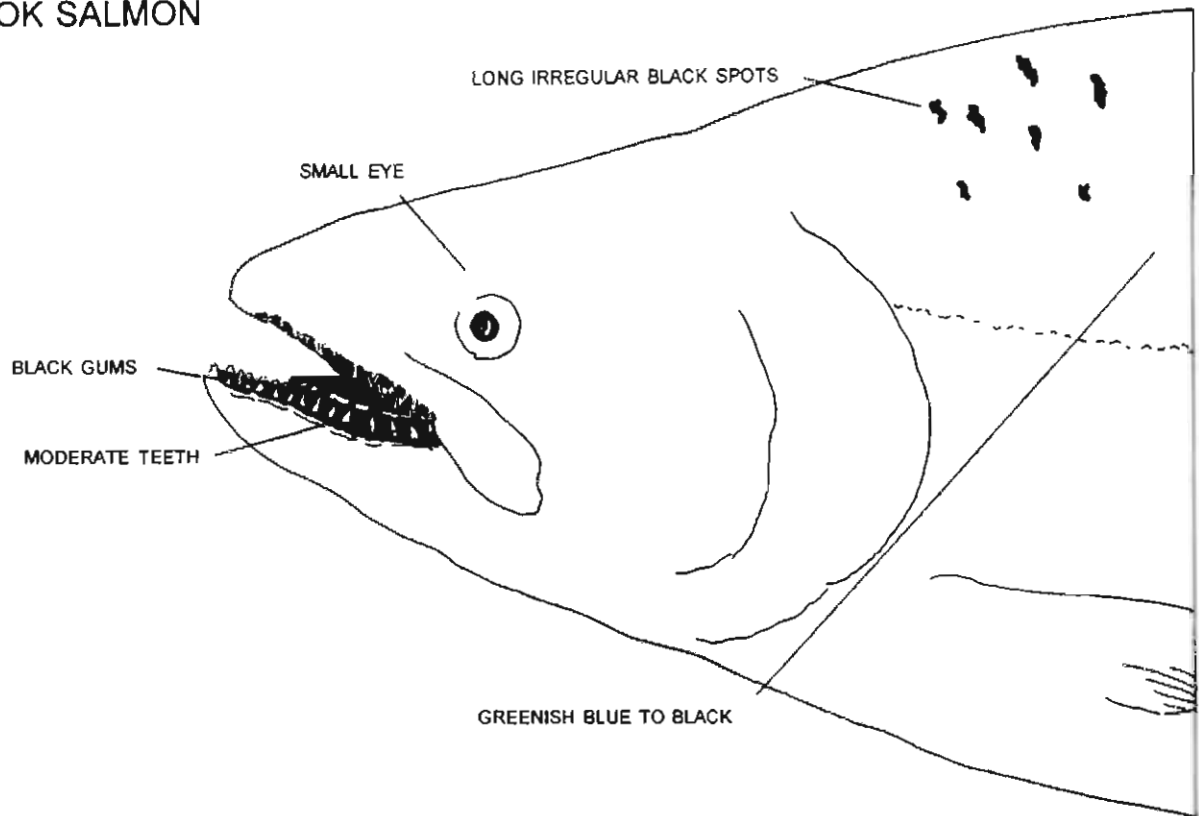


Plate 18. Side view of CHINOOK SALMON and COHO SALMON heads. *Photographs by William Shaw*

CHINOOK SALMON



COHO SALMON

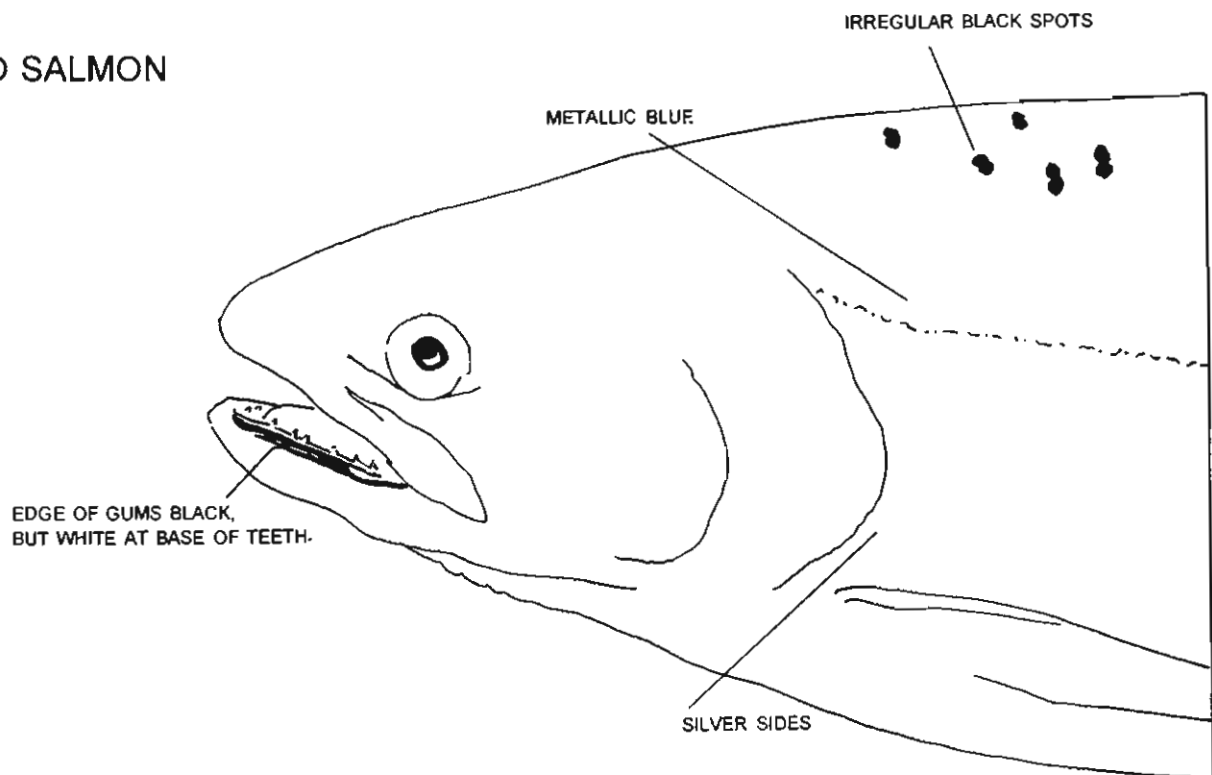


Figure 19. Schematic drawings of heads of CHINOOK SALMON and COHO SALMON from Plate 18 displaying important identification characteristics and description.

PINK SALMON

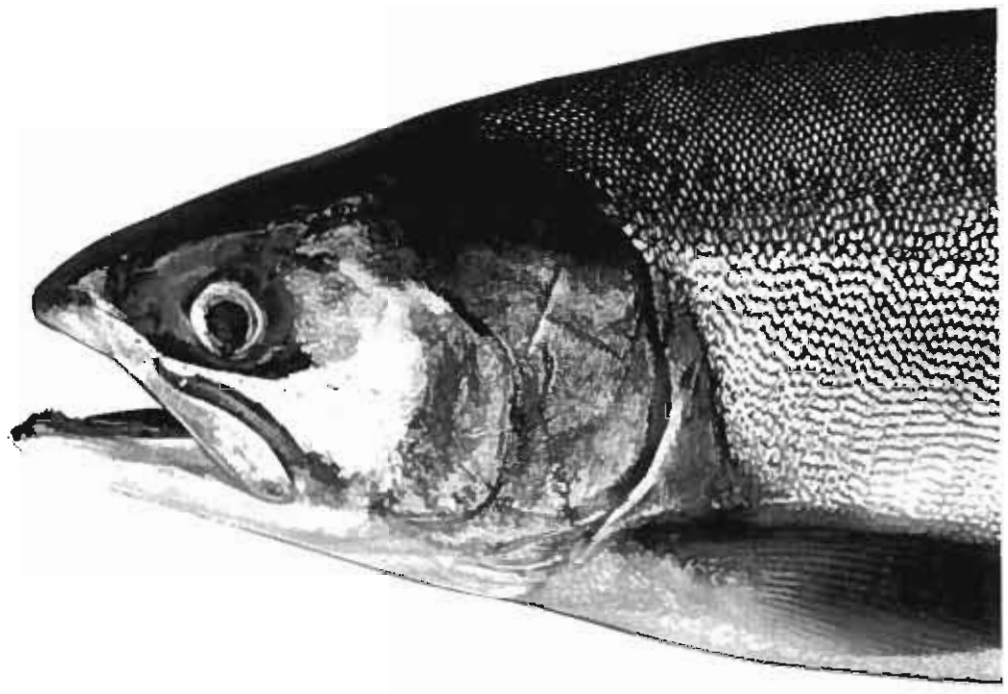


Plate 19. Side view of a PINK SALMON head. *Photograph by William Shaw*

PINK SALMON

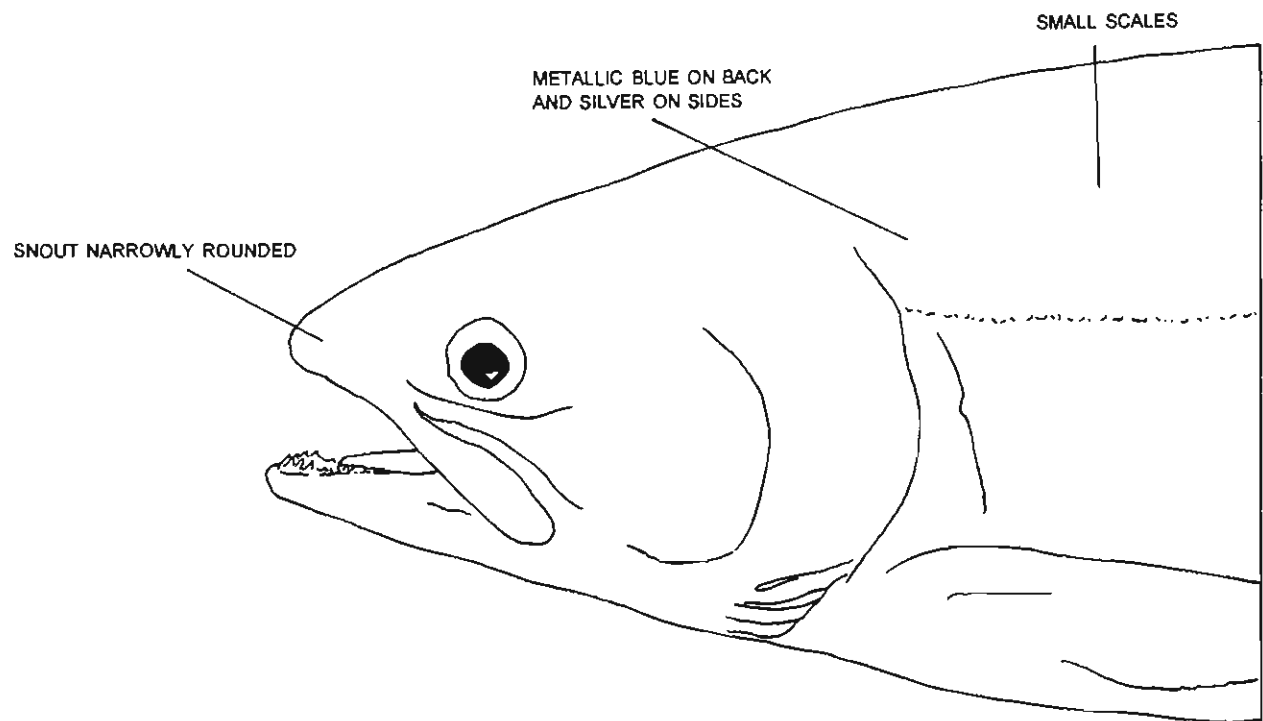


Figure 20. Schematic drawing of the head of PINK SALMON from Plate 19 displaying important identification characteristics and description.

CHAPTER 2 - SAMPLING

The sampling activities associated with collecting a biological sample are partitioned into CAPTURE, SAMPLING AND BIOLOGICAL events. In this chapter there are a total of 48 sampling activities or "attributes". These attributes are essential to many DFO biological databases. They address the type of data that can be collected from any fishery, either from the marine or freshwater environment.

The **CAPTURE EVENT** consists of 10 possible attributes that describe how, where and when the sample of fish was caught. Some of these attributes are related to the marine environment, such as vessel name from research surveys or commercial fisheries. The location attributes distinguish between marine and freshwater, such as the rabcode attribute and site code for the freshwater watershed systems. Accurate locations can be obtained by latitude and longitude data from which catch region, statistical area, and sub-area can be derived. The date of capture can be used to determine the statistical week.

The **SAMPLING EVENT** consists of 6 possible attributes that describe who sampled, where, and when the sampling occurred. Also, it addresses the type of sample collected.

The **BIOLOGICAL EVENT** consists of 31 possible attributes that describe an individual fish. Combinations of these attributes address the following issues: size composition, sex ratio, maturation stage, age composition, body and gonad weight relationships, fecundity, genetic sampling, trophic relationships, disease, parasitology, and external damage.

Not all of the above attributes are to be recorded at any one time, however they are to be used as a guide for the sampler to follow when collecting a biological sample. As mentioned above, a biological sample is a collection of attributes that addresses a specific research question. The reader will note that I have tried to place the attributes into a sequence of events with the most commonly sampled attributes at the start and the lesser sampled attributes towards the end. In the following section each of these attributes is explained in detail along with a list of codes to be used for encoding the data. The final chapter in this manual outlines the format for coding the sampling data for keypunching onto the computer.

The **DATA MANAGER** of the Mark Recovery Program in the Salmon Biological Services Section, Salmon Division, Pacific Biological Station, Nanaimo (756-7000) is responsible for maintaining the database and data codes. Any questions regarding changes or amendments to the existing codes should be directed to the **DATA MANAGER**.

It is important to use pencils and waterproof paper to record data. Use waterproof labels when storing specimens and ensure that the label is placed between the tissue and the plastic bag so that the label can be easily read through the bag. Use a waterproof pen for writing on the outside of a bag or container. **BE NEAT AND ORGANIZED.**

CAPTURE EVENT ATTRIBUTES

VESSEL

The vessel name/number is an important requirement since it can be cross-referenced back to specific fisheries when the samples were originally collected. Record the name of the vessel from which the samples originated. The name of the vessel should be written in full under area titled VESSEL NAME. Record vessel using 5 characters:

ENCODE - Example of a CFV number could be = 24578

Note: It is important to always include the full name of the vessel under VESSEL NAME on the SALMON BIOLOGICAL DATA FORM.

LATITUDE

In some cases, you are able to record the exact geographic location where your samples were caught, such as latitude in degrees, minutes, North (ie. 48°50.1' N). If your positions are in Loran C then convert to latitude/longitude by replotting on a chart, or using a Loran conversion program. Record latitude as a 6 character variable:

ENCODE - For example, a latitude of 48°50.1'N = 48501N

LONGITUDE

In some cases, you are able to record the exact geographic location where your samples were caught, such as longitude in degrees, minutes, West (ie. 127°21.1'W). If your positions are in Loran C then convert to latitude/longitude by replotting on a chart, or using a Loran conversion program. Record longitude as a 7 character variable:

ENCODE - For example, a longitude of 127°21.1'W = 127211W

GEOGRAPHIC CAPTURE AREA

The GEOGRAPHIC CAPTURE AREA CODES apply to commercial catches in the marine environment. These codes refer to the Statistical Area/Sub-Area MRP coding convention. They are not the same as the Statistical Area/Management Unit coding convention. Periodical changes are made to the Statistical Area/Management Unit boundaries which affect the resolution of the codes and thus should not be used. A series of maps outlining the boundaries (using digitized format) for both types of Statistical Areas is presented in Shaw and Bates (in prep).

The MRP coding convention has been used since 1973 and are to be continued for consistency with existing biological data bases. There are circumstances when biological samples are collected from

catches at points of delivery such as onshore processing plants or packers on the fishing grounds. In both of these circumstances catches may be comprised of fish from a number of specific locations or a complex range of coordinates. Instead of recording each coordinate, the geographic capture area is described as bounded area by a hierarchical system consisting of three levels of increasing spatial resolution, these levels are: 1) **CATCH REGION**; 2) **STATISTICAL AREA**; and 3) **SUB-AREA**. Each catch region is comprised of a number of statistical areas which, in turn, are comprised of a number of sub-areas.

CATCH REGION

The coast of B.C. is divided into a total of 21 catch regions. Of these, 8 refer to the **troll** fishery areas, 9 refer to **net** fishery areas, and 4 refer to the **sport** fishery areas. Generally, these are mutually exclusive of each other with troll areas located seaward of the surf-line, and the net and sport areas located inside the surf-line. A few exceptions to the above catch regions currently exist as the result of special management actions. Specific to the troll and net fishery areas are 5 codes each that represent different combinations of catch regions. There are an additional 14 catch regions that include either fishery activities outside of B.C., or other fishery related activities. Each catch region is identified by a 2 digit code. Record catch region as:

ENCODE - See **Appendix Table 1** for catch region codes.

STATISTICAL AREA

Each catch region is divided into (MRP) statistical areas. The actual number of statistical areas within a catch region is variable. Statistical area boundaries are described in Schedule II of the Pacific Fishery Management Area Regulations (Amendment list March 15, 1993). A statistical area includes any stream that flows into it. In addition to codes for single statistical areas, there are codes for different combinations of statistical areas. Each statistical area is identified by a 3 character code. Record statistical area as:

ENCODE - See **Appendix Table 2** for statistical area codes with sub-area codes.

SUB-AREA

Each (MRP) statistical area is further divided into a number of sub-areas. The actual number of sub-areas within a statistical area is variable. A sub-area may consist of either a bounded area or a geographic location (e.g. Sombrio Pt.). Each sub-area is identified by a 3 digit code. Record sub-area as:

ENCODE - See **Appendix Table 2** for statistical sub-area codes with the associated area codes.

GEAR

Many different types of fishing gear and equipment are used for catching salmon. It is very important to note the type of gear used for the catch. The gear type information helps to determine where and when the fish were caught, ie. offshore or inshore, to determine which segments of the total population are impacted, and examine gear selectivity. Each gear type has a specific code. Do not enter

"general troll" or "mixed gillnet and seine" if more specific information is available. Record gear as a 2 digit code:

ENCODE - See Appendix Table 3 for gear codes.

SET NUMBER

A consecutive numbering system that represent unique fishing location. The set number can be linked with the latitude and longitude to determine the geographic location. Record set number as a 3 digit code:

ENCODE - For example, set number 1 = 001

DATE OF CAPTURE

This is the date when the fish were caught - Year, Month and Day (Year/Mo./Day). It maybe different from date of sample. Record the date of capture as an 8 digit code:

ENCODE - A capture date of June 1, 1994 = 19940601

STATISTICAL WEEK LANDED ("PERIOD CODE")

A statistical week is a calendar week of 7 days beginning Sunday. It is labelled by a three digit code, where the first two digits delineate the month and the last digit specifies the week within the month. Each month has 4 statistical weeks, except months 04, 07, and 10 which each have 5 statistical weeks. A delivery is considered 'landed' when 1) a vessel arrives at the processing plant, 2) vessels contributing to a truck's load arrive at the camp/plant, or 3) vessels unload their catch to a Packer. Record statistical week during which the data were collected as:

ENCODE - For example, statistical week 051 denotes the first week in May. The dates which bound week 051 vary from one year to the next; it may occur as early as April 29 - May 5, or as late as May 7 - May 13 (Example based on pg. 30 in Wong 1983).

RABCODE

The name of each creek, stream, river, or watershed is identified by a unique 27 character code in 7 levels (ie.xx-xxxx-xxx-xxx-xxx-xxx-xxx). Each level reflects the hierarchical organization of watersheds within watersheds. The geographical locations and rabcodes of salmon spawning streams of British Columbia are described in detail in "Index of Salmon Spawning Streams of British Columbia" by Serbic et al. (1985) and more recently in the DFO "Stream Information Summary (SIS)" reports, 1 per subdistrict for a total of 51 subdistricts (Fig. 21)(Fish Habitat Inventory and Information Program, 1991). In addition, Williams et al. (1994) provided a quick reference for the geographic distribution of salmon streams in British Columbia along with their rabcodes. The codes are recorded as left justified.

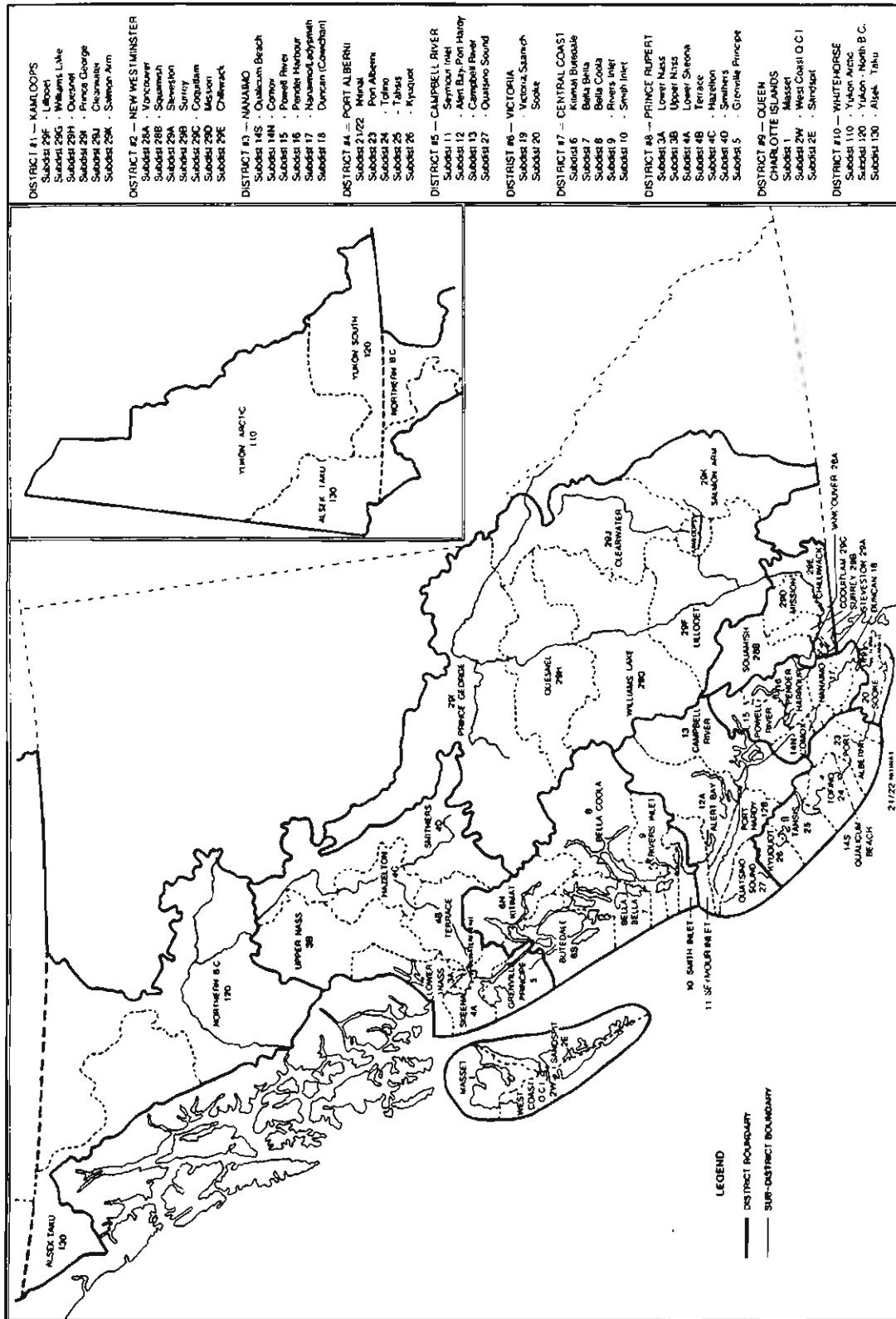


Figure 21. DFO Pacific Region Subdistricts and Districts. The reorganization of Operations Branch in 1993 changed the "District and Sub-district" utilization. District is now referred to as Area and Subdistrict uses the MRP Statistical Area Codes.

Normally, when rabcodes are used then the statistical area codes are also recorded (see STATISTICAL AREA). Otherwise record rabcode as:

ENCODE - Refer to the DFO 'Stream Information Summaries (SIS)' reports.

Note: It is important to always include the full name of the sampling location under **LOCATION NAME** on the **SALMON BIOLOGICAL DATA FORM** for each sampling event.

SITE CODE

Site codes are specific locations where sampling occurs in the freshwater environment. A site code may refer to a hatchery, release site, or recovery site. The codes were established by the Salmon Enhancement Program (SEP) in 1975 and adopted by the MARK RECOVERY PROGRAM. Record site code as a 4 digit code:

ENCODE - See **Appendix Table 4** for site codes.

SAMPLING EVENT ATTRIBUTES

NAME OF SAMPLER

The initials of the sampler should be included in the data forms as a means of accountability in the event of questions with the encoding. A 3 character code is used to minimize repetition. Record the name of the sampler as:

ENCODE - For example, William Bernard Shaw = WBS

AGENCY

The company or agency (private or government) that was responsible for collecting the data. Record agency as a 3 character variable:

ENCODE - DFO = Department of Fisheries and Oceans
 JOT = J. O. Thomas and Associates
 NTC = Nuu-cha-Nulth Tribal Council

VESSEL-TRUCK-PACKER (VTP)

For sampling at processing plants there are three ways fish usually are delivered; by Vessel, Truck, or Packer (VTP). It is important to record how the fish were delivered for sampling purposes since both fishing location and date can be linked to the sample. Record VTP as a 1 digit code:

ENCODE - 1 = Vessel
 2 = Truck
 3 = Packer

SAMPLING LOCATION

Sampling of commercial or sport fisheries may take place either at a fishing port, boat ramp, onboard vessels, or localized site. Refer to **SITE CODE** if sampling occurs at a hatchery or remote areas such as streams, fences, or lakes. Record sampling location as a 3 digit code:

ENCODE - See **Appendix Table 5** for sampling location codes.

DATE SAMPLED

This represents the date when the fish were sampled - Year, Month and Day (Year/Mo./Day). This is usually different from date of capture. In some cases this date can be used to approximate the date of capture. Record the data of sample as an 8 digit code:

ENCODE - A sampling date of June 1, 1994 = 19940601

SAMPLE TYPE

It is important to determine how fish are grouped for sampling as each sample type is selected for a specific purpose. For example, the type of sampling can be either random (collected regardless of size), total catch, stratified (a specified number of fish selected from predetermined categories, eg. grade, length, weight or sex), selected (only specific size of fish), dead pitch, or other which may include random-graded, random-ungraded or etc.. Record the sample type as a 2 digit code:

ENCODE - 01 = Random
 02 = Total
 03 = Stratified
 04 = Random Stratified
 05 = Selected
 06 = Dead pitch
 99 = Other

Note: Care should be taken when sampling commercial fish because sampling may change the value of the fish. Check with the fisher or plant owner before sampling.

BIOLOGICAL EVENT ATTRIBUTES

SPECIES

Identify all individuals to species. Refer to Chapter 1 on **ADULT SPECIES IDENTIFICATION** if you encounter problems. Record species as a 3 digit code:

ENCODE - 108 = Pink Salmon
 112 = Chum
 115 = Coho
 118 = Sockeye
 124 = Chinook
 128 = Steelhead
 131 = Atlantic

Note: if species cannot be identified, indicate this under **COMMENTS**.

FISH NUMBER

A fish must be assigned a unique consecutive number when structures or tissues are removed. This allows the sampled structures to be correctly labelled for future identification, and cross referencing to the data base associated to that fish. Use a unique number up to 7 characters to a fish. Record fish number as:

ENCODE - (ie. 1234567 or L001567).

LENGTH

Measuring salmon should be conducted using a flat measuring board (wood, aluminum or plastic) with a plastic or metal metric rule imbedded in the board, or by measuring sticks. All measurements must be recorded in millimetres (mm) to minimize error. Measure the length of the fish according to types listed under **LENGTH CODE**. Remember to **right justify** the entries. Record length as a 4 digit code:

ENCODE - (ie. 450 mm = 0450)

LENGTH CODE

There are seven types of length measurements used for salmon. Fork length (FL), and post-orbital hypural length (OH or POH) are commonly used for ocean staged fish, and fish sampled on the spawning grounds, respectively. Total length (TL), standard length (SL) and post-orbital fork length (PFL) are not commonly used. The Alaskan Department of Fish and Game (ADF&G) uses mid-eye hypural length (MEH), and mid-eye fork length (MEF).

FORK LENGTH

Fork length is generally used for live or dead salmon that are not in a spawning stage. It is the length of the fish from the tip of the snout (upper jaw), in a straight line with the fish laid in a natural position, to the posterior edge of the median caudal (tail) fin rays or the shortest caudal rays at the centre of the "fork" (Fig. 22). Place the fish flat on a measuring board with the head facing left; push the snout against the end of the board; ensure mouth is closed; position the fork of the tail over the ruler on the board; and, record the length from the posterior edge of the median tail fin rays. The measuring board consists of a metre stick imbedded into a narrow flat base board with a small upright back board at the left end. Use a waterproof measuring tape if a measuring board is not available.

POST-ORBITAL HYPURAL LENGTH

Sexually mature salmon in a spawning stage are usually measured for post-orbital hypural length. This is the best measurement for mature salmon as it is not affected by an eroded tail or development of a lengthened snout. The post-orbital hypural length is measured from the posterior edge of the eye socket (orbit), in a straight line with the fish laid in a natural position, to the plate at the posterior end of the spinal column (hypural plate) (Fig. 22). This plate can be located by bending the tail upwards until a deep crease is formed anterior to the base of the tail. This can be easily done using a "hypural stick" which consists of a metre stick set in an aluminum channel with a stationary pin for the fish eye socket and a pin on a sliding cursor for alignment with the hypural plate. If a hypural stick is not available then use a waterproof measuring tape.

TOTAL LENGTH

Total length is the measurement from the tip of the snout (upper jaw), in a straight line with the fish laid in a natural position, to the dorsal tip of the caudal (tail) fin rays (Fig. 22). This measurement may be used for fish having an undeveloped tail fork, such as in the early juvenile stage.

STANDARD LENGTH

Standard length is the measurement from the anterior tip of the snout, in a straight line with the fish laid in a natural position, to the posterior end of the spinal column, (Fig. 22).

POST-ORBITAL FORK LENGTH

Post-orbital fork length is measured from the posterior edge of the eye socket (orbit), in a straight line with the fish laid in a natural position, to the posterior edge of the median caudal (tail) fin rays or the shortest caudal rays at the centre of the "fork" (Fig. 22). This can be easily done using a "hypural stick".

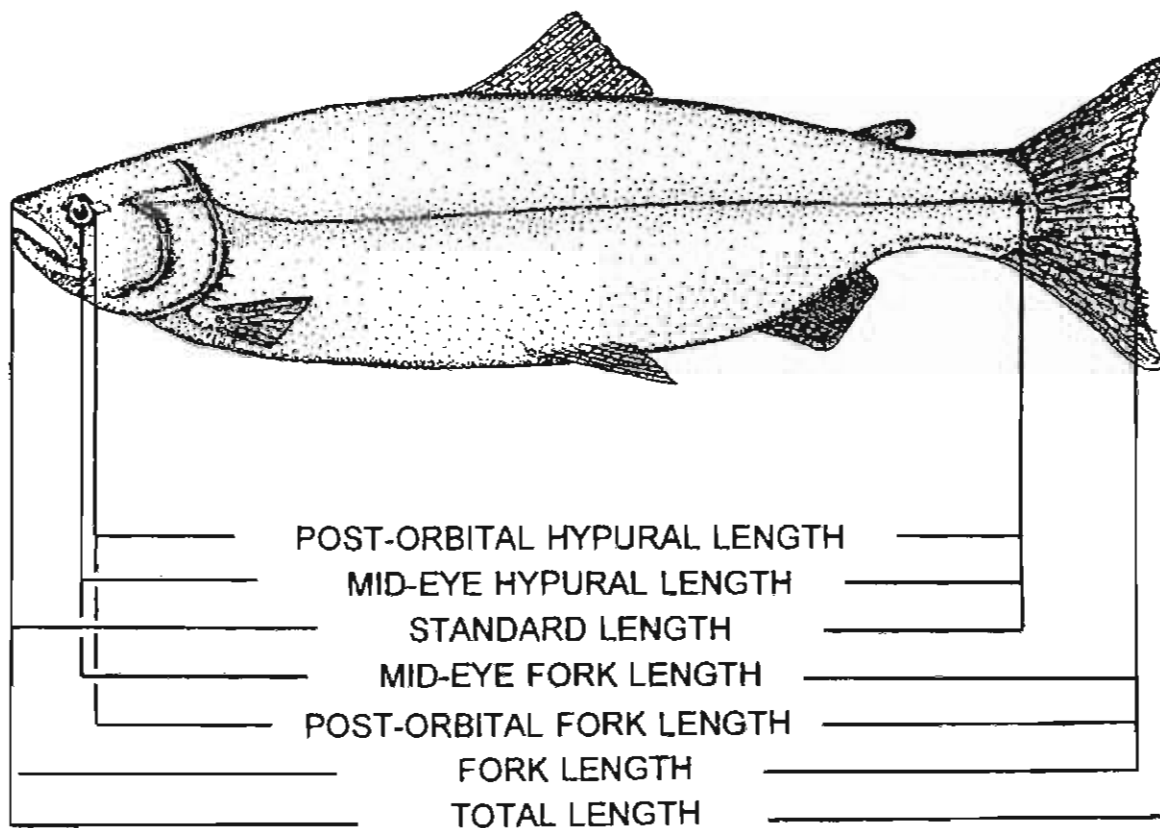


Figure 22. Seven different length types used for measuring salmon; Post-orbital hypural (POH or OH), Mid-eye hypural (MEH), Standard (SL), Mid-eye fork (MEF), Post-orbital fork (PFL), Fork (FL), and Total (TL).

MID-EYE HYPURAL LENGTH

Mid-eye hypural length is the distance from the middle of the eye socket (orbit), in a straight line with the fish laid in a natural position, to the plate at the posterior end of the spinal column (Fig. 22). This can be done using a tape measure.

MID-EYE FORK LENGTH

Mid-eye fork length is the distance from the middle of the eye socket (orbit), in a straight line with the fish laid in a natural position, to the posterior edge of the median caudal (tail) fin rays or the shortest caudal rays at the centre of the "fork" (Fig. 22). This can be done using a tape measure. Record length code as a 1 digit code:

ENCODE - 1 = Fork length
 2 = Post-orbital hypural length
 3 = Total length
 4 = Standard length
 5 = Post-orbital fork length
 6 = Mid-eye hypural length
 7 = Mid-eye fork length

SEX

The sex of the fish can be determined by internal examination. Make an incision using a "sawing" action with a sharp knife (rather than poking a knife tip in to begin the incision) along the ventral midline of the fish from the pectoral girdle to a point 1/2 way to the ventral fins. Open the belly flaps and examine the gonads to determine the sex. The gonads are located at the anterior end of the body cavity and ventral to the swim bladder. There are instances when internal examination is not necessary to determine sex (ie. spawning grounds) in the field. In these cases, the external characteristics of the fish are examined for determining sex. Record the sex as a 1 digit code:

ENCODE - 1 = Males
 2 = Females
 3 = Unknown

MATURITY

The gonads for immature fish appear as thin ribbons of tissue only a few centimetres in length with almost no volume. As the fish grows and matures the gonads elongate and the testes and ovaries become easily distinguishable. The ovaries will have a granular appearance (developing eggs) in comparison to the testes which will appear smooth and whiter in colour than the ovaries. The ovaries eventually take on a red or light orange colour while the testes will appear translucent to white. Record maturity as a 1 digit code:

ENCODE - 1 = Immature (Female egg skeins are small, appearing granular and occupying <15% of the body cavity. Egg diameter is <4mm)

(Male testes are thin and thread-like usually occupying <15% of the body cavity. Extensive vascularization gives them a red or brown colour)

- | | |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2 = Mature | (Female egg skeins are full of developing or well developed eggs and occupy >15% of the body cavity. Egg diameter is >4mm)
(Male testes occupy >15% of the body cavity and are grey or white) |
| 3 = Ripe | (Female egg skeins are full of eggs which are released with slight pressure on the belly)
(Male testes are large which emit white sperm with slight pressure on the belly) |
| 4 = Spent | (Female skeins have few to no eggs)
(Male testes are flacid, watery, not well formed) |

SCALE BOOK NUMBER

This is a unique number with up to 5 digits printed on scale books, otolith boxes and fin ray envelopes and boxes. It provides a means of linking the age results to the biological data. This number series is repeated approximately every 3 years for scale books and at the beginning of each new year for other structures. **DO NOT CREATE YOUR OWN BOOK NUMBERS. RETURN UNNUMBERED BOOKS AND BOXES TO THE FISH MORPHOLOGY LAB.**

The majority of the methodologies and illustrations which follow are from MacLellan (1987). Scale samples are to be mounted on numbered, adhesive cards supplied in a book format (Fig. 23). When requesting books, specify the species and lifestage of the fish that you will be sampling so that books with an appropriate numbering system can be supplied. You will note that the 5 digit number is printed on both the inside and outside of the cover of the scale book. Record book number as a 5 digit code:

ENCODE - For example scale book number 24689 = 24689

SCALE NUMBER

Inside a scale book (Fig. 23) is a gummed matrix page numbered either 1 to 50 (single book format) or 1 to 25 (x2)(double book format)(Fig. 24). A scale number identifies the fish the scale came from. Record the scale number for every scale taken.

FRONT COVER

SCALE SAMPLING ESSENTIALS № 2801 N

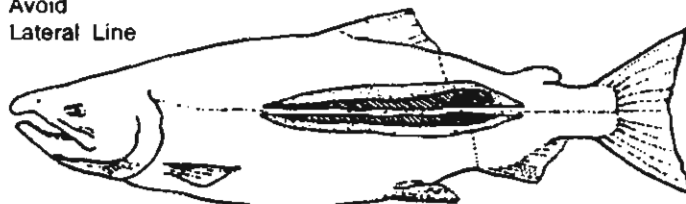
1. SELECT PREFERRED SCALES.
2. CHECK FOR REGENERATES.
HOLD SCALE UP TO LIGHT.
3. WIPE OUTER-SIDE OF SCALE DRY
AND PLACE THAT SIDE UP.
4. KEEP BOOKS DRY.

↑
**RECORD THIS
BOOK NUMBER
ON FIELD
DATA SHEET**

COMPLETE ALL SCALE BOOK DATA.

INSIDE FRONT COVER

Avoid
Lateral Line



Rated Areas



Most preferred
Next best
Least preferred
Avoid

Take scale samples from most preferred area

BACK OF GUMMED CARD

SAMPLE LOCATION: _____		STAT AREA: _____	
№ 2801	SAMPLE DATE: _____ <small>(DAY) (MO.) (YEAR)</small>		SPECIES: <input type="checkbox"/> CH <input type="checkbox"/> SK <input type="checkbox"/> CO <input type="checkbox"/> CM
	SAMPLE TYPE: _____		<input type="checkbox"/> ST <input type="checkbox"/> OTHER _____ <small>(SPECIFY)</small>
	FISHERY	GEAR:	SCALE FORMAT:
	<input type="checkbox"/> TEST <input type="checkbox"/> COMMERCIAL <input type="checkbox"/> SPORT <input type="checkbox"/> NATIVE FOOD	<input type="checkbox"/> GILLNET <input type="checkbox"/> SEINE <input type="checkbox"/> TROLL <input type="checkbox"/> SPORT ROD <input type="checkbox"/> DEAD PITCH <input type="checkbox"/> OTHER (SPECIFY) _____	<input type="checkbox"/> 2 → SCALES <input type="checkbox"/> 5 ↓ PER <input type="checkbox"/> 10 → FISH <input type="checkbox"/> 2 SMEARS (JUVENILES)
	ESCAPEMENT	SAMPLERS: _____	
<input type="checkbox"/> SPAWNING GROUNDS <input type="checkbox"/> SPAWNING CHANNEL <input type="checkbox"/> HATCHERY RETURNS		<input type="checkbox"/> OTHER (SPECIFY) _____	
<input type="checkbox"/> OTHER (SPECIFY) _____			

Figure 23. Example of a typical scale book with information on how to remove the scales, a diagram showing the preferred area, and what data are essential to record. Each book is assigned a unique book number.

SINGLE BOOK FORMAT

10	9	8	7	6	5	4	3	2	1
20	19	18	17	16	15	14	13	12	11
30	29	28	27	26	25	24	23	22	21
40	39	38	37	36	35	34	33	32	31
50	49	48	47	46	45	44	43	42	41

DOUBLE BOOK FORMAT

5	5	4	4	3	3	2	2	1	1
10	10	9	9	8	8	7	7	6	6
15	15	14	14	13	13	12	12	11	11
20	20	19	19	18	18	17	17	16	16
25	25	24	24	23	23	22	22	21	21

Figure 24. Two examples of the numbered gummed matrix page found inside a typical scale book. Be careful to record the correct number to the appropriate scale.

Standard scale requirements per fish are:

Juvenile - All species	.Separate scale smears from left and right side mounted 2 across .Double book of 1-25 (x2), Fig. 24 .For example: fish 1 = 1 left, 1 right fish 2 = 2 left, 2 right
Chum adults Sockeye adults (ocean caught) Sockeye spawners Chinook adults (ocean caught) Coho (ocean caught)	.Two scales per fish mounted 2 across .Double book of 1-25 (x2), Fig. 24 .For example: fish 1 = 1, 1 fish 2 = 2, 2

Special scale requirements are :

Freshwater resident samples Atlantic Salmon	.Five scales per fish mounted 5 down .Single book of 1-50, Fig. 24 .For example: fish 1 = 1, 11, 21, 31, 41 fish 2 = 2, 12, 22, 32, 42
Coho (spawners) Chinook (spawners) Steelhead Trout (all)	.Ten scales per fish mounted 10 across .Single book of 1-50, Fig. 24 .For example: fish 1 = 1-10 fish 2 = 11-20

Record the 2 digit number from the scale book as:

ENCODE - For example, scales on numbers 1-25(x2) = 01 to 25

SCALE SELECTION, REMOVAL AND MOUNTING PROCEDURE

The following steps outline how to remove individual scales from the preferred area from the fish and store scales into the scale book.

1. Keep the scale books as dry as possible.
2. Place the fish on its side with the head facing to the left.
3. Locate the preferred area (Fig. 25a) and wipe it clear of water and slime with a cloth or the edge of a knife.
4. Remove a scale (the number 2 scale above the lateral line, Fig. 25b) from the preferred area by grasping its exposed edge with forceps and pulling. Do not take a scale from the

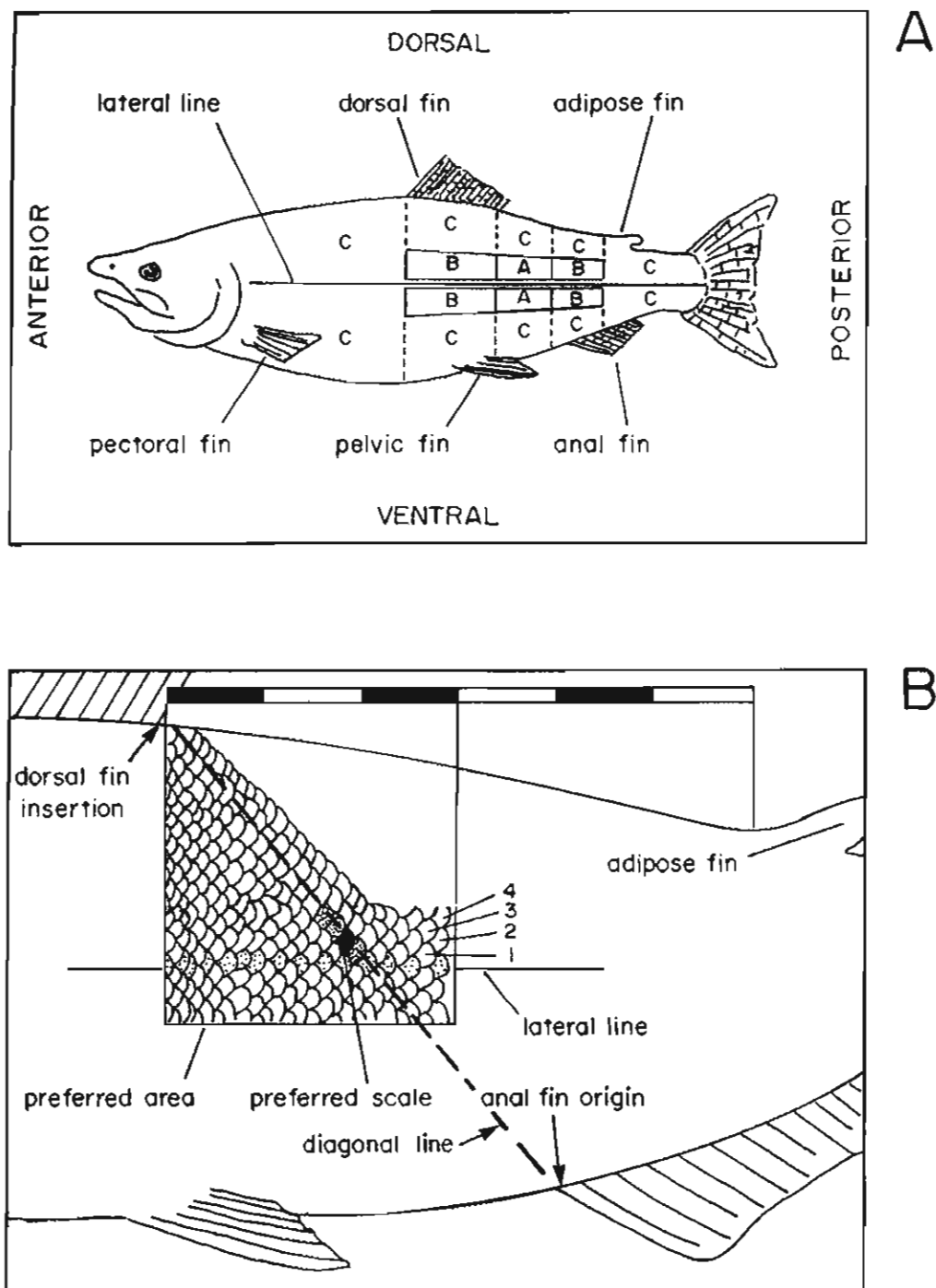


Figure 25. Preferred areas for scale removal; A) area A is the primary preferred area; area B is the second preferred area if no scales in area A; and, area C is the non-preferred area. B) Close up of the preferred area with the preferred scale in solid black. It is located 2 rows up from the lateral, on a diagonal from posterior the dorsal fin insertion to the origin of the anal fin.

lateral line, as its morphology is quite different from that of preferred scales.

5. Clean scale of tissue, debris and quinine (silver tissue) by rubbing it gently between thumb and fingers, back of your hand, or on a damp cloth. Hold the scale up to a light source and check for deformation or regeneration (Fig. 26). **This is a quick step that requires instruction to perform effectively, but can immensely increase the number of readable scales in many cases.** If the scale is not good (ie. Fig. 26b-f), or you are doubtful about the quality of the scale, discard it and select another scale in the best area. If necessary, take scales from the next best area. If there are no suitable scales on the left side of the fish, try the right side. You are trying to select an acceptable scale that is similar to Fig. 26a.

6. **Centre the scale on the numbered square** in the book so that the side that was outermost on the fish is facing up on the card (Fig. 27a) (ie. **Do not flip the scale over**). If uncertain that a scale is right-side up check by scraping the surface of the scale lightly with your forceps to see if **it is rough**.

7. Orient all scales in the same direction on the card as in Fig. 28a, not as in Fig. 28b.

8. Firmly press the scale onto the scale book with forceps or a dry finger. A slightly moist scale will adhere well. Excessive moisture will dissolve the book's adhesive coating and obliterate or wash away the scales.

9. If for some reason you are taking 2 scales per fish, and you can only get one scale leave the next numbered square blank.

10. When you have taken approximately half of the required scales from the left side of the fish, turn it over and take the remaining scales from the other side.

11. Fill in the information on the back of the scale book (Fig. 23). Do not write any information on the outside covers as these are destroyed during processing. The information includes:

ITEM	DESCRIPTION
Sample Location	Name of location where you took the samples (ie. Fraser R. - Boston Bar)
Stat. Area	Statistical area code for the sample location
Sample Date	Date you collected samples
Species	Check one species: only mount samples from one species in each book
Sample Type	Were the samples collected from a particular fishery or escapement? Check one.
Gear	What gear was used to capture the fish? Check one.
Scale Format	Check the number of scales per fish and their layout in the book. (ie. 2 across, 5 down or 10 across)
Sampler	Write your name.

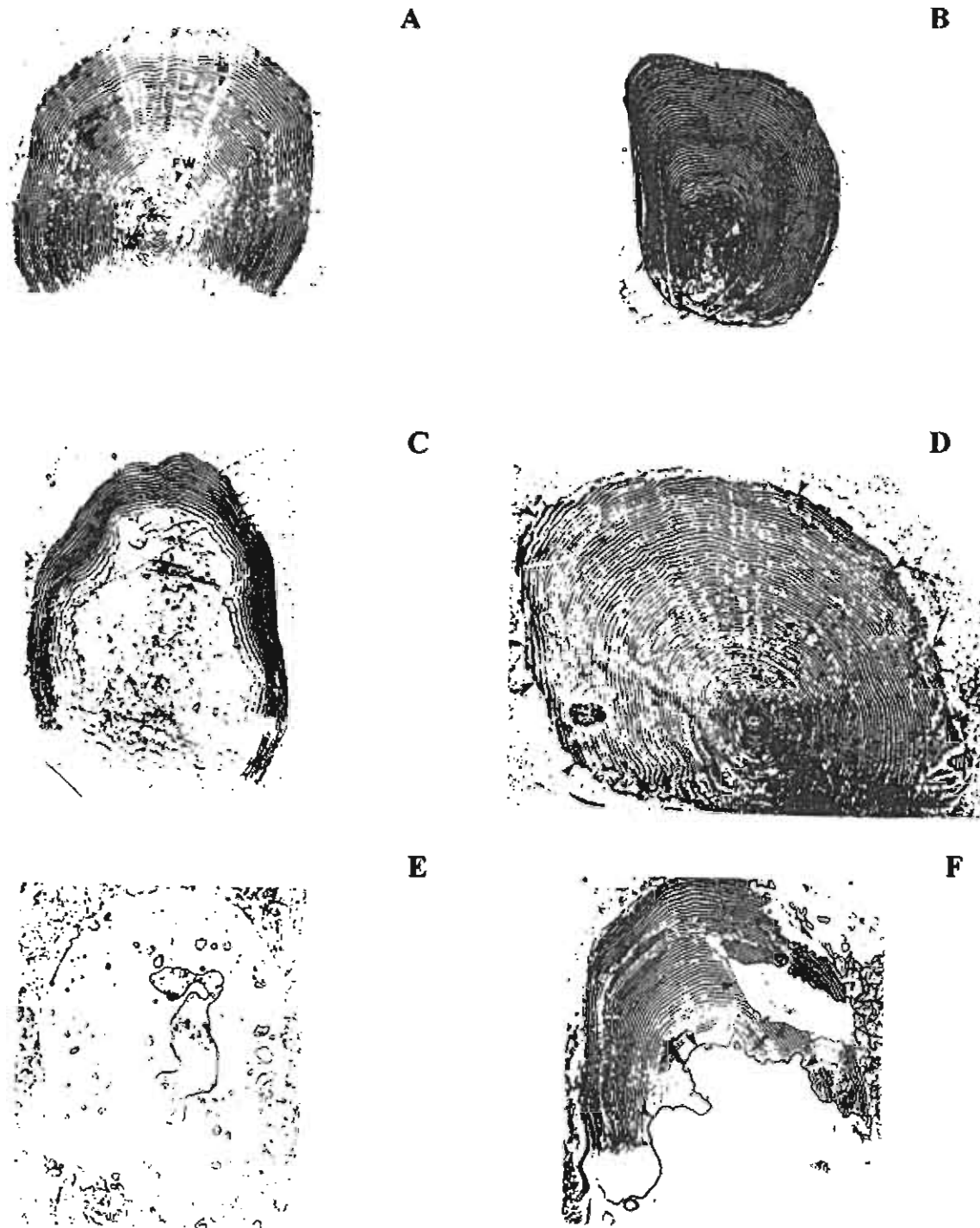


Figure 26. A) Example of a good scale used for scale collection. FW =freshwater annulus; M = marine annulus; **B)** Non-preferred scale is not symmetrical; **C)** Regenerate scale; **D)** Edges of scale are resorbed (see arrows); **E)** Upside down scale; and **F)** Wet scale. Scales B to F are non-preferred scales and should be discarded.

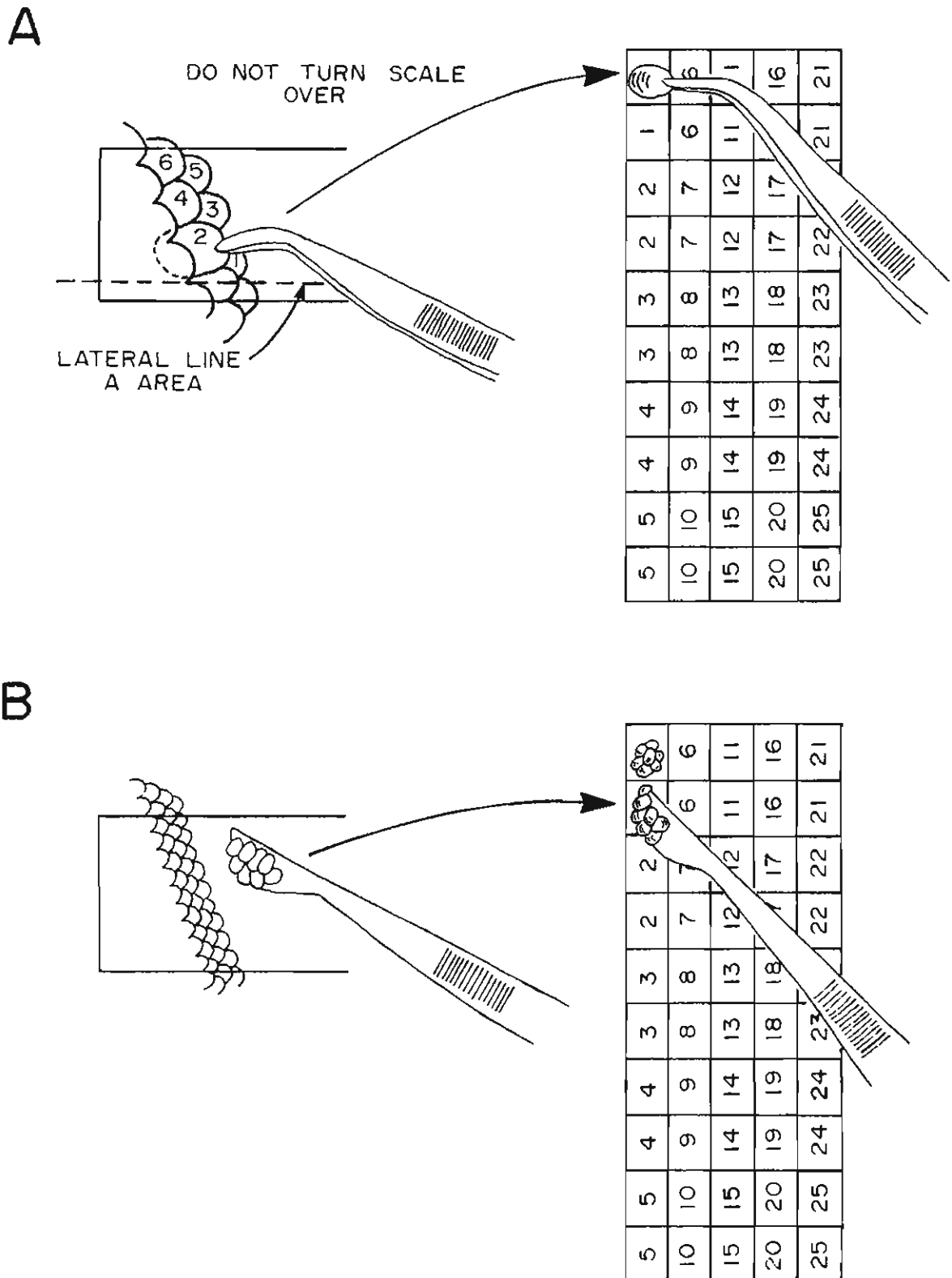


Figure 27. A) Individual scale removal of the preferred scale (No. 2) from area A and placement on the scale book. B) Scale smear removal from the preferred area and placement on the scale book.

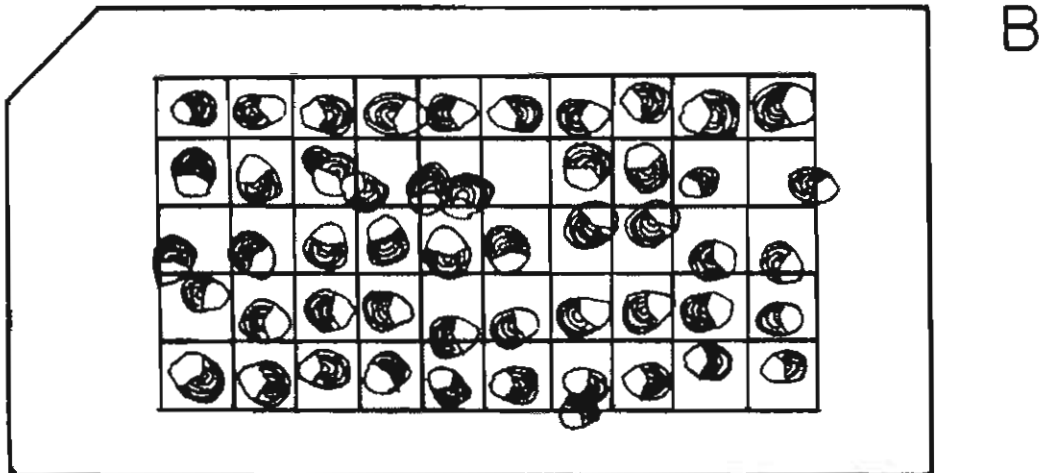
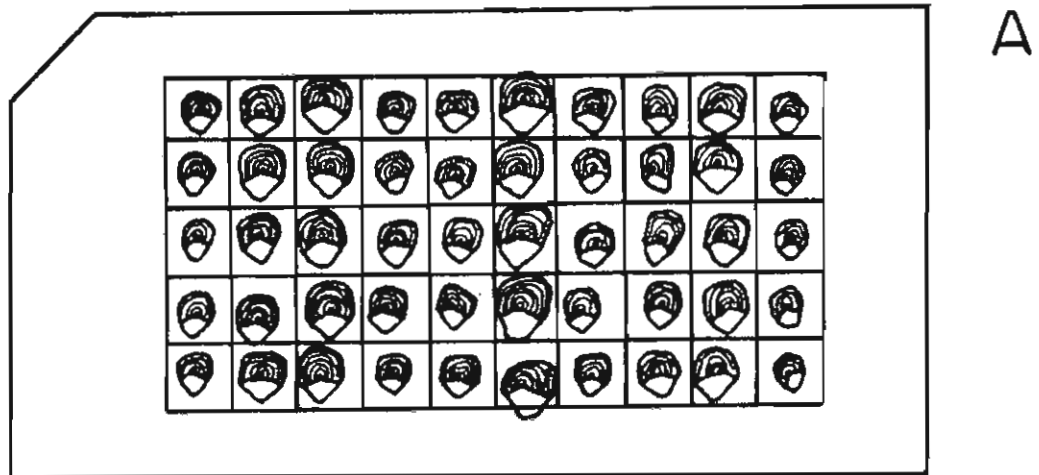


Figure 28. A) Scales are all **correctly** oriented on the card in the same direction. B) Scales are incorrectly oriented in different directions.

12. Take care to record both scale book number and scale number on the data form. Make sure that the scale numbers in the book match the data form.

The following steps outline how to collect and store scale smears from small, juvenile fish when individual scales are not visible.

1. **Keep the scale books as dry as possible.**
2. Using a clean scalpel, gently scrape the blade in a posterior to anterior direction over the preferred area (Fig. 25a).
3. Scale smears are collected from the left side of the fish and placed onto the first of the pair of squares for that fish. Scales are then collected from the right side of the fish and placed onto the second of the pair of squares for that fish.
4. **Without turning the scalpel over**, push the scales with a pencil or fingernail onto the gummed card using a scalpel or pencil. Apply enough pressure to spread and smooth the scales evenly onto one square (Fig. 27b). The scales will be mounted on the card with the outermost side up (rough side up).
5. Fill in the information on the back of the scale book (Fig. 23) as per step 11 on page 71.
6. Take care to record both scale book number and scale number on data form. Make sure that the scale numbers in the book match the data form.
7. Scale smears can also be mounted between 2 glass slides so that scales can be read from either side. Record the fish number on the top glass slide.

Care of the scale book is most important. Always keep the surfaces of the scale book dry as too much moisture will dissolve the book's adhesive coating and cover the scale with glue or wash away the scale. Do not leave scale books open in the sun as this causes the scales to peel away from the book.

FIN RAY REMOVAL

Fin-rays are taken as age determination structures. The most important thing to remember when cutting fins from a fish, is to ensure that the fin ray bases are included, otherwise the first year's growth can be lost. The fin ray bases are the area where the two ray elements separate to attach to the backbone or other supportive bones. The majority of the methodologies and illustrations given below are from MacLellan (1987).

DORSAL FIN REMOVAL

Using a knife or bone scissors (Tullen cutters) make the first cut downwards to the fish's backbone, just ahead of the first ray of the dorsal fin (Fig. 29a). Holding onto the fin cut posteriorly, move the knife edge or scissors along the backbone. It is helpful to pull up on the

fin while cutting. Trim off any excess flesh along the fin base. A double row of fin ray bases will be evident if the cut is deep enough (Fig. 29b). If the dorsal fin is broken it can still be used as long as there is about 1 centimetre (cm) of fin left above the skin.

PECTORAL FIN REMOVAL

Place the fish with the head facing to the left side and cut through the basal structure of the left pectoral fin, where the fin rays flare out to attach to the body (Fig. 29c). It is easier to start the cut through the leading (thickest) ray. Trim off any excess flesh along the fin base. If the left pectoral fin is missing then remove the right pectoral fin. The tips can be cut off large fins for storage in the fin envelopes to a minimum length of 7.5 cm from the base.

STORING THE FINS

Fins can be placed in individual labelled paper envelopes or ziploc plastic bags. Label the first paper envelope, or the waterproof paper label for inside the plastic bag, with species name, date, sample location, sampler, and fish number. Subsequent samples need only be labelled with species and fish number. Fins stored in plastic bags should be flattened to separate all fin rays. Fins stored in envelopes should have the cut edge at the opening and the rays at right angles to the bases. The basal portion of the fin should stick out, free of the envelope (Fig. 29d). If the fin is too big for the envelope, cut it in half horizontally to 7.5 cm and vertically to include the first 8-10 rays. Bundle the plastic bags or fin-envelopes using rubber bands and freeze fins as soon as possible or else spread out the fin-envelopes to air dry (about 1 week).

FIN RAY BOX NUMBER

For convenience in storing the fins, the Fish Morphology Laboratory (555 W. Hastings, Vancouver, ph:666-8500) will provide **plastic fin boxes** capable of storing up to a **maximum of 50 fins**. The purpose for storing ≤ 50 fins per plastic box is to enable the Fish Morphology Lab. to cross-reference the fins with associated scales and otoliths (if collected). If the sample size is greater than 50 fish then use another plastic box. All fin ray containers should be properly identified with larger waterproof labels containing species, location, date, list of fish numbers used by species, gear and sampler. **Use a pencil when writing on waterproof labels.** A unique, consecutive serial number is engraved into the plastic box. Record the fin ray box number as a 5 digit code:

ENCODE - For example, a box number of 15678 = 15678

FIN RAY NUMBER

Each fin must be labelled with a number from 1 to 50. If another fin box was used, start the fin number from 1 to 50 again. The result is that a fin can be identified by the number on the fin ray box and the fin number. Record the fin number as a 2 digit code:

ENCODE - For example, 01 to 50

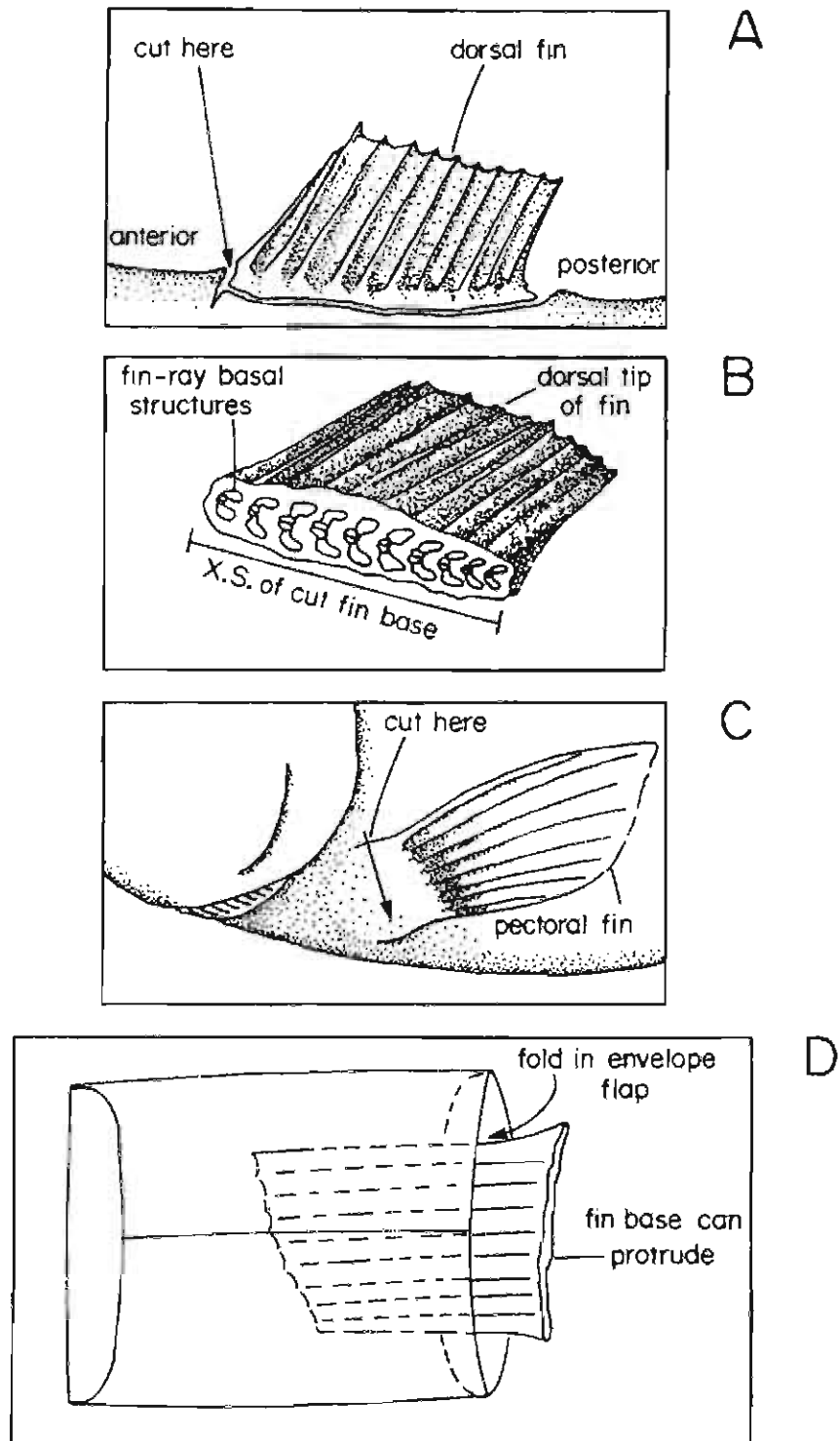


Figure 29. Fin sampling; **A)** indicates where to cut the dorsal fin off; **B)** base of the dorsal fin showing the cross-section of the fin rays; **C)** indicates where to cut the pectoral fin off; and, **D)** proper procedure for storing fins in envelopes.

OTOLITH REMOVAL

Otoliths (*sagittae*) are two bones located in fluid filled sacs in the fish's middle ear behind the brain. They are used as age determination structures. When removing otoliths it is important to remove them intact. The majority of the methodologies and illustrations which follow are from MacLellan (1987). There are four cuts which can be used to remove the otoliths from the head (Fig. 30a-b): a diagonal cross sectional cut starting from the dorsal surface at the junction of the skull and dorsal body tissue and down to the top of the eye; a cross sectional cut about 2.5 cm behind the eye; a transverse cut from the snout, about 1.0 cm above the eye orbit to the operculum and up through the nape leaving both otoliths intact inside the cranial groove; and, a longitudinal cut along the vertical mid-line of the head. In all cases, a sharp, thin knife is recommended. Locate the otoliths within membranous sacs on either side of the mid-line at the posterior ventral portion of the brain cavity (Fig. 30b). It is important to collect both otoliths, unbroken and as clean as possible. Remove any gelatinous membrane and mucous adhering to the otoliths before placing them in the vial or tray. Store the otoliths in a 60:40 glycerine:water solution with some thymol (1/4 tsp. per litre) added to inhibit fungal, algal and bacterial growth. Some otoliths are stored dry in otolith pouches in the field then put into a medium back in the laboratory. Otoliths containing thermal marks should be stored in 95% alcohol instead of glycerine. Otoliths can be stored either in plastic trays or small vials.

OTOLITH BOX NUMBER

For convenience in storing otoliths, the Fish Morphology Laboratory (555 W. Hastings, Vancouver, ph:666-8500) will provide **plastic otolith boxes**, each box containing **50 plastic vials**. The purpose for storing ≤ 50 vials (otoliths) per plastic box is to enable the Fish Morphology Lab. to cross-reference the otoliths with the associated scales and fins (if collected). If the sample size is greater than 50 fish then use another plastic box. A unique, consecutive serial number is engraved into the plastic box. All otolith containers should be properly identified with larger waterproof labels containing species, location, date, list of fish numbers used by species, gear and sampler. **Use a pencil when writing on waterproof labels.** Record the otolith box number as a 5 digit code:

ENCODE - For example, a box number of 25678 = 25678

OTOLITH NUMBER

Each vial or cell in a plastic tray must contain a waterproof label numbered from 1 to 50. **If another otolith box was used to complete the sample then the otolith numbers will start from 1 to 50 again for the new box.** The result is that an otolith can be identified by the number on the otolith box and the otolith number. Record the otolith number as a 2 digit code:

ENCODE - For example, 01 to 50

Note: In some cases otoliths are stored in plastic trays (commonly called TRAY BIENS) containing 100 cells. If this is the case, then each cell must contain the **FISH NUMBER**. If this method is used then ignore **OTOLITH BOX NUMBER** and **OTOLITH NUMBER** procedures described above. These trays are to be sent to the Age Determination Unit (Biological Sciences Branch, Pacific Biological Station, Nanaimo, ph:756-7179).

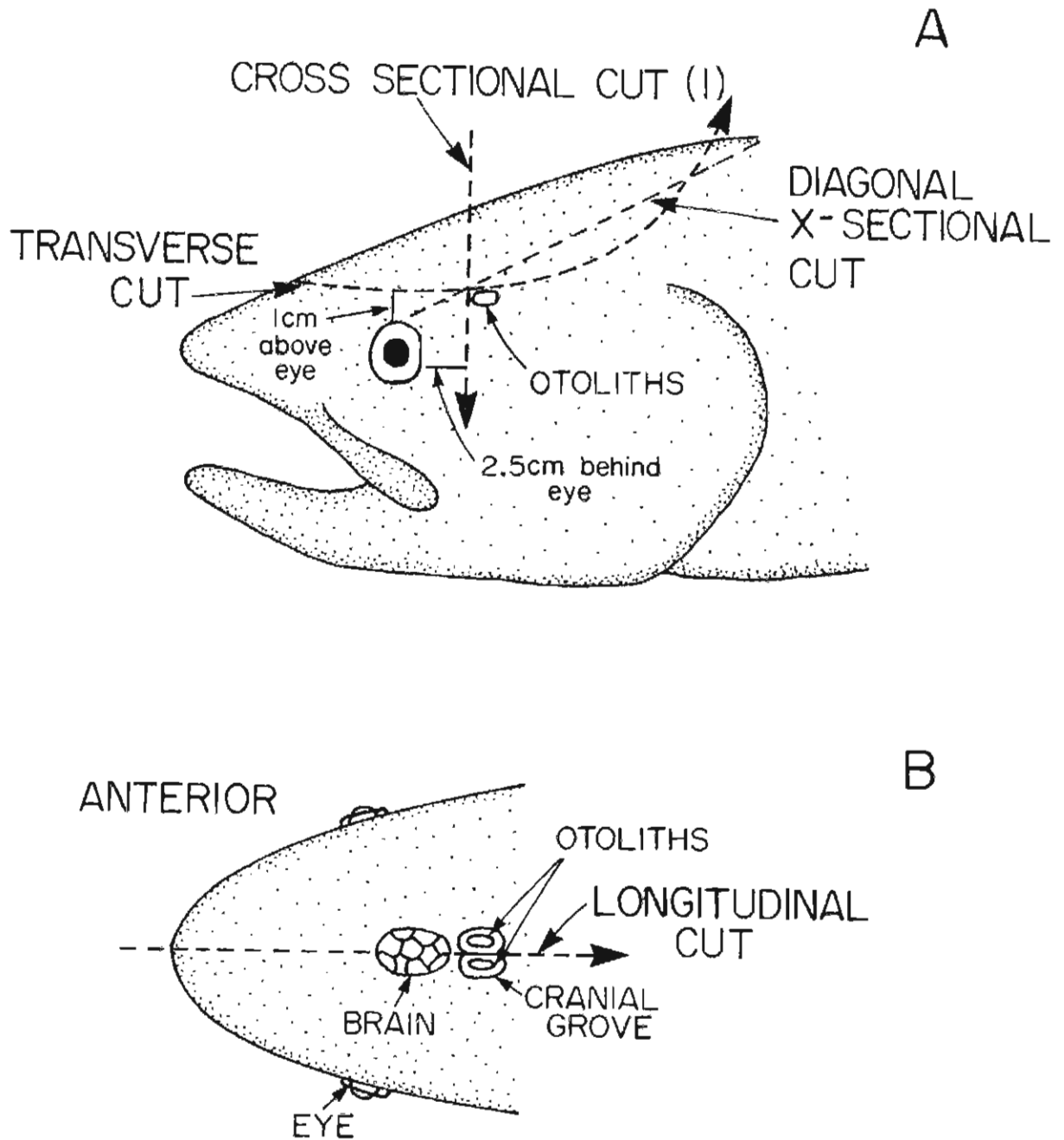


Figure 30. Otolith removal; **A)** the 3 common cuts used to remove the paired otoliths from the cranium; and, **B)** the otoliths are located in cranial grooves directly behind the brain.

AGE RESULTS

Scales, fin rays, and otoliths collected as part of ongoing stock assessment activities are sent to the scale ageing lab (Fish Morphology Lab., 555 W. Hastings, Vancouver, ph:666-8500). Scales, otoliths, and fin rays collected as part scientific research objectives are sent to the ageing lab (Age Determination Unit, Biological Sciences Branch, Pacific Biological Station, Nanaimo, ph:756-7179). The final age results are provided by Age Laboratory personnel.

BODY WEIGHT

Weight measurements of fish are most easily taken using a spring scale with a dial type face. It is important that the fish to be weighed are treated consistently, i.e. all should be equally dry and weighed before spawning. Do not weigh some fish before spawning and some fish after as this results in weight data that are not readily comparable. Check the scale for tare frequently because slime build up on the scale trough will change the tare. Weights should be taken in whole grams (gm). In the event the weights are measured in pounds, record them under **COMMENTS**; then convert to grams and enter under **BODY WEIGHT** as time permits. If weights are in kilograms record the data in grams and **right justify** the data. Record body weight as a 5 digit code:

ENCODE - (ie. 900 gm = 00900; 2 kg = 02000)

ROUND/DRESS (RD/DRS)

Record the state of the fish when sampled. It is particularly important to sample fish in the round (or intact) as full sampling objectives will be met, however sampling fish that are "gutted and cleaned" are referred to as dressed fish. If the fish are dressed with the head cut off then obtaining the full complement of samples is not possible. Record round/dress as a 1 digit code:

ENCODE - 1 = Round
 2 = Dressed (head off)
 3 = Dressed (head on)

GRADE

This applies only to commercial catches of chinook and coho. At dockside the fish are grouped by plant personnel ("graders") into specific weight ranges (ie. a 9 lb. fish may be grouped or graded into the 8 to 12 lbs category). Determine the grade which corresponds to the weight of the fish. Record grade as a 4 digit code:

ENCODE - See **Appendix Table 6** for grade codes.

GONAD WEIGHT

Gonad weight is used for a variety of objectives, for example, to ascertain whether or not the fish

would have reached maturity in the year of sampling. The state of maturity at a given fishery is often useful for stock identification. The gonads are located at the anterior end of the body cavity and ventral to the swim bladder. In immature fish they appear as thin ribbons of tissue only a few centimetres in length (See **MATURITY**). To extract the gonads you should slit the abdomen from the vent along the ventral midline to beneath the gill covers and then cut dorsally along the side behind the pectoral fin to the backbone such that the side of the fish can be folded dorsally over the back. An additional dorsal cut near the vent and up to the backbone may be helpful in allowing the side of the fish to remain folded over and out of your view of the body cavity. The gonads lie below the swim bladder and are attached to the body wall at the extreme anterior end. Once the gonads are located, dissect them from the body wall and remove them from the body cavity. Use a small balance to weigh the gonads and then record the weight to the nearest gram using 4 digits. Calibrate the scale with known weights (record deviations) prior to each sample and after each 50 measurements. Record gonad weight as a 4 digit code:

ENCODE - (ie. 10 gm = 0010)

FECUNDITY ESTIMATE TYPE

The fecundity of salmon is the number of ripening eggs in the female prior to the next spawning period. It is best to obtain all female fish needed for a fecundity study when the eggs have been ovulated and not ripe and running. Select females when they are fresh to the spawning grounds and eggs are still in the skeins and not running ("green"). Fish can be selected either from a random sample of the population, or from a stratified sample that includes the entire size range of fish in the sample. The number of fish in a sample is species dependent and requires consultation with Fisheries Officers. Selecting the type of fecundity procedure depends on the objectives. There are 3 methods used by DFO workers to estimate fecundity: Total Counts, Volumetric Subsample, and Gravimetric Subsample. Record fecundity type as a 1 character variable:

ENCODE - T = Total counts
 V = Volumetric Subsample
 G = Gravimetric Subsample

FECUNDITY ESTIMATE

Egg skeins are removed from either prespawning live fish, post spawned live fish, or dead fish. Selecting skeins from live fish involves either stripping the fresh eggs from prespawning, ripe fish into graduated cylinders, as in hatchery procedures, or by surgically removing the intact skein, placing it into a cotton bag appropriately labelled for individual identification, and storing the bag/skein in a 10% formalin solution. In the laboratory, the preserved skeins are washed in fresh water to remove excess formalin, and broken into clusters. The individual eggs are teased from the surrounding ovarian tissue with care so not to break or lose any eggs. A description of the type of procedure used to estimate fecundity is as follows:

TOTAL COUNTS

In this case, all of the eggs are counted from both ovaries. Care should be taken since it is easy to make gross errors when counting several thousand eggs.

VOLUMETRIC SUBSAMPLE

Place all of the eggs, from both left and right ovary, into a graduated cylinder and record the total volume in millilitres (ml). Select 3 subsamples by pouring each into 100 ml containers, count all of the eggs in each 100 ml subsample, and determine the average number of eggs per 100 ml. Average fecundity is determined by extrapolating the subsample egg number to the displacement volume of the remaining eggs. This procedure also provides an approximation of egg size (#eggs/100ml).

GRAVIMETRIC SUBSAMPLE

Place all of the eggs into a preweighed container and weigh both container and eggs to the nearest gram. Select 3 subsamples of eggs, each weighing about 10% of the total weight. Count all of the eggs in each subsample and determine the average number of eggs per 10% total weight. Average fecundity is determined by extrapolating the subsample egg number to the ratio of total weight/weight of the subsample.

ENCODE - Record the total number of eggs in the total count procedure, and, in the subsample procedures record the average number of eggs from the 3 subsamples as a 5 digit code:

(ie. 2500 = 02500)

EGG RETENTION

Egg retention is used to determine spawning success of female salmon. This is accomplished during deadpitch sampling where the sampler examines the carcasses and visually estimates the number of eggs left in the skeins. Record egg retention as a 1 digit code:

ENCODE -
1 = Full intact skeins with 0% eggs spawned
2 = More than 100 eggs are left in the skeins
3 = Less than 100 eggs are left in the skeins

CARCASS CONDITION

Carcass condition is a qualitative assessment conducted during deadpitch sampling to determine the degree of decomposition of the fish. From the age of the carcass, one can determine bias in tag loss. As the carcass gets older the chance of recovering information relating to external marks such as a coded wire tag (CWT) or other external tags, and accuracy of sex determination declines. Record the carcass condition as a 1 digit code:

ENCODE -
1 = Fish in fresh condition with red or mottled gills, fairly bright eyes
2 = Fish with firm flesh but the gills are completely white, glazed eyes
3 = Fish is intact but flesh is soft and putrid, dull eyes or possibly no eyes
4 = Fish consists of skin and bones

FLESH COLOUR

This is to identify the flesh colour of **chinook salmon**. Flesh colour is recorded as either red, white or mixed (unknown). Pink fleshed chinook are recorded as red; and "marbled flesh" chinook means red/white coloured flesh. This condition would be allocated either a red or a white code depending on the preponderance of the marble colouring. Record flesh colour as a 1 digit code:

ENCODE - 1 = Red
 2 = White
 3 = Mixed (essentially means not determined by sampler or unknown)

SKIN COLOUR

The colour of the skin at time of sampling is another method to assess the maturity stage. For a given population skin colour is qualitative, can be variable and is rather subjective. Most of the colour changes will occur during the time of spawning. Record skin colour as a 1 digit code:

ENCODE - 1 = silver bright
 2 = semi-bright (some darkening or initial stages of colour)
 3 = qualla (spawning colours are very prominent and fully formed)
 4 = unknown (unclassifiable)

EXTERNAL TAGS

External tags are used to tag salmon at the beginning of the spawning escapement runs. The common tag used is the opercular tag which is a metal tag containing a 4 digit number. These tags are placed on a sample of fish, regardless of CWT marks, and the fish are released into the river. Later in the season, dead pitch sampling will retrieve fish containing the opercular tags. The fish will be assigned an E-label (see **HEAD NUMBER**). The opercular tags are then used to cross reference with the E-label for CWT marked fish. Record the external tag number as a 4 digit code:

ENCODE - (ie. No. 1234 = 1234)

Note: Other external tags include floy (spaghetti) tag and peterson disc. Record the number and follow the directions on the tag. Some tags have no instructions and should be left on the fish for the appropriate assessment crew. Check with Fisheries Officers or hatchery managers if you find these tags.

GENETIC SAMPLING

Tissue samples have been extensively collected from salmon stocks for genetic analyses. This analysis can be used to determine stock composition for in-season management and post-season evaluation, and other studies (ie. post evolutionary). Samples should be collected from fish representing the full size

range of the catch. Sampling consists of collecting specific tissues or blood. Sample quotas must account for bright and dark quality grades so that each are proportionally represented in the sample. Post-spawners are fine (and are generally recommended by Fishery Officers) as long as they were alive when collected. Tissue samples such as heart, liver, muscle, eye, and blood are used for genetic analyses.

TISSUE SAMPLING

ISOZYME

Tissue samples taken for isozyme analyses should consist of four tissue types: **heart, liver, eye, and muscle**. Remove the tissues as follows: slit ventral surface from below origin of pectoral fin back midway to pelvic fin then open cavity and carefully remove heart intact; cut away gall bladder (yellow-green sac) from liver, then remove about 10 cc (1 cm³) of liver; remove 1 intact eyeball by pushing from behind operculum with index finger; and, remove about 10 cc (1 cm³) of muscle. Tissues can be stored in either plastic bags or small polypropylene vials. Plastic bags make collection easy and quick, but are large and bulky when space is a premium. Vials are small and compact and most of the processing is done in the field, however processing into vials is time consuming and requires a great deal of care ensuring instruments are clean. If plastic bags are used then place each tissue in a separate plastic bag, labelled with species name, fish number, and tissue type. All four bags should then be placed in another bag labelled with species, location, sex, date, fish number, and tissue types. Tissues placed in vials must be labelled with species name, fish number, and tissue type. Alternatively, vials containing the same tissue should be labelled with a fish number and stored in trays. Trays are stored in plastic bags labelled with species, date, location, and tissue type. Tissues should be collected from fresh, recently alive specimens. Care should be taken that the tissue is clean and free from contamination by dirt, general slime and tissue matter or solutions from other tissues. Wash tissues thoroughly if contaminated. A target sample size is about 100 fish, depending on the objectives.

DNA EXTRACTION

Tissue samples taken for DNA (DeoxyriboseNucleic Acid) extraction are primarily blood or liver. Other tissues (heart, eye, and muscle) are considered secondary choices. Sample size can be as low as 1 fish, depending on the objectives. Follow the procedures outlined above for ISOZYME for DNA extraction.

PCR ANALYSES

Tissue samples taken for PCR (Polymerase Chain Reaction) analyses include blood, liver or a fin clip. Other tissues are considered secondary choices. Follow the procedures outlined above for ISOZYME for PCR analyses. The fin must be clipped as close to the base as possible, so as to include some tissue.

BLOOD SAMPLING

DNA/PCR

To obtain a clean blood sample, insert a sterilized 10 cc syringe directly into the heart, or preferably a major artery in the gill or caudal peduncle. Remove 3 cc of blood and

place into EDTA vacutainer (15 ml polypropylene vials/lids). Ensure each vial has a label with species, sex, date, and fish number.

STORAGE OF SAMPLES

Tissue samples for isozyme analyses must be kept frozen. Tissue and blood samples for DNA/PCR analyses can either be frozen or preserved in 95% ethanol. Blood samples for DNA/PCR analyses can be frozen. Samples should be preserved as soon as possible after death to prevent deterioration. **It is very important that samples never thaw after freezing.**

TISSUE

ISOZYME - The tissue samples should be frozen either in liquid nitrogen, or dry ice (if no other freezer is available), or in a freezer at -30°C, prior to transfer back to an ultracold ($\leq -70^{\circ}\text{C}$).

DNA/PCR - The tissue samples can be frozen, as for isozyme analyses, or minced into fine particles and placed into polypropylene vials/caps with 95% ethanol. Ethanol will leak through other plastic vials but not polypropylene. Fin samples should not be minced. Large fins can be frozen, small fins can be frozen or stored in ethanol in polypropylene tubes.

BLOOD

DNA/PCR - Blood is frozen in plastic EDTA vacutainers. For short term storage keep at 4°C.

Record the type of sample taken as a 1 digit code:

ENCODE - 1 = tissues sample taken
 2 = blood sample taken
 3 = tissues & blood samples taken
 4 = fin clip sample taken

STOMACH SAMPLE

Before preserving stomach samples, stomachs should be cut open longitudinally to ensure they become completely saturated in formalin. Place the whole stomach in a cloth stomach bag that has been properly labelled with species, fish number, date, set number and name of sampler. Store all stomachs in a closed bucket containing a solution of 10% formalin. Make sure that all stomach bags are completely submerged in the preservative solution. Record stomach sample as a 1 digit code:

ENCODE - 1 = stomach preserved
 2 = stomach frozen
 3 = stomach contents examined
 4 = empty stomach

5 = everted stomach

STOMACH VOLUME

If the stomach is examined in the field then determine the total volume of the contents by visually estimating the volume (cc). This will provide an estimate of fullness. An easy and effective method to estimate volume is to use a calibrated syringe to compare volume of stomach to volume of the syringe. Record the total volume as a 3 digit number. To determine the volume of each prey item in the stomach contents just proportion the volume by prey item accordingly and record in **COMMENTS**. Record stomach volume as a 3 digit code:

ENCODE - (ie. 12 cc = 012)

PARASITES

Parasite analyses is another technique for stock identification. Sampling for parasites will include sampling the intact fish or removing specific tissues. Select samples from fresh fish. Postspawners are fine as long as they were alive when collected. The procedures to follow when collecting specific tissues are described below:

BRAIN

The recommended procedure for removing the brain is to open the brain cavity by removing the top of the head; remove brain with clean forceps taking care to get the hindbrain and part of the spinal cord. Use clean knives and forceps. It is recommended to have 6-10 forceps available while sampling. After use, place contaminated forceps into a rinsing bucket containing bleach solution (water is adequate if rinsed and wiped carefully); select new forceps for the next fish until supply is exhausted; rinse and wipe forceps in bleach to renew supply. Be sure to wipe knives carefully so that the blade is free of blood or tissue before cutting into the brain cavity. Store the brain in a vial with the fish number written on the lid with a fine permanent marking pen. Vials are best stored in trays to facilitate later examination. Freeze as soon as possible.

HEAD

Remove the head intact by making a straight cut 3 cm behind the operculum to include gills, heart and nape. Place the head into a labelled plastic bag and freeze as soon as possible.

MUSCLE

Remove the entire fillet from one side of the fish from the operculum to the tail. Place the fillet into a labelled plastic bag and freeze as soon as possible.

KIDNEY

Remove the entire kidney intact from the fish by carefully cutting the membrane encasing the kidney parallel to the body wall. Gently roll out the kidney from the backbone, the full length of the fish. Place the kidney into a labelled plastic bag and freeze as soon as possible.

VISCERA

This includes all of the organs excluding kidney and heart. Carefully cut the fish along the abdomen, from anus to throat. Open the body cavity and cut the esophagus ahead of the pneumatic duct located directly behind the gills, and peel the entire viscera back to include the swimbladder. Remove intact by cutting the intestine from the anus. Place the viscera into a labelled plastic bag and freeze as soon as possible.

CARCASS

Select a fresh specimen and place intact into a labelled plastic bag and freeze as soon as possible.

It is important to make sure that the samples are frozen in individual bags. Each bag must contain a waterproof label that is legible through the bag. Also, the bag must be labelled on the outside with a permanent marking pen.

Record the type of parasite sample(s) taken as a 1 character variable:

ENCODE - B = brain removed
 H = head frozen
 M = muscle
 K = kidney
 V = viscera
 C = intact carcass

HOOK LOCATION

For fish caught on hook and line note the location where the hook was embedded in the fish. These results are part of a hooking mortality project. Record hook location as a 2 digit code:

ENCODE - 01 = upper jaw (maxillary, roof of mouth)
 02 = lower jaw
 03 = corner jaw (where jaw articulates)
 04 = lower gills (arch)
 05 = upper gills (arch)
 06 = eye
 07 = isthmus (underside and centre of lower jaw)
 08 = orbit (eye socket but not including eye)

- 09 = body of fish
- 10 = operculum (gill flap)
- 11 = tongue, deep in both jaw
- 12 = snout (nose)
- 13 = deep in throat
- 14 = head
- 99 = unknown (in some cases a hook will let go at the time of capture and leave a wound that is very difficult to locate)

EXTERNAL DAMAGE

All salmonids should be examined for any signs of external damage. Note the location and type of damage. This includes net marks, slash marks, lamprey scars or external bleeding. Record external damage as a 2 digit code:

- ENCODE-**
- 01 = none (fish in good condition)
 - 02 = slight bleeding from fish
 - 03 = moderate bleeding from fish
 - 04 = severe/heavy bleeding from fish
 - 05 = net marks
 - 06 = lamprey marks
 - 07 = slash marks (non seal damage)
 - 08 = seal claw marks

DISEASE TYPE

The effects of disease (pathological changes) in salmonids can be examined either from external or internal observations. The various characteristics to look for in a diseased fish are presented in detail in a manual, *"Diseases of Seawater Netpen-reared Salmonid Fishes In The Pacific Northwest"* (Kent 1992). In brief, look for the following:

EXTERNAL SURFACE

- Popeye - one eye or both
- Skin colour - changes from the normal colour
- Skin colour - open lesions (ulcers)
 - tumours (colour lumps, nodules either single/multiple)
- Gills - pale colour, lumps or nodules

INTERNAL ORGANS

- Liver - colour, size, ulcers, lumps/nodules either single/multiple
- Gut - colour, size, ulcers, lumps/nodules either single/multiple
- Spleen - colour, size, lumps/nodules either single/multiple
- Heart - colour, size, lumps/nodules either single/multiple
- Kidney - colour, size, lumps/nodules either single/multiple
- Gonads - colour, size, lumps/nodules either single/multiple

Record the major disease type and put others in **COMMENTS**. Record disease as a 1 digit code:

ENCODE - 1 = eye
 2 = skin
 3 = gills
 4 = liver
 5 = gut
 6 = spleen
 7 = heart
 8 = gonad
 9 = kidney

DISEASE PRESERVATION

In some cases infected specimens should be delivered intact to the Fish Health Section at the Pacific Biological Station, Nanaimo, 756-7054. The specimens can be fresh (chilled by refrigeration or on ice), frozen, or preserved (see Kent 1992). Record disease preserved as a 1 digit code:

ENCODE - 1 = fresh
 2 = frozen
 3 = preserved

COMMENTS

On the back of the SALMON BIOLOGICAL DATA FORM record additional information pertaining to the fish being sampled, such as tag number, missing adipose fin, unusual markings, and other physical characteristics which may be useful. Use the **FISH NUMBER** to identify the fish to which the comment pertains. To flag comments on the front of the form include a single character variable in the record. Record comments as

ENCODE - C = Comments on the back of the page

CHAPTER 3 - MARK RECOVERY PROGRAM

The Mark Recovery Program (MRP) consists of 2 types of mark sampling programs: Adipose Fin/CWT Sampling, and Multiple Fin Clip (MFC) Sampling. Catches are delivered to processing plants and fish camps from trollers, gillnetters, seiners, packers and trucks throughout the fishing season from June to November. **A mark sample is a number of fish that have been checked for either adipose fin clip or multiple fin clip marks.** A delivery should only be sampled for marks if more than 90 percent originates from a single catch region; a mixed catch region sample is of limited value. When sampling commercial fisheries landings for fish with missing adipose fins, these mark samples must be taken only from deliveries that fully represent the catch. Deliveries will represent the catch if all species, size, colour, and quality grades are present in delivery in the same proportions as in the catch from which it originated. Do not perform a mark sample on deliveries from which fish have been sold to other fish buyers.

Research programs outside of MRP also conduct mark sampling. The procedures outlined below can also apply to their work, including recording and coding of data.

ADIPOSE MARK SAMPLING

Sampling for adipose marks involves looking through a sample of a catch for fish with a missing adipose fin. A fish without an adipose fin indicates it as carrying a coded wire tag (CWT) in its nose cartilage. When a fish with a missing adipose fin is located, the degree of regeneration of the clipped adipose fin is determined. The head or snout will have to be cut off the fish, preserved, and processed for the coded wire tag.

ADIPOSE FIN PROCESSING

Fish identified as carrying a CWT by an adipose mark are removed from the sample to be processed. The six basic steps in processing an adipose-mark fish are:

1. Attach the disc tag - See **HEAD NUMBER**
2. Determine weight - See **BODY WEIGHT**
3. Determine length - See **LENGTH** and **LENGTH CODE**
4. Determine sex and maturity - See **SEX MATURITY**
5. Collect scales - See **SCALE BOOK NUMBER** and **SCALE NUMBER**
6. Remove the head or snout - See **HEAD NUMBER**

LOCATION CODE

Refer to **SAMPLING LOCATION** on pg. 60 for a list of the sampling location codes. Write in the name where the sampling took place under **LOCATION**.

STATISTICAL WEEK

Refer to **STATISTICAL WEEK LANDED** on pg. 57 for a description and how to encode the statistical week.

NAME OF SAMPLER

Under the heading **RECORDED BY**: write in the sampler's name(s) or initials.

VESSEL

Under the heading **BOAT NAME**: write the vessel name in full. Do not use abbreviations.

HEAD CODE

Some heads can be sampled as part of a set sample size, no heads sampled in a set sample size, or heads can be sampled without recording a sample size. Record head code as a 1 character code:

ENCODE - D = Heads with a sample size
 C = Sample size without heads
 S = Heads without a sample size

HEAD NUMBER

A numbered paper label with a 6 digit numeric code as the head number is attached to the operculum (if the head is to be removed) or the maxillary (if only the snout is to be removed) of the adipose-marked fish . This facilitates the correlation of physical measurements of the fish and scale data taken from the fish with the CWT in the fish's head or snout once it is removed from the body. When removing the head, cut directly behind the operculum making sure to include the gills. When removing the snout, make sure the cut is at least 1 cm behind the eye. The heads are grouped by catch region when shipped to the laboratory facilities. If an adipose-marked fish is clearly seen, but for some reason cannot be retrieved for processing, include the fish in the mark sample, assign it a head tag number and record it on the sample form and make a notation "lost head to production" under **COMMENTS**. Record head number as a 6 character code:

ENCODE - (ie. 123456 or 002591)

For fish caught for escapement sampling programs, completely fill in the 6 digit head number label or E-label (E refers to escapement recoveries) and place that label on the head. Place the head in a plastic bag and freeze for later transfer to the head recovery program. For example:

No. 02297 E
Site _____
Species _____

Record head number as a 6 character code:

ENCODE - (ie. No. 02297 E = 02297E)

If the E-labels are not available then fill out a waterproof label (species, date, vessel-plant-packer name, fish number, set number, statistical area) and attach it to the jaw. **The E-labels are attached in sequence in a book which can be obtained from the Mark Recovery Program, 555 West Hastings, Vancouver.**

CODED WIRE TAG (CWT) CODE

This field is not used by field samplers. The CWT code will be added into this field at a later date.

WEIGHT

Refer to **BODY WEIGHT** on pg. 80 for a description and how to encode the information.

ROUND/DRESS

Refer to **ROUND/DRESS (RD/DRS)** on pg. 80 for a description and a list of codes.

LENGTH

Refer to **LENGTH** on pg. 62 for a description and how to encode the information.

LENGTH CODE

Fork length is the appropriate type of length measurement for commercial sampling. Refer to **LENGTH CODE** on pg. 62 for a description and a list of codes for the length types.

SPECIES

Refer to **SPECIES** on pg. 62 for a description and list of codes by species.

FLESH COLOUR

Refer to **FLESH COLOUR** on pg. 83 for a description and list of codes.

GRADE

Refer to **GRADE** on pg. 80 for a description and **Appendix Table 6** for grade codes.

SEX MATURITY

Sex and maturity will be determined for adipose-marked fish caught in the fisheries. [Sex and maturity is utilized for a variety of purposes including the determination of sex ratios of marked fish, differentiating between jacks (precocious males) and immature males, and evaluating hatchery sterilization experiments.] Record sexual maturity for all **ROUND** recoveries. For **DRESSED** recoveries enter the unknown code. Record sex maturity as a 1 digit code:

- ENCODE -**
- 1 = Immature female (egg skeins are small and occupy < 15% of the body cavity. Egg diameter is < 4mm)
 - 2 = Mature Female (egg skeins are full of developing or well developed eggs and occupy > 15% of the body cavity. Egg diameter is > 4mm)
 - 3 = Immature male (testes are thin and thread-like and occupy < 15% of the body cavity. Extensive vascularization gives them a red or brown colour)
 - 4 = Mature male (testes occupy > 15% of the body cavity and are grey or white)
 - 5 = Unknown

CODED FIN MARK

When examining for missing adipose fins from marked samples, record the stage of regeneration of the adipose fin. Partial adipose fins should be considered to be adipose marks but recorded as "stubby". Some adipose clipped fish will partially or fully regenerate their adipose fin between the time they are marked and the time they are caught. If an unhealed scar is present they should not be sampled for CWT. Record coded finmark as a 2 digit code:

- ENCODE -**
- 01 = complete adipose clip
 - 33 = stubby adipose clip mark

SCALE BOOK NUMBER

Refer to **SCALE BOOK NUMBER** on pg. 66 for a description and how to encode the book numbers.

SCALE NUMBER

Refer to **SCALE NUMBER** on pg. 66 for a description, number of scales to collect by species

and how to encode the scale numbers.

VESSEL-TRUCK-PACKER (VTP)

Refer to **VTP** on pg. 60 for a description and list of codes.

GEOGRAPHIC CAPTURE AREA

Refer to **GEOGRAPHIC CAPTURE AREA** on pg. 55 for a description.

CATCH REGION

Refer to CATCH REGION on pg. 56 for a description and **Appendix Table 1** for the catch region codes.

STATISTICAL AREA

Refer to STATISTICAL AREA on pg. 56 for a description and **Appendix Table 2** for statistical area codes with sub-area codes.

SUB-AREA

Refer to SUB-AREA on pg. 56 for a description and **Appendix Table 2** for statistical sub-area codes with the associated area codes.

GEAR

Refer to **GEAR** on pg. 56 for a description and **Appendix Table 3** for a list of gear codes.

ADIPOSE MARK SAMPLE SIZES

Adipose mark sample size refers to the numbers of COHO, CHINOOK, STEELHEAD (STHD), CHUM, SOCKEYE, and PINKS that were checked for marks. The samples are collected randomly. Record the numbers under these titles only once on the first line of each adipose mark sample data set. These are right justified and are the total count of all grades for each species sampled. For example, a random sample from either a vessel landing, truck delivery, or test catch of 200 fish are sampled for marks. This sample may have a total of 25 COHO, 125 CHINOOK, 5 STHD, 20 CHUM, 15 SOCKEYE, and 10 PINKS. Record adipose mark sample size as:

<i>ENCODE -</i>	<i>#COHO</i>	<i>#CHINOOK</i>	<i>#STHD</i>	<i>#CHUM</i>	<i>#SOCKEYE</i>	<i>#PINKS</i>
	25	125	5	20	15	10

DATE SAMPLED

Refer to **DATE SAMPLED** on pg. 60 for a description and how to encode the date when the sample was taken.

STATISTICAL WEEK LANDED ("PERIOD CODE")

Refer to **STATISTICAL WEEK LANDED** on pg. 57 for a description and how to encode the statistical week landed.

COMMENTS

Record notes regarding lost head tag, missing marks, unidentified species, fishing location names, and any other pertinent unstructured information not captured elsewhere.

MULTIPLE FIN CLIP SAMPLING

Sampling for multiple fin clip marks requires looking through a sample of a commercial catch for fish with a missing right or left ventral (ie. pelvic) fin, or a combination of missing left or right ventral fin and missing adipose fin. The pectoral, anal and dorsal fin have also been clipped in the past. When fish with missing fins are located, the degree of regeneration of the clipped fin is determined.

MULTIPLE FIN CLIP PROCESSING

From commercial landings, fish identified as being MFC marked are removed from the sample to be processed. The six basic steps in processing fin clip marks are:

1. Determine mark type and ventral fin regeneration - See **CODED FIN MARK** and **VENTRAL REGENERATION**
2. Determine length - See **LENGTH** and **LENGTH CODE**
3. Determine weight - See **BODY WEIGHT**
4. Collect scales - See **SCALE BOOK NUMBER** and **SCALE NUMBERING**
5. Determine sex - See **SEX MATURITY**
6. Determine skin colour - See **SKIN COLOUR**

LOCATION CODE

Refer to **SAMPLING LOCATION** on pg. 60 for a list of the sampling location codes.

SPECIES

Refer to **SPECIES** on pg. 62 for a description and list of codes by species.

STATISTICAL WEEK SAMPLED ("PERIOD CODE")

Refer to **STATISTICAL WEEK LANDED** on pg. 57 for a description and how to encode the statistical week sampled.

NAME OF SAMPLER

Under the heading **RECORDED BY:** write in the sampler's name(s) or initials.

VESSEL

Under the heading **BOAT NAME:** write the vessel name in full. Do not use abbreviations.

CODED FIN MARK

A fin-clip mark is identified as a single or combination of missing fins or maxillaries. Record the coded finmark as a 2 digit code:

<i>ENCODE -</i>	01 = complete adipose clip (ad/CWT)
	07 = adipose and left ventral fin (ad LV)
	08 = right ventral fin removed (RV)
	09 = left ventral fin removed (LV)
	10 = adipose and right ventral fin (ad RV)
	33 = stubby adipose clip mark
	40 = right pelvic fin removed
	41 = left pelvic fin removed
	42 = adipose and anal fins removed
	43 = adipose, right and left ventral fin removed
	44 = right and left ventral fins removed
	45 = right maxillary removed
	46 = left maxillary removed
	47 = adipose and right maxillary removed
	48 = adipose and left maxillary removed
	49 = right ventral and right maxillary removed
	50 = right ventral and left maxillary removed
	51 = left ventral and right maxillary removed
	52 = left ventral and left maxillary removed
	53 = adipose and half dorsal removed
	54 = half dorsal removed
	88 = adipose (stubby) + right ventral fin (ad(Stubby)RV)
	99 = adipose (stubby) + left ventral fin (ad(Stubby)LV)
	00 = unknown

VENTRAL REGENERATION

Some ventral fins regenerate after they are clipped. The degree to which these fins regenerate varies widely. Use the following criterion to determine whether the abnormality you see does, in fact, represent a valid fin clip: A valid fin clip is a partially regenerated ventral fin with fused fin rays that are $\frac{3}{4}$ as long as its mate's; if it is longer than $\frac{3}{4}$ the length of its mate's then it is not a valid fin clip. If the criterion is met, then look for the scar from the original clip to determine the degree of fin regeneration. Record ventral regeneration as a 1 digit code:

<i>ENCODE -</i>	1 = no regeneration of ventral fin, or 0%
	2 = ventral fin regenerated about $\frac{1}{4}$ the length of its mate, or 25%
	3 = ventral fin regenerated about $\frac{1}{2}$ the length of its mate, or 50%
	4 = ventral fin regenerated about $\frac{3}{4}$ the length of its mate, or 75%
	5 = regeneration of ventral fin unknown (undecided)

WEIGHT

Refer to **BODY WEIGHT** on pg. 80 for a description and how to encode the information.

ROUND/DRESS

Refer to **ROUND/DRESS (RD/DRS)** on pg. 80 for a description and a list of codes.

LENGTH

Refer to **LENGTH** on pg. 62 for a description and how to encode the information.

LENGTH CODE

Fork length is the appropriate type of length measurement for commercial sampling. Refer to **LENGTH CODE** on pg. 62 for a description and a list of codes for the length types.

SEX MATURITY

Sex and maturity will be determined for multiple fin clip marked fish caught in the fisheries. Refer to **SEX MATURITY** on pg. 93 for a description and a list of codes.

SKIN COLOUR

The colour of the skin is used as an indicator of the spawning transition. A fish will enter the river system either as a silver bright or exhibiting the initial stages of the spawning colours. Record skin colour as a 1 digit code:

ENCODE -

- 1 = silver bright
- 2 = semi-bright (some darkening or initial stages of colour)
- 3 = qualla (spawning colours are very prominent and fully formed)
- 4 = unknown (unclassifiable)

SCALE BOOK NUMBER

Refer to **SCALE BOOK NUMBER** on pg. 66 for a description and how to encode the book numbers.

SCALE NUMBER

Refer to **SCALE NUMBER** on pg. 66 for a description, number of scales to collect by species

and how to encode the scale numbers.

VESSEL-TRUCK-PACKER (VTP)

Refer to **VTP** on pg. 60 for a description and list of codes.

GEOGRAPHIC CAPTURE AREA

Refer to **GEOGRAPHIC CAPTURE AREA** on pg. 55 for a description.

CATCH REGION

Refer to **CATCH REGION** on pg. 56 for a description and **Appendix Table 1** for the catch region codes.

STATISTICAL AREA

Refer to **STATISTICAL AREA** on pg. 56 for a description and **Appendix Table 2** for statistical area codes with sub-area codes.

SUB-AREA

Refer to **SUB-AREA** on pg. 56 for a description and **Appendix Table 2** for statistical sub-area codes with the associated area codes.

GEAR

Refer to **GEAR** on pg. 56 for a description and **Appendix Table 3** for a list of gear codes.

SAMPLE SIZE

This refers to the number of a particular species of salmon that are sampled for both multiple fin clip and CWT marks, or sampled for only multiple fin clip marks. Sample sizes are recorded once for each sample on the first entry line of that sample. Record the fin-clip mark sample size as a 5 digit code:

ENCODE - (ie. 235 = 00235)

MULTIPLE FIN CLIP (MFC) SAMPLE TYPE

There are two types of multiple fin clip samples, either multiple fin clip and coded wire tag

sample, or multiple fin clip sample only. Prior knowledge of a particular fishery, such as mark groups in the past, will assist you in deciding which of the two sample types to choose. For example, if fish in a particular area had the right ventral fin removed and received a CWT, then the sample type would be multiple fin clip and coded wire tag sample type (code 2). This happens to be the preferred sample type. Record the type of a multiple fin clip sample as a 1 digit code:

ENCODE - 2 = sample for adipose/CWT, RV, LV, ADRV, and ADLV marks (multiple fin clip and coded wire tag sample)

3 = sample for RV, LV, ADRV, and ADLV marks (multiple fin clip sample only)

DATE SAMPLED

Refer to **DATE SAMPLED** on pg. 60 for a description and how to encode the date when the sample was taken.

STATISTICAL WEEK LANDED ("PERIOD CODE")

Refer to **STATISTICAL WEEK LANDED** on pg. 57 for a description and how to encode the statistical week landed.

COMMERCIAL SAMPLE FORM (CSF) REFERENCES

This sections refers only to samples of type 2, ie., an adipose mark sample is taken concurrently with a fin-clip mark sample.

D or C

For each delivery, record the prefix "D" if an adipose mark recovery was made, or "C" if no adipose mark recovery was made.

FIRST HEAD NUMBER

If an adipose mark recovery was made ("D") then the corresponding first (regardless of species) disc/head tag number or, HEAD NUMBER from the ADIPOSE FIN PROCESSING on pg. 90 will be recorded under FIRST HEAD #. If no adipose mark recovery was made ("C") then nothing is entered under FIRST HEAD #.

NUMBER ADIPOSE HEADS

The total number of a given species of salmon adipose-only recoveries for the corresponding samples.

COMMENTS

Record notes regarding lost head tag, missing marks, unidentified species, fishing location names, and any other pertinent information not captured elsewhere.

CHAPTER 4 - DATA CODING

BIOLOGICAL DATA CODING FORMAT

Biological data are to be recorded on a standardized SALMON BIOLOGICAL DATA FORM (see Fig. 31). All entries onto the coding sheet are to be **right justified except for RABCODE which is left justified**. A total of 49 sampling attributes are listed along with a comment section:

<u>DESCRIPTION</u>	<u>COLUMN</u>	<u>FORMAT</u>
1. Vessel	1-5	5 characters
2. Latitude	6-11	6 characters
3. Longitude	12-18	7 characters
4. Catch Region	19-20	2 digits
5. Statistical Area	21-23	3 characters
6. Sub-Area	24-26	3 digits
7. Gear	27-28	2 digits
8. Set Number	29-31	3 digits
9. Date of Capture	32-39	8 digits
10. Statistical Week Landed	40-42	3 digits
11. Rabcode	43-69	27 characters
12. Site Code	70-73	4 digits
13. Name of Sampler	74-76	3 characters
14. Agency	77-79	3 characters
15. VTP	80	1 digit
16. Sampling Location	81-83	3 digits
17. Date Sampled	84-91	8 digits
18. Sample Type	92-93	2 digits
19. Species	94-96	3 digits
20. Fish Number	97-103	7 characters
21. Length	104-107	4 digits
22. Length Code	108	1 digit
23. Sex	109	1 digit
24. Maturity	110	1 digit
25. Scale Book Number	111-115	5 digits
26. Scale Number	116-117	2 digits
27. Fin Ray Box Number	118-122	5 digits
28. Fin Ray Number	123-124	2 digits
29. Otolith Box Number	125-129	5 digits
30. Otolith Number	130-131	2 digits
31. Body Weight	132-136	5 digits
32. Round/Dress	137	1 digit
33. Grade	138-141	4 digits
34. Gonad Weight	142-145	4 digits
35. Fecundity Estimate Type	146	1 character
36. Fecundity Estimate	147-151	5 digits

SALMON BIOLOGICAL DATA FORM

Page # _____

CAPTURE EVENTS

VESSEL NAME: _____

VESSEL: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

CATCH REGION: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

DATE CAPTURED: YEAR 1 2 3 4 5 6 7 8 9 10 11 12 MONTH 1 2 3 4 5 6 7 8 9 10 11 12 DAY 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

TIME: HOUR 1 2 3 4 5 6 7 8 9 10 11 12 MINUTE 1 2 3 4 5 6 7 8 9 10 11 12 SECOND 1 2 3 4 5 6 7 8 9 10 11 12

STATION NUMBER: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

DATE OF CAPTURE: YEAR 1 2 3 4 5 6 7 8 9 10 11 12 MONTH 1 2 3 4 5 6 7 8 9 10 11 12 DAY 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

TIME: HOUR 1 2 3 4 5 6 7 8 9 10 11 12 MINUTE 1 2 3 4 5 6 7 8 9 10 11 12 SECOND 1 2 3 4 5 6 7 8 9 10 11 12

STATION NUMBER: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

SAMPLING EVENTS

VESSEL NAME: _____

VESSEL: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

CATCH REGION: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

DATE CAPTURED: YEAR 1 2 3 4 5 6 7 8 9 10 11 12 MONTH 1 2 3 4 5 6 7 8 9 10 11 12 DAY 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

TIME: HOUR 1 2 3 4 5 6 7 8 9 10 11 12 MINUTE 1 2 3 4 5 6 7 8 9 10 11 12 SECOND 1 2 3 4 5 6 7 8 9 10 11 12

STATION NUMBER: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

DATE OF CAPTURE: YEAR 1 2 3 4 5 6 7 8 9 10 11 12 MONTH 1 2 3 4 5 6 7 8 9 10 11 12 DAY 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31

TIME: HOUR 1 2 3 4 5 6 7 8 9 10 11 12 MINUTE 1 2 3 4 5 6 7 8 9 10 11 12 SECOND 1 2 3 4 5 6 7 8 9 10 11 12

STATION NUMBER: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

SPECIES CODE

100 - Pink
101 - Chin
102 - Coho
103 - Chinook
104 - Steelhead
105 - Atlantic

SITE CODE

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

BIOLOGICAL SAMPLE EVENTS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

Figure 31. The SALMON BIOLOGICAL DATA FORM containing all of the biological sampling attributes discussed in this report. Comments are to be included on the reverse side of the form associated with the corresponding record number .

<u>DESCRIPTION</u>	<u>COLUMN</u>	<u>FORMAT</u>
37. Egg Retention	152	1 digit
38. Carcass Condition	153	1 digit
39. Flesh Colour	154	1 digit
40. Skin Colour	155	1 digit
41. External Tags	156-159	4 digits
42. Genetic Sampling	160	1 digit
43. Stomach Sample	161	1 digit
44. Stomach Volume	162-164	3 digits
45. Parasites	165	1 character
46. Hook Location	166-167	2 digits
47. External Damage	168-169	2 digits
48. Disease Type	170	1 digit
49. Disease Preservation	171	1 digit
50. Comments	172	1 character

BIOLOGICAL DATA REQUIREMENTS

When you are about to take a biological sample, keep in mind that there are some attributes that must be recorded in order to have a valid data record. To assist you in this decision, I have listed below all of the attributes from the CODING FORMAT with their level of importance for each of 5 sampling activities: Vessel (commercial or research), Port (commercial or research), Sport (vessel or ramp), Spawn (ie. sampling at spawning grounds), and Other (ie. stream, river, hatchery, fence, Aboriginal fishery, escapement). For example, **M** indicates mandatory information; these attributes are critical for effective use of the data. **D** indicates desirable information; you must record this information if at all possible. **O** indicates optional information; this information is collected as part of research objective or a specific request. Some of the optional information may be top priority in certain fisheries.

SAMPLING PRIORITY

<u>DESCRIPTION</u>	<u>Vessel</u>	<u>Port</u>	<u>Sport</u>	<u>Spawn</u>	<u>Other</u>
1. Vessel	M	D	D	-	-
2. Latitude	M	-	M	-	D
3. Longitude	M	-	M	-	D
4. Catch Region	M	M	M	M	M
5. Statistical Area	M	M	M	M	M
6. Sub-Area	M	M	M	M	M
7. Gear	M	M	M	M	M
8. Set Number	M	-	M	-	D
9. Date of Capture	M	D	M	M	M
10. Statistical Week Landed	M	M	-	-	O
11. Rabcode	-	-	-	M	D
12. Site Code	-	-	M	M	M
13. Name of Sampler	M	M	M	M	M

PRIORITY SAMPLING (Cont'd)

<u>DESCRIPTION</u>	<u>Vessel</u>	<u>Port</u>	<u>Sport</u>	<u>Spawn</u>	<u>Other</u>
14. Agency	M	M	M	M	M
15. VTP	-	M	-	-	-
16. Sampling Location	-	M	M	M	D
17. Date Sampled	M	M	M	M	M
18. Sample Type	M	M	M	M	M
19. Species	M	M	M	M	M
20. Fish Number	D	D	D	D	D
21. Length	M	M	M	M	M
22. Length Code	M	M	M	M	M
23. Sex	M	M	M	M	M
24. Maturity	D	D	D	D	D
25. Scale Book Number	D	D	D	D	D
26. Scale Number	D	D	D	D	D
27. Fin Ray Box Number	D	D	D	D	D
28. Fin Ray Number	D	D	D	D	D
29. Otolith Box Number	D	D	D	D	D
30. Otolith Number	D	D	D	D	D
31. Body Weight	D	D	D	D	D
32. Round/Dress	M	M	M	-	M
33. Grade	O	M	O	-	O
34. Gonad Weight	O	O	O	O	O
35. Fecundity Type	O	O	O	O	O
36. Fecundity Estimate	O	O	O	O	O
37. Egg Retention	O	O	O	O	O
38. Carcass Condition	-	-	-	O	-
39. Flesh Colour	O	M	O	O	O
40. Skin Colour	O	O	O	O	D
41. External Tags	M	M	M	M	M
42. Genetic Sampling	O	O	O	O	O
43. Stomach Sample	O	O	O	-	O
44. Stomach Volume	O	O	O	-	O
45. Parasites	O	O	O	O	O
46. Hook Location	O	O	D	-	O
47. External Damage	O	O	O	D	O
48. Disease Type	O	O	O	O	O
49. Disease Preservation	O	O	O	O	O
50. Comments	O	O	O	O	O

MARK RECOVERY DATA CODING FORMAT

ADIPOSE FIN DATA

The data are to be recorded on the MRP COMMERCIAL SAMPLING FORM for Adipose Mark Sampling (CWT)(see Fig. 32). All entries onto the coding sheet are to be **right justified**. A total of 29 sampling attributes are listed:

<u>DESCRIPTION</u>	<u>COLUMN</u>	<u>FORMAT</u>
1. Location Code	1-3	3 digits
2. Statistical Week	4-6	3 digits
3. Head Code	7	1 character
4. Head Number	8-13	6 characters
5. Coded Wire Tag Code	14-25	12 digits
6. Weight	26-28	3 digits
7. Round/Dress	29	1 digit
8. Length	30-33	4 digits
9. Length Code	34	1 digit
10. Species	35-37	3 digits
11. Flesh Colour	38	1 digit
12. Grade	39-42	4 digits
13. Sex Maturity	43	1 digit
14. Coded Finmark	44-45	2 digits
15. Scale Book Number	46-50	5 digits
16. Scale Number	51-52	2 digits
17. VTP	53	1 digit
18. Catch Region	54-55	2 digits
19. Statistical Area	56-58	3 characters
20. Sub-Area	59-61	3 digits
21. Gear	62-63	2 digits
22. Number of Coho	64-68	5 digits
23. Number of Chinook	69-72	4 digits
24. Number of Steelhead	73-75	3 digits
25. Number of Chum	76-80	5 digits
26. Number of Sockeye	81-84	4 digits
27. Number of Pinks	85-88	4 digits
28. Date Sampled	89-96	8 digits
29. Statistical Week Landed	97-99	3 digits

[illegible]

Figure 32. The MRP COMMERCIAL SAMPLING FORM for recording Adipose Mark Sampling data.

ADIPOSE FIN DATA REQUIREMENTS

To ensure that you have collected all of the pertinent information, follow the example set in the BIOLOGICAL DATA REQUIREMENTS pg. 104.


<u>DESCRIPTION</u>	<u>PRIORITY SAMPLING</u>
1. Location Code	M
2. Statistical Week	M
3. Head Code	M
4. Head Number	M
5. Coded Wire Tag Code	
6. Weight	O
7. Round/Dress	D
8. Length	D
9. Length Code	D
10. Species	M
11. Colour	O
12. Grade	O
13. Sex Maturity	O
14. Coded Finmark	M
15. Scale Book Number	D
16. Scale Number	D
17. VTP	M
18. Catch Region	M
19. Statistical Area	M
20. Sub-Area	M
21. Gear	M
22. Number of Coho	M
23. Number of Chinook	M
24. Number of Steelhead	M
25. Number of Chum	M
26. Number of Sockeye	M
27. Number of Pink	M
28. Date Sampled	M
29. Statistical Week Landed	M

MULTIPLE FIN CLIP DATA

The data are to be recorded on the MRP M.F.C. SAMPLE FORM for Multiple Fin Clip Mark Sampling (see Fig. 33). All entries onto the coding sheet are to be **right justified**. A total of 26 sampling attributes are listed:

<u>DESCRIPTION</u>	<u>COLUMN</u>	<u>FORMAT</u>
1. Location Code	1-3	3 digits
2. Species	4-6	3 digits
3. Statistical Week Sampled	7-9	3 digits
4. Coded Fin Mark	10-11	2 digits
5. Ventral Regeneration	12	1 digit
6. Weight	13-15	3 digits
7. Round/Dress	16	1 digit
8. Length	17-20	4 digits
9. Length Code	21	1 digit
10. Sex Maturity	22	1 digit
11. Skin Colour	23	1 digit
12. Scale Book Number	24-28	5 digits
13. Scale Number	29-30	2 digits
14. Scale Age Reading	31-32	2 characters
15. VTP	33	1 digit
16. Catch Region	34-35	2 digits
17. Statistical Area	36-38	3 characters
18. Sub-Area	39-41	3 digits
19. Gear	42-43	2 digits
20. Sample Size	44-48	5 digits
21. MFC Sample Type	49	1 digit
22. Date Sampled	50-57	8 digits
23. Statistical Week Landed	58-60	3 digits
24. D or C	61	1 character
25. First Head Number	62-67	6 characters
26. Number Adipose Heads	68-69	2 digits

Figure 33. The MRP MULTIPLE FIN CLIP SAMPLE FORM for recording Multiple Fin Clip data.

FIN MARK CODES		VENTRAL REGEN. CODES		SEXUAL MATURITY		SKIN COLOUR CODES		M.F.C. SAMPLE TYPE		Mark Recovery Program M.F.C. SAMPLE FORM				PAGE #: _____												
RV-08 ad (stubby) RV-05		1 - none 4 - 1/4		1 - Immature Female		1 - silver-bright		2 - RV, LV 3 - RV, LV		LOCATION CODE: [] []		SPECIES: [] []		STAT WK SAMPLED: [] []												
LV-09 ad (stubby) LV-09		2 - 1/2 5 - unk.		2 - Mature Female		2 - semi-bright		ad RV, ad LV ad RV, ad LV		RECORDED BY: _____		STAT WK SAMPLED: [] []		RECORDED BY: _____												
ad RV-10 unknown - B		3 - 1/2		3 - Immature Male		3 - quads		ad RV, ad LV																		
ad LV-07				4 - Mature Male		4 - unknown																				
				5 - Unknown																						
(OFFICE USE ONLY)	BOAT NAME	COLOR FIN MARK	VENTRAL REGEN.	WEIGHT (kg)	FIDUCIALS	LENGTH (mm)	LENGTH CODE	SEX MAT.	SKIN COLOUR	SCALE BOOK No.	SCALE #	SCALE AGE READING	YTP	CATCH REGION	STAT. AREA	SUB-AREA	GEAR	SAMPLE SIZE	MFC SAM TYPE	DATE SAMPLED			STAT. WK. LUNDED	Leave blank if M.F.C. sample type = 3.		COMMENTS
																				YEAR	MO.	DAY		C.S.F. REFERENCES	FIRST HEAD # (regardless of species)	
1											01															
2											02															
3											03															
4											04															
5											05															
6											06															
7											07															
8											08															
9											09															
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22											22															
23											23															
24											24															
25											25															

MULTIPLE FIN CLIP DATA REQUIREMENTS

To ensure that you have collected all of the pertinent information, follow the example set in the BIOLOGICAL DATA REQUIREMENTS pg. 104.

<u>DESCRIPTION</u>	<u>PRIORITY SAMPLING</u>
1. Location Code	M
2. Species	M
3. Statistical Week Sampled	M
4. Coded Fin Mark	M
5. Ventral Regeneration	M
6. Weight	O
7. Round/Dress	O
8. Length	D
9. Length Code	D
10. Sex Maturity	O
11. Skin Colour	O
12. Scale Book Number	M
13. Scale Number	M
15. VTP	M
16. Catch Region	M
17. Statistical Area	M
18. Sub-Area	M
19. Gear	M
20. Sample Size	M
21. MFC Sample Type	M
22. Date Sampled	M
23. Statistical Week Landed	M
24. D or C	M
25. First Head Number	M
26. Number Adipose Heads	M

DATA VERIFICATION

As soon as possible after sampling it is important to make sure that all data have been accurately recorded on the coding forms. Ensure that all of the data sheets are clean and legible and in consecutive page order. If possible, have a second person review the data sheets for errors in coding, to ensure that all important attributes indicated as "M" are filled in, to see that consecutive numbers are not duplicated, and to ensure that sampling requests for desirable and optional attributes are filled in.

GLOSSARY

The following terms (Scott and Crossman 1973; Hart 1975) mentioned in this manual are described below:

- Abdomen* - the lower surface of the body, especially the part between the pectoral fins and the anus.
- Adipose fin* - a fleshy fin on the back between the dorsal and tail fin.
- Allozyme* - refers to the electrophoretic expression of allelic proteins at a particular locus.
- Anadromous* - ascending rivers from the sea to spawn.
- Anal* - referring to the anus or vent.
- Anal fin* - the fin on the median ventral line behind the anus.
- Anterior* - the front portion, or in front.
- Anus* - the posterior external opening of the alimentary canal: the vent.
- Basibranchials* - the three median bones on the floor of the gill chamber, joined by the ventral ends of the five gill arches.
- Branchial* - of the gills.
- Branchiostegal rays* - bony rays supporting the membranes which close the branchial or gill cavity under the head.
- Caecum* - (plural caeca) a blind sac connected with the alimentary canal.
- Caudal* - referring to the tail or caudal fin.
- Caudal peduncle* - the fleshy end of the body behind the anal fin and before the caudal or tail fin: the tail minus the tail fin: the "wrist".
- Circuli* - usually concentric ridges surrounding a central spot or focus on the upper surface of a scale.
- Cycloid* - scales having smooth margins, typical of soft-rayed fishes.
- Cleithrum* - a bone supporting the posterior edge of the gill opening.
- Dorsal* - pertaining to the back.
- Dorsal fin* - a fin on the back, usually central in position supported by rays or spines.
- DNA* - Deoxyribosenucleic Acid is a long chain compound formed from a large number of nucleotides; found in all living things. It is found almost exclusively in the chromosomes of plants and animals, and in the corresponding structures of bacteria and viruses.
- Eye diameter* - the horizontal diameter of the eye ball-in contrast to iris diameter, which is the distance across the black aperture in the centre of the eye, or orbit diameter, which is the horizontal distance between anterior and posterior margins of the socket.
- Gill arches* - the bony supports of the gills.
- Gill cover* - the bony covering of the gill cavity, composed of opercular bones (operculum).
- Gill membrane* - the thin wall of skin supported by the branchiostegals, and closing the gill cavity below.
- Gill rakers* - a series of bony projections along the anterior edge of the gill arch. Gill-raker counts are usually made on the left anterior arch. Every raker is counted, including the bony rudiments at the ends of the series that may be difficult to see except under magnification.
- Head length* - distance from the anterior point of the head to the posterior edge of the opercle.
- Hyoid* - the visceral arch behind the jaws

GLOSSARY (Cont'd)

<i>Insertion</i>	- (of a fin) the posterior end of the base, the part of the base farthest from the head.
<i>Interorbital space</i>	- narrowest distance across the head, between the bony edges of the orbits or eye sockets.
<i>Isozyme</i>	- refers to different distinguishable molecules found in the same organism which catalyze the same reaction. The "isozyme method" is the localization of an enzyme's activity in a gel (Ryman and Utter 1987).
<i>Isthmus</i>	- the fleshy space beneath the head and between the gill openings.
<i>Kelt</i>	- a dark, thin, recently spawned-out (or spent) Atlantic salmon or trout.
<i>Kype</i>	- the upward hook on the lower jaw of spawning male Atlantic salmon.
<i>Lateral line</i>	- series of porelike openings (to sensory canal) along the sides of a fish.
<i>Mandible</i>	- lower jaw.
<i>Maxillary</i>	- the posterior and lateral element of the upper jaw.
<i>Morphology</i>	- the study of form.
<i>Operculum</i>	- the gill cover
<i>Orbit</i>	- the bony eye socket.
<i>Otolith</i>	- two bone, each about 1/4" in diameter, located near the back of the fish's skull. otoliths help to maintain the fish's balance.
<i>Palatines</i>	- paired bones usually extending backward and out, on the roof of the mouth carrying teeth.
<i>Pectoral fins</i>	- the most anterior or uppermost paired fins, normally dorsal to the pelvic fins.
<i>Peduncle</i>	- the fleshy end of the body behind the anal fin (see caudal peduncle).
<i>Pelvic fin</i>	- ventral, paired fins lying behind the pectoral fin, ie. between it and the anal fin.
<i>Premaxillaries</i>	- paired bones of the upper jaw, sometimes carrying the teeth, sometimes comprising most of the jaw.
<i>Pupil</i>	- the opening in the iris at front of eye.
<i>Pyloric caeca</i>	- fingerlike extensions attached to the pylorus, the section of the intestinal tract immediately following the stomach.
<i>Random sample</i>	- a sample in which each fish in the run or stock has an equal chance of being selected.
<i>Ray</i>	- an articulated or jointed rod that supports the membrane of a fin.
<i>Regenerate scale</i>	- a scale that has been regrown after the original one was lost.
<i>Representative sample</i>	- a sample in which the fish are typical of the whole run or stock.
<i>Resorption</i>	- a process in which the outer edges of a scale break down.
<i>Somatic</i>	- of the body.
<i>Snout</i>	- that part of the head of a fish in front of the eyes.
<i>Skein</i>	- refers to the ovary of a salmon.
<i>Standard length</i>	- distance from the most anterior part of the head to the posterior margin of the last whole vertebral centrum (end of the hypural plate).
<i>Swim bladder</i>	- (also called gas bladder, air bladder) gas-filled sac in dorsal portion of body cavity which aids in buoyancy.
<i>Vent</i>	- the external opening of the alimentary canal; the anus.
<i>Ventral</i>	- on the lower surface; pertaining to the abdomen or belly.
<i>Vomer</i>	- the median anterior bone on the roof of the mouth.

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Appendix Table 1. Catch regions by major fishery with the associated MRP statistical area codes.

CATCH REGION	NAME ABBREV.	NAME	MRP STATISTICAL AREAS
1	NWTR	Northwest Vancouver Is. Troll	25-27
2	SWTR	Southwest Vancouver Is. Troll	21, 23, 24
3	WOT	Washington Oregon Troll-Historical	
4	GSTR	Georgia Strait Troll	13-18, (29A-C, E)
5	CTR	Central Troll	6-12, 30
6	NTR	Northern Troll	1-5
7	ATR	Alaska Troll-Historical	31
8	FGN	Fraser River Gillnet	(29A-E)
9	NN	Northern Net	1-5
10	GSN	Georgia Strait Net	14-19
11	JSN	Johnstone Strait Net	12, 13
12	CN	Central Net	6-11
13	JFN	Juan de Fuca Net	20
14	JFTR	Juan de Fuca Troll	20
15	NWTR/CTR	Areas 1 & 5	6-12, 25-27, 30
17	NWTR/SWTR	Areas 1 & 2	21, 23-27
18	NTR/CTR	Areas 5 & 6	1-12, 30
19	JSN/CN	Areas 11 & 12	6-13
20	NWVN	Northwest Vancouver Is. Net	25-27
21	SWVN	Southwest Vancouver Is. Net	21-24
22	GSPTN	Georgia Strait Sport North	13-16
23	GSPTS	Georgia Strait Sport South	17-19A, 28, (29B-E)
24	JFSPT	Juan de Fuca Sport	19B, 20
25	NSPT	Northern Sport	1-5
26	CSPT	Central Sport	6-12, 30
27	WSPT	West Coast Vancouver Is. Sport	21-22, 23B, 24-27
28	ACSPT	Alberni Canal Sport	23A
29	FWSP	Freshwater Sport	RABCODE, SITE CODE
33	NN/CN	Areas 9 & 12	1-11
34	GSTR/CTR	Areas 4 & 5	6-18, 29, 30
36	YKN	Yukon Net	50, 55-57
37	JFN/GSN	Areas 10 & 13	14-18, 29
45	JSN/GSN	Areas 10 & 11	12-18
46	FGN/GSN	Areas 8 & 10	14-18, 29
47	AKN	Alaska Net	31
48	BC	BC Unknown	All B.C.
53	GSTR/SWTR	Areas 2 & 4	13-18, 21, 23, 24, 29
56	NCIR	North Central Troll	6-9, 30
57	SCTR	South Central Troll	10-12
58	FSN	Fraser Seine	29A-B
60	WAN	WA net, catch, sample by CDN	200-208
80	HSC	High Seas Commercial	Lat./Long.
81	HSR	High Seas Research	Lat./Long.
82	HSN	High Seas Native	Lat./Long.
90		Freshwater Commercial	RABCODE, SITE CODE
91		Freshwater Research	STAT. AREA
92		Freshwater Native	RABCODE, SITE CODE
99	CDN ESCMENT	Canadian Escapement	RABCODE, SITE CODE

Appendix Table 2. List of the statistical area codes by catch region (CR), statistical area (STAT), and by sub-area (SUB) complete with a description of each sub-area.

STATISTICAL AREAS			
CR	STAT	SUB	PLACE
01	025	066	ESTEVAN PT. TO BAJO PT. (INCLUDES NOOTKA SD.)
01	025	067	BAJO PT. TO TATCHO PT. (INCLUDES ESPERANZA INLET)
01	025	183	NOOTKA SOUND (MANAGEMENT UNITS 25-6, 7 & 15) (AMENDED 30/05/94)
01	025	526	ESTEVAN POINT (APP 6/24/91)
01	025	678	HISNIT INLET (APP 12/15/93)
01	026	068	TATCHO PT. TO CAPE COOK
01	026	094	KYUQUOT SD.
01	026	527	CHECLESET BAY (APP 6/24/91)
01	026	528	SOLANDER ISLAND (APP 6/24/91)
01	026	623	MISSION GROUP ISLANDS (APP 05/20/93)
01	027	069	CAPE COOK TO LAWN PT. (BROOKS BAY) (APP 6/24/91) (AMENDED 30/05/94)
01	027	070	LAWN PT. TO TOPKNOT PT.
01	027	071	TOPKNOT PT. TO CAPE SCOTT
01	027	112	WINTER HARBOUR
01	027	184	QUATSINO SD.
01	027	247	SUBS 69 AND 70
01	027	248	SUBS 70 AND 71
01	027	249	SUBS 70 AND 112
01	027	529	TOPKNOT POINT (APP 6/24/91)
01	027	530	SEA OTTER COVE (APP 6/24/91)
01	027	531	KAINS ISLAND (APP 6/24/91)
01	027	532	LIPPY POINT (APP 6/24/91)
01	027	533	CAPE SCOTT (APP 6/24/91)
01	027	624	CAPE PALMERSTON (APP 05/20/93)
01	052	000	STATS 25, 26 AND 27
01	120	374	STATS 25 AND 26 - SUBS 67 AND 68
01	121	000	STATS 26 AND 27
01	121	424	LAWN PT. TO CLERKE PT. (APP 15/08/89)
01	140	325	STATS 25 AND 27 - SUBS 67 AND 69
01	140	382	STATS 25 AND 27 - SUBS 66, 67 AND 71
02	021	048	PRAIRIES (AMENDED 30/05/94)
02	021	052	SWIFTSURE BANK
02	021	053	OFF SWIFTSURE BANK (SEE MRP MAP) (AMENDED 30/05/94)
02	021	176	NITINAT BAR
02	021	516	CARMANAH POINT (APP 6/24/91)
02	021	517	CLO-OOSE (APP 6/24/91)
02	021	518	PACHENA POINT (APP 6/24/91)
02	023	054	INSIDE SURFLINE - ALBERNI INLET
02	023	055	OUTSIDE SURFLINE - PACHENA PT. TO CAPE BEALE (INCLUDES 7&12 MILE BANKS)
02	023	056	INSIDE SURFLINE - CAPE BEALE TO BOUNDARY OF STATS 23 AND 24
02	023	057	OUTSIDE SURFLINE - CAPE BEALE TO LOUDOUN CHANNEL
02	023	058	OUTSIDE SURFLINE - LOUDOUN CHAN TO BOUNDARY OF STATS 23 & 24 (INCLUDES SOUTH BANK)
02	023	059	BIG BANK (INCLUDES SHALLOW SPOT, THE GULLEY AND SW CORNER)
02	023	073	BAMFIELD
02	023	109	UCLUELET
02	023	113	FINGER BANK (APP 05/20/93)
02	023	177	7 AND 12 MILE BANK
02	023	178	THE WRECK (UCLUELET) (AMENDED 30/05/94)
02	023	179	TREVOR CHANNEL
02	023	228	SUBS 55, 57 AND 58
02	023	229	SUBS 55, 57 AND 59
02	023	230	SUBS 55, 58, 59 AND 113
02	023	231	SUBS 55 AND 59
02	023	232	SUBS 55, 59 AND 113
02	023	233	SUBS 57 AND 59
02	023	234	SUBS 58 AND 59
02	023	235	SUBS 58, 59 AND 113
02	023	236	SUBS 59 AND 113

Appendix Table 2. (Cont'd)

STATISTICAL AREAS			
CR	STAT	SUB	PLACE
02	023	519	STAMP POINT TO SPROAT NARROWS (APP 6/24/91)
02	023	520	SPROAT NARROWS TO TEN MILE POINT (APP 6/24/91)
02	023	521	TEN MILE POINT (APP 6/24/91)
02	023	522	SPROAT NARROWS (APP 6/24/91)
02	023	523	STAMP POINT (APP 6/24/91)
02	023	524	GULLIES (APP 6/24/91)
02	023	605	AMPHITRITE POINT (LIGHTHOUSE) (APP 07/27/92)
02	023	625	BARKLEY SOUND (APP 05/20/93)
02	024	060	INSIDE 50 FATHOM LINE - BOUNDARY OF STATS 23 AND 24 TO 49TH PARALLEL
02	024	061	OUTSIDE OF 50 FATHOM LINE - BOUNDARY OF STATS 23 AND 24 TO 49TH PARALLEL
02	024	062	INSIDE 50 FATHOM LINE - 49TH PARALLEL TO RAFAEL PT.
02	024	063	OUTSIDE 50 FATHOM LINE - 49TH PARALLEL TO RAFAEL PT.
02	024	064	INSIDE 50 FATHOM LINE - RAFAEL PT. TO ESTEVAN PT.
02	024	065	OUTSIDE 50 FATHOM LINE - RAFAEL PT. TO ESTEVAN PT.
02	024	108	TOFINO
02	024	181	LONG BEACH
02	024	182	CLAYOQUOT SD.
02	024	237	SUBS 60 AND 61
02	024	238	SUBS 60 AND 62
02	024	239	SUBS 61 AND 62
02	024	240	SUBS 61, 62 AND 63
02	024	241	SUBS 61 AND 63
02	024	242	SUBS 61, 63 AND 65
02	024	243	SUBS 62 AND 63
02	024	244	SUBS 62 AND 64
02	024	245	SUBS 63 AND 65
02	024	246	SUBS 64 AND 65
02	024	525	PORTLAND POINT (APP 6/24/91)
02	024	602	RAFAEL POINT (AHOUSAT) (APP 07/11/92)
02	024	603	CLELAND ISLAND (APP 07/27/92)
02	024	604	LENNARD ISLAND (APP 07/27/92)
02	024	676	HOT SPRINGS COVE (APP 08/30/93)
02	053	000	STATS 21, 23 AND 24
02	109	383	STATS 21 AND 24
02	109	384	STATS 21 AND 24 - SUBS 052, 053, 054, 062, AND 063
02	111	328	STATS 21 AND 23 - SUBS 48, 52 AND 59
02	111	329	STATS 21 AND 23 - SUBS 52, 48 AND 113
02	111	330	STATS 21 AND 23 - SUBS 48 AND 59
02	111	331	STATS 21 AND 23 - SUBS 52 AND 55
02	111	332	STATS 21 AND 23 - SUBS 52, 55 AND 58
02	111	333	STATS 21 AND 23 - SUBS 52, 55 AND 59
02	111	334	STATS 21 AND 23 - SUBS 52 AND 58
02	111	335	STATS 21 AND 23 - SUBS 52, 58 AND 59
02	111	336	STATS 21 AND 23 - SUBS 52 AND 59
02	111	337	STATS 21 AND 23 - SUBS 52, 59 AND 113
02	111	338	STATS 21 AND 23 - SUBS 52 AND 113
02	111	339	STATS 21 AND 23 - SUBS 52, 53 AND 59
02	111	340	STATS 21 AND 23 - SUBS 52, 53, 59 AND 113
02	111	341	STATS 21 AND 23 - SUBS 53, 55 AND 57
02	111	342	STATS 21 AND 23 - SUBS 48, 53 AND 113 (THE FENCE)
02	114	000	STATS 23 & 24 (APP 25/07/89)
02	114	344	STATS 23 AND 24 - SUBS 56, 60 AND 62
02	114	345	STATS 23 AND 24 - SUBS 57, 61 AND 63
02	114	346	STATS 23 AND 24 - SUBS 58, 59 AND 60
02	114	347	STATS 23 AND 24 - SUBS 58, 59, 60, 62 AND 64
02	114	348	STATS 23 AND 24 - SUBS 58, 60 AND 62
02	114	349	STATS 23 AND 24 - SUBS 58 AND 62
02	114	350	STATS 23 AND 24 - SUBS 59, 60 AND 61
02	114	351	STATS 23 AND 24 - SUBS 59, 60, 61, 62, 63 AND 64
02	114	352	STATS 23 AND 24 - SUBS 59, 60 AND 62
02	114	353	STATS 23 AND 24 - SUBS 59, 60, 62 AND 113
02	114	354	STATS 23 AND 24 - SUBS 59 AND 61

Appendix Table 2. (Cont'd)

STATISTICAL AREAS			
CR	STAT	SUB	PLACE
02	114	355	STATS 23 AND 24 - SUBS 59, 61 AND 63
02	114	356	STATS 23 AND 24 - SUBS 59, 61, 62 AND 65
02	114	357	STATS 23 AND 24 - SUBS 59 AND 62
02	114	358	STATS 23 AND 24 - SUBS 59, 62 AND 64
02	114	359	STATS 23 AND 24 - SUBS 59 AND 64
02	114	360	STATS 23 AND 24 - SUBS 59, 64 AND 113
02	114	361	STATS 23 AND 24 - SUBS 60 AND 113
02	114	362	STATS 23 AND 24 - SUBS 59 AND 60
02	114	363	STATS 23 AND 24 - SUBS 58 AND 60
02	114	364	STATS 23 AND 24 - SUBS 55, 57, 58 AND 60
02	114	674	LA PEROUSE BANK (APP 08/10/93)
02	114	675	WYA POINT (APP 08/24/93)
03	000	000	WASHINGTON OREGON TROLL
04	013	076	CAMPBELL RIVER
04	013	092	JOHNSTONE STRAIT
04	013	133	DISCOVERY PASSAGE
04	013	134	RIPPLE PT.
04	013	135	KELSEY BAY
04	013	136	CAPE MUDGE
04	013	137	STUART I.
04	013	138	THE LIGHTHOUSE
04	013	139	REBECCA SPIT
04	013	140	OKISOLLO CHANNEL
04	013	141	HOSKYN CHANNEL
04	013	142	CORTES I. (WEST)
04	013	143	MITLENATCH I.
04	013	144	SEYMOUR NARROWS
04	013	409	DUNCAN BAY (APP 05/07/89)
04	013	421	CHATHAM PT. (GREENSEA BAY) (APP 14/08/89) (AMENDED 30/05/94)
04	013	422	DEEPWATER BAY (APP 14/08/89)
04	013	423	CAMP POINT (APP 14/08/89)
04	013	506	NODALES CHANNEL (APP 6/24/91)
04	013	507	GRANITE PT. (OKISOLLO CHANNEL) (APP 6/24/91)
04	013	553	BEAR POINT (APP 10/17/91)
04	014	077	COMOX
04	014	079	DEEP BAY
04	014	085	FRENCH CREEK
04	014	089	HORNBY I.
04	014	145	CAPE LAZO
04	014	146	DENMAN I.
04	014	147	CHROME I.
04	014	148	NORRIS ROCKS
04	014	149	LASQUETI I.
04	014	150	SISTERS I.
04	014	151	QUALICUM BEACH
04	014	227	SUBS 79 & 89
04	014	508	LITTLE RIVER (APP 6/24/91)
04	014	509	JENKINS I. TO SEAL REEF TO SANGSTER I. (APP 6/24/91)
04	014	543	OYSTER RIVER (APP 7/24/91)
04	015	095	LUND
04	015	152	BAKER PASSAGAE
04	015	153	MYSTERY REEF
04	015	154	SAVARY I.
04	015	155	REDONDA I.
04	015	156	HARWOOD ISLAND
04	015	157	CORTES I. (EAST)
04	015	158	SARAH PT.
04	015	159	SLIAMMON PT.
04	016	097	PENDER HARBOUR
04	016	117	SABINE CHANNEL
04	016	160	AGAMEMNON CHANNEL
04	016	161	FRANCIS PT.

Appendix Table 2. (Cont'd)

STATISTICAL AREAS			
CR	STAT	SUB	PLACE
04	016	162	JERVIS INLET
04	016	163	THORMANBY I.
04	016	626	MALASPINA STRAIT (APP 05/20/93)
04	017	080	EAST SIDE OF GALIANO I.
04	017	096	NANAIMO
04	017	098	PORLIER PASS
04	017	106	SILVA BAY
04	017	115	GABRIOLA PASS
04	017	164	EAST SIDE OF VALDES I.
04	017	165	FIVE FINGER I.
04	017	166	WINCHELSEA I.
04	017	167	BALLENAS
04	017	168	FLAT TOP I.
04	017	169	STUART CHANNEL
04	018	170	SATELLITE CHANNEL
04	018	171	ACTIVE PASS
04	018	172	SANSUM NARROWS
04	018	173	SATURNA I.
04	018	552	PENDER BLUFFS (APP 9/4/91)
04	029	044	SOUTH MOUTH (MANAGEMENT UNITS 29-6, 7, 9)
04	029	045	NORTH MOUTH (MANAGEMENT UNIT 29-10)
04	029	046	GEORGIA STRAIT (MANAGEMENT UNITS 29-1,2, 3, 4, 5)
04	029	047	EAST SIDE OF GALIANO AND VALDES (MANAGEMENT UNIT 29-5)
04	029	084	FRASER RIVER GENERAL
04	032	086	GEORGIA STRAIT
04	034	000	STATS 14 AND 15
04	039	000	STATS 16 AND 17
04	054	000	STATS 13 - 18 AND 29A,B,C
04	101	043	STATS 13 AND 14
04	103	000	STATS 14 AND 16
04	104	000	STATS 14 AND 17
04	104	327	STATS 14 AND 17 - SUBS 79 AND 96
04	107	000	STATS 16 AND 29
04	110	000	STATS 17 AND 29A
04	122	000	STATS 29A AND 29B
04	127	000	STATS 13 AND 15
04	128	000	STATS 13, 14 AND 16 (APP 09/28/87)
04	29A	081	FRASER RIVER MOUTH
04	29B	081	FRASER RIVER MOUTH
04	29C	081	FRASER RIVER MOUTH
04	29E	000	BOUNDARY BAY
05	087	000	STATS 8, 9 AND 10
05	088	000	STATS 8, 9, 10 AND 11
05	091	315	STATS 9 AND 10 - SUBS 37 AND 39
06	001	001	TIAN HEAD TO LANGARA PT. (OUTSIDE OF SURFLINE OF MANAGEMENT UNIT 1-2)
06	001	002	LANGARA PT. TO WIAH PT. (INSIDE A LINE DRAWN BETWEEN LANGARA PT. TO ROSE SPIT RED BUOY)
06	001	003	WIAH PT. TO ROSE SPIT (INSIDE SURFLINE OF MANAGEMENT UNIT 1-5 AND OUTSIDE SURFLINE OF UNIT 1-7)
06	001	004	NORTH OF A LINE DRAWN BETWEEN LANGARA PT. TO ROSE SPIT RED BUOY
06	001	200	SUBS 1 AND 2
06	001	201	SUBS 1, 2 AND 3
06	001	202	SUBS 1, 2 AND 4
06	001	203	SUBS 1 AND 3
06	001	204	SUBS 2 AND 3
06	001	205	SUBS 2, 3 AND 4
06	001	206	SUBS 3 AND 4
06	001	446	FREDERICK ISLAND (APP 6/24/91)
06	001	447	LEARMONTH BANK (APP 6/24/91)
06	001	448	CAPE MUZON (APP 6/24/91)
06	001	449	CAPE CHACON (APP 6/24/91)
06	001	450	CELESTIAL REEF (APP 6/24/91)

Appendix Table 2. (Cont'd)

STATISTICAL AREAS			
CR	STAT	SUB	PLACE
06	001	451	TOW HILL (APP 6/24/91)
06	001	452	WIAH POINT (APP 6/24/91)
06	001	627	CAPE EDENSAW (APP 05/20/93)
06	001	628	LANGARA ISLAND (NORTH ISLAND) (APP 05/20/93) (AMENDED 30/05/94)
06	002	214	SUBS 5, 6, 12, 13 AND 14
06	003	016	ZAYAS I. AND DUNDAS I. (WEST SIDE)
06	003	017	WALES I. AND BOSTON ROCKS
06	003	018	PORTLAND INLET
06	003	215	SUBS 16 AND 17
06	003	286	SUBS 16 AND 18
06	003	465	PORT SIMPSON (APP 6/24/91)
06	004	019	INSIDE SURFLINE - NORTH END OF HUDSON BAY PASSAGE TO BUTTERWORTH ROCKS (AMENDED 30/05/94)
06	004	020	OUTSIDE SURFLINE - NORTH END OF HUDSON BAY PASSAGE TO STENHOUSE SHOAL
06	004	021	INSIDE SURFLINE- BUTTERWORTH ROCKS TO JOACHIM RK. TO SKEENA MOUTH (AMENDED 30/05/94)
06	004	022	OUTSIDE SURFLINE - STENHOUSE SHOAL TO JOACHIM RK. (INCLUDES TWO PEAKS, THE CORNER, THE CUT, INSIDE EDGE, SOUTHFLATS, THE FINGER, OVAL BANK, AND VENUS GROUNDS)
06	004	121	MOUTH OF SKEENA RIVER (MANAGEMENT UNIT 4-12)
06	004	122	SUB 21 MINUS MOUTH OF SKEENA
06	004	216	SUBS 21 AND 22
06	004	217	SUBS 19 AND 21
06	004	470	BELL PASS (APP 6/24/91)
06	004	471	EAST STEPHENS ISLAND (APP 6/24/91)
06	004	472	WEST STEPHENS ISLAND (APP 6/24/91)
06	004	478	FINLAYSON ISLAND (APP 6/24/91)
06	004	698	CHATHAM SOUND/OUTSIDE STEPHENS ISLAND (MANAGEMENT UNITS 4-2, 3, 4, 9, 12 (PART OF), 13 (APP 27/05/94)
06	005	023	INSIDE SURFLINE - JOACHIM RK. TO WHITE RK. (INCLUDES BROWNING ENTRANCE & FREEMAN PASS)
06	005	024	OUTSIDE SURFLINE - JOACHIM RK. TO WHITE RK.
06	005	025	INSIDE SURFLINE - WHITE RK. TO JOSEPH I.
06	005	026	OUTSIDE SURFLINE - WHITE RK. TO JOSEPH I. (INCLUDES SHELLGROUNDS, BRANDY SPOT, BONILLA I., TIDE RIP, WAYNE SPOT AND OLY SPOT)
06	005	218	SUBS 23 AND 24
06	005	219	SUBS 23, 24 AND 25
06	005	220	SUBS 23 AND 25
06	005	221	SUBS 24 AND 26
06	005	482	BONILLA ISLAND (APP 6/24/91)
06	02E	009	ROSE SPIT - NORTH TO CORNER BOUNDARY FOR STATS 1 - 4
06	02E	010	ROSE SPIT TO CAPE BALL
06	02E	011	CAPE BALL TO SANDSPIT (INCLUDES LAWN HILL, SKIDEGATE FLATS AND SANDSPIT FLATS)
06	02E	012	SANDSPIT TO CUMSHEWA HEAD
06	02E	013	CUMSHEWA HEAD TO FULLER PT.
06	02E	014	FULLER PT. TO GOODWIN PT. (INCLUDES RAMSAY CORNER AND SCUDDER PT.)
06	02E	015	GOODWIN PT. TO CAPE ST. JAMES
06	02E	119	SKIDEGATE INLET (MANAGEMENT UNIT 2-1) (AMENDED 30/05/94)
06	02E	120	CUMSHEWA INLET (MANAGEMENT UNITS (2-3, 4) (AMENDED 30/05/94)
06	02E	208	SUBS 9, 12 AND 14
06	02E	209	SUBS 11 AND 12
06	02E	210	SUBS 11, 12, 13 AND 14
06	02E	211	SUBS 12, 13, 14 AND 15
06	02E	212	SUBS 13 AND 14
06	02E	213	SUBS 9, 10 AND 11
06	02W	005	TIAN HEAD TO MARBLE I. (OUTSIDE SURFLINE)
06	02W	006	MARBLE I. TO TASU SD. (OUTSIDE SURFLINE)
06	02W	007	TASU SD. TO GOWGAIA BAY (OUTSIDE SURFLINE)
06	02W	008	GOWGAIA BAY TO CAPE ST. JAMES (OUTSIDE SURFLINE)
06	02W	118	RENNEL SD.
06	02W	188	ENGLEFIELD BAY (APP 9/15/93)

Appendix Table 2. (Cont'd)

STATISTICAL AREAS			
CR	STAT	SUB	PLACE
06	02W	190	TASU SOUND (APP 9/15/93)
06	02W	207	SUBS 6, 7 AND 8
06	02W	455	HIPPA ISLAND (APP 6/24/91)
06	02W	456	CARTWRIGHT SOUND (APP 6/24/91)
06	02W	457	FLAMINGO INLET (APP 6/24/91)
06	02W	458	CAPE ST. JAMES (APP 6/24/91)
06	033	000	STATS 1 - 5
06	035	250	STATS 1 AND 2W - SUBS 1, 2, 3 AND 5
06	035	251	STATS 1 AND 2W - SUBS 1, 2, 5 AND 6
06	035	252	STATS 1 AND 2W - SUBS 1 AND 5
06	035	253	STATS 1 AND 2W - SUBS 2 AND 5
06	036	254	STATS 1 AND 2E - SUBS 1, 2, 3 AND 9
06	036	255	STATS 1 AND 2E - SUBS 1, 3 AND 9
06	036	256	STATS 1 AND 2E - SUBS 1 AND 9
06	036	257	STATS 1 AND 2E - SUBS 2, 3, 4 AND 9
06	036	258	STATS 1 AND 2E - SUBS 2 AND 9
06	036	259	STATS 1 AND 2E - SUBS 3 AND 11
06	036	260	STATS 1 AND 2E - SUBS 4 AND 9
06	037	000	STATS 1, 2E AND 3
06	038	000	STATS 1, 2E AND 4
06	040	000	STATS 1, 2E AND 2W
06	041	000	STAT AREA 2W & 2E (MANAGEMENT UNITS 2-5, 6, 11, 12, 13) (APP 09/27/88) (AMENDED 30/05/94)
06	044	261	STATS 1 AND 3 - SUBS 2, 3 AND 17
06	044	262	STATS 1 AND 3 - SUBS 2 AND 17
06	045	263	STATS 1 AND 4 - SUBS 1, 2, 3 AND 22
06	045	264	STATS 1 AND 4 - SUBS 1 AND 21
06	045	265	STATS 1 AND 4 - SUBS 2, 3 AND 22
06	051	185	STATS 2E, 4 AND 5 - HECATE STRAIT
06	051	266	STATS 2E, 4 AND 5 - SUBS 11, 12, 13, 22, 24 AND 26
06	051	267	STATS 2E, 4 AND 5 - SUBS 11, 12, 13, 24 AND 26
06	051	268	STATS 2E, 4 AND 5 - SUBS 11, 13, 14, 22 AND 26
06	051	269	STATS 2E, 4 AND 5 - SUBS 11, 22, 24 AND 26
06	051	270	STATS 2E, 4 AND 5 - SUBS 11, 22 AND 26
06	058	000	STATS 2E AND 3
06	059	271	STATS 2E AND 4 - SUBS 9 AND 22
06	059	272	STATS 2E AND 4 - SUBS 11 AND 21
06	059	273	STATS 2E AND 4 - SUBS 11 AND 22
06	059	274	STATS 2E AND 4 - SUBS 13 AND 22
06	059	275	STATS 2E AND 4 - SUBS 14 AND 22
06	061	276	STATS 2E AND 5 - SUBS 9 AND 25
06	061	277	STATS 2E AND 5 - SUBS 10, 11 AND 26
06	061	278	STATS 2E AND 5 - SUBS 11, 12 AND 26
06	061	279	STATS 2E AND 5 - SUBS 11 AND 25
06	061	280	STATS 2E AND 5 - SUBS 11 AND 26
06	061	281	STATS 2E AND 5 - SUBS 12 AND 26
06	061	282	STATS 2E AND 5 - SUBS 13 AND 26
06	061	283	STATS 2E AND 5 - SUBS 14 AND 23
06	061	285	STATS 2E AND 5 - SUBS 14 AND 26
06	064	000	STATS 2, 3, 4 AND 5
06	068	288	STATS 3 AND 4 - SUBS 16 AND 21
06	068	289	STATS 3 AND 4 - SUBS 17 AND 21
06	068	290	STATS 3 AND 4 - SUBS 16, 17, 18 AND 21
06	071	000	STATS 3, 4 AND 5
06	072	000	STATS 3 AND 5
06	074	291	STATS 4 AND 5 - SUBS 21 AND 23
06	074	292	STATS 4 AND 5 - SUBS 21, 23 AND 25
06	074	293	STATS 4 AND 5 - SUBS 21 AND 26
06	074	294	STATS 4 AND 5 - SUBS 22 AND 23
06	074	295	STATS 4 AND 5 - SUBS 22, 24 AND 26
06	074	296	STATS 4 AND 5 - SUBS 22 AND 24
07	031	087	ALASKA STAT AREA 101

Appendix Table 2. (Cont'd)

STATISTICAL AREAS			
CR	STAT	SUB	PLACE
07	031	105	ALASKA STAT AREA 104
07	031	107	ALASKA STAT AREA 152
07	031	110	ALASKA STAT AREA 106
07	031	111	ALASKA SOUTHERN INTERMEDIATES 105,109,110
07	031	114	ALASKA STAT AREA 114 (APP 05/12/89)
07	031	116	KETCHIKAN, ALASKA
08	029	044	SOUTH MOUTH (MANAGEMENT UNITS 29-6, 7, 9)
08	029	045	NORTH MOUTH (MANAGEMENT UNIT 29-10)
08	029	047	EAST SIDE OF GALIANO AND VALDES ISLANDS (MANAGEMENT UNIT 29-5)
08	029	049	UPPER RIVER (MANAGEMENT UNITS 29-15, 16, 17)
08	029	050	LOWER RIVER (MANAGEMENT UNITS 29-13, 14)
08	029	051	NORTH ARM (MANAGEMENT UNITS 29-11, 12)
08	029	083	GEORGIA STRAIT (MANAGEMENT UNITS 29-1,2, 3, 4, 5)
08	029	084	FRASER RIVER GENERAL
08	029	389	GEORGIA ST., LR. FRASER (MANAGEMENT UNITS 29-3, 4, 6, 7, 9, 10, 13, 14) (APP 08/25/87)
08	029	390	UP. & LR. FRASER, NORTH ARM (MANAGEMENT UNITS 29-12, 13, 17) (APP 08/25/87)
08	029	391	UP. & LR. FRASER, NORTH ARM (MANAGEMENT UNITS 29-11, 12, 13, 14, 15, 16, 17) (APP 08/25/87)
08	029	396	COTTONWOOD DRIFT (APP 15/06/88)
08	029	534	MIDDLE RIVER (MANAGEMENT UNITS 29-11, 12, 13, 14) (APP 6/24/91)
08	029	535	LOWER RIVER OUTSIDE (MANAGEMENT UNITS 29-1, 2-10) (APP 6/24/91)
08	029	536	ALBION
08	029	537	DOUGLAS ISLAND (APP 6/24/91)
08	029	588	SAND HEADS LIGHT (APP 06/15/92)
08	029	589	ROBERTS BANK (APP 06/15/92)
08	029	590	POINT GREY BELL BUOY (APP 06/15/92)
08	029	591	STAVE RIVER (APP 06/15/92)
08	029	592	ANNACIS ISLAND (APP 06/15/92)
08	029	593	MANAGEMENT UNIT 29-15 (APP 06/15/92)
08	029	594	MANAGEMENT UNIT 29-16 (APP 06/15/92)
08	029	595	MANAGEMENT UNIT 29-17 (PATULLO TO PORT MANN BRIDGE) (APP 06/15/92) (AMENDED 30/05/94)
08	029	596	FORT LANGLEY (APP 06/15/92)
08	029	629	SILVERDALE (APP 05/20/93)
08	029	630	MISSION BRIDGE (APP 05/20/93)
08	029	631	GLEN VALLEY (APP 05/20/93)
08	029	632	HAMMOND (APP 05/20/93)
08	029	633	MATSQUI ISLAND (APP 05/20/93)
08	029	634	PITT RIVER MOUTH (APP 05/20/93)
08	029	635	BARNSTON ISLAND (APP 05/20/93)
08	029	636	HANEY (APP 05/20/93)
08	029	637	PATULLO BRIDGE TO PORT MANN BRIDGE (APP 05/20/93)
08	029	638	TILBURY ISLAND (APP 05/20/93)
08	029	639	WOODWARD REACH (APP 05/20/93)
08	029	640	DEAS ISLAND (APP 05/20/93)
08	029	641	CANOE PASSAGE (APP 05/20/93)
08	029	642	STEVESTON ISLAND (APP 05/20/93)
08	029	706	LADNER
08	122	000	STATS 29A AND 29B
08	123	000	STATS 29B AND 29D
08	29A	081	FRASER RIVER MOUTH
08	29B	081	FRASER RIVER MOUTH
08	29C	081	FRASER RIVER MOUTH
08	29D	082	FRASER RIVER FRESHWATER
08	29E	000	BOUNDARY BAY
09	001	001	TIAN HEAD TO LANGARA PT. (APP 05/12/89)
09	001	002	LANGARA PT. TO WIAH PT. (INSIDE A LINE DRAWN BETWEEN LANGARA PT. TO ROSE SPIT RED BUOY)
09	001	003	WIAH PT. TO ROSE SPIT

Appendix Table 2. (Cont'd)

STATISTICAL AREAS			
CR	STAT	SUB	PLACE
09	001	004	NORTH OF A LINE DRAWN BETWEEN LANGARA PT. TO ROSE SPIT RED BUOY (APP 08/24/88)
09	001	204	SUBS 2 AND 3
09	001	388	MASSET INLET (MANAGEMENT UNIT 1-6) (APP 01/19/87) (AMENDED 30/05/94)
09	001	437	VIRAGO SOUND (APP 12/13/90) GOSSELIN
09	001	453	COHO POINT (APP 6/24/91)
09	001	454	SHAG ROCK (APP 6/24/91)
09	001	628	LANGARA ISLAND (NORTH ISLAND) (APP 8/15/94)
09	002	214	SUBS 5, 6, 12, 13 AND 14
09	003	016	ZAYAS I. AND DUNDAS I. (WEST SIDE)
09	003	017	WALES I. AND BOSTON ROCKS
09	003	018	PORTLAND INLET
09	003	215	SUBS 16 AND 17 (APP 08/24/88)
09	003	286	SUBS 16 AND 18
09	003	459	BOSTON ROCK (UNION BAY) (APP 6/24/91) (AMENDED 30/05/94)
09	003	460	DUNDAS ISLAND (APP 6/24/91)
09	003	461	SOMERVILLE ISLAND (APP 6/24/91)
09	003	462	PEARSE ISLAND (APP 6/24/91)
09	003	463	CAAMANO PASSAGE (APP 6/24/91)
09	003	464	SUBS 17 AND 18 (APP 6/24/91)
09	003	465	PORT SIMPSON (APP 6/24/91)
09	003	544	PEARSE CANAL (APP 8/29/91)
09	003	545	HOGAN ISLAND (APP 8/29/91)
09	003	546	PORTLAND POINT (APP 8/29/91)
09	003	547	LIZARD POINT (APP 8/29/91)
09	003	548	TRACY ISLAND (APP 8/29/91)
09	003	549	HAYSTACK ISLAND (APP 8/29/91)
09	003	554	BIRNIE ISLAND (APP 06/10/92)
09	003	555	ARNISTON POINT (APP 06/15/92)
09	003	556	WHITLY POINT (APP 06/15/92)
09	003	645	TREFUSIS POINT (APP 05/20/93)
09	003	646	RAMSDEN POINT (APP 05/20/93)
09	003	699	CHINA HAT (APP 27/05/94)
09	003	700	CHATHAM SOUND (MANAGEMENT UNITS 3-2, 3, 4, 7 (PART OF), 11 (WEST PART) (APP 27/05/94)
09	003	701	PORTLAND/NASS (MANAGEMENT UNITS 3-7 (WEST PART), 8, 9, 10, 11 (EAST PART), 12, 13-18) (APP 27/05/94)
09	004	019	INSIDE SURFLINE - NORTH END OF HUDSON BAY PASSAGE TO STENHOUSE SHOAL
09	004	021	INSIDE SURFLINE- STENHOUSE SHOAL TO JOACHIM ROCK
09	004	121	MOUTH OF SKEENA RIVER (MANAGEMENT UNIT 4-12)
09	004	122	SUB 21 MINUS MOUTH OF SKEENA
09	004	217	SUBS 19 AND 21
09	004	400	SKEENA RIVER - INSIDE (MANAGEMENT UNIT 4-15) (APP 23/06/89)
09	004	411	INVERNESS PASSAGE (SLOUGH & OLD CANNERIES) (APP 28/07/89) (AMENDED 30/05/94)
09	004	412	DEHORSEY PASSAGE (APP 28/07/89)
09	004	413	EAST SIDE DEHORSEY ISLAND (APP 28/07/89)
09	004	414	CLAXTON (APP 28/07/89)
09	004	415	KENNEDY ISLAND (WEST SIDE ONLY) (APP 25/09/89)
09	004	416	CASSIAR POINT (APP 28/07/89)
09	004	417	LAWYER ISLAND (APP 28/07/89)
09	004	418	WEST SIDE SMITH ISLAND (APP 28/07/89)
09	004	419	TELEGRAPH PASSAGE (EAST SIDE OF KENNEDY ISLAND) (APP 25/09/89)
09	004	420	KITSON ROCK (APP 28/07/89)
09	004	466	BLUE LINE (APP 6/24/91)
09	004	467	BONE YARD (APP 6/24/91)
09	004	468	MOWITCH POINT (APP 6/24/91)
09	004	469	GLORY HOLE (APP 6/24/91)
09	004	470	BELL PASS (APP 6/24/91)
09	004	471	EAST STEPHENS ISLAND (APP 6/24/91)
09	004	472	WEST STEPHENS ISLAND (APP 6/24/91)
09	004	473	RACHEL ISLAND (APP 6/24/91)

Appendix Table 2. (Cont'd)

STATISTICAL AREAS			
CR	STAT	SUB	PLACE
09	004	474	TUGWELL ISLAND (APP 6/24/91)
09	004	475	LUCY ISLAND (APP 6/24/91)
09	004	476	BIG BAY (APP 6/24/91)
09	004	477	EDYE PASS (APP 6/24/91)
09	004	478	FINLAYSON ISLAND (APP 6/24/91)
09	004	479	KINAHAN ISLAND (APP 6/24/91)
09	004	550	DIGBY ISLAND (APP 8/29/91)
09	004	551	GREENTOP ISLAND (APP 8/29/91)
09	004	677	HUDSON BAY PASSAGE (APP 09/20/93)
09	004	697	RIVER/GAP/SLOUGH (MANAGEMENT UNITS 4-12 (PART OF), 15 (APP 27/05/94)
09	004	698	CHATHAM SOUND/OUTSIDE STEPHENS ISLAND (MANAGEMENT UNITS 4-2, 3, 4, 12 (PART OF), 13 (APP 27/05/94)
09	005	023	INSIDE SURFLINE - JOACHIM RK. TO WHITE RK. (INCLUDES BROWNING ENTRANCE & FREEMAN PASS)
09	005	024	OUTSIDE SURFLINE - JOACHIM RK. TO WHITE RK. (APP 05/07/90)
09	005	025	INSIDE SURFLINE - WHITE RK. TO JOSEPH I. (INCLUDES PRINCIPE CHAN)
09	005	220	SUBS 23 AND 25
09	005	401	OGDEN CHANNEL (APP 23/06/89)
09	005	402	BROWNING ENTRANCE (APP 23/06/89)
09	005	436	GRENVILLE CHANNEL (APP 12/13/90) GOSSELIN
09	005	480	PRINCIPE CHANNEL (APP 6/24/91)
09	005	481	PETREL CHANNEL (APP 6/24/91)
09	02E	011	CAPE BALL TO SANDSPIT (INCLUDES LAWN HILL, SKIDEGATE FLATS AND SANDSPIT FLATS)
09	02E	012	SANDSPIT TO CUMSHEWA HEAD
09	02E	014	FULLER PT. TO GOODWIN PT. (INCLUDES RAMSAY CORNER AND SCUDDER PT.) (APP 05/12/89)
09	02E	119	SKIDEGATE INLET (MANAGEMENT UNIT 2-1) (AMENDED 30/05/94)
09	02E	120	CUMSHEWA INLET (MANAGEMENT UNITS (2-3, 4) (AMENDED 30/05/94)
09	02E	186	DARWIN SOUND (MANAGEMENT UNIT 2-10)
09	02E	187	SELWYN INLET (MANAGEMENT UNIT 2-6)
09	02E	209	SUBS 11 AND 12
09	02E	399	CUMSHEWA INLET & SELWYN INLET (APP 11/07/88)
09	02E	538	SKIDEGATE INLET TO CUMSHEWA INLET (APP 6/24/91)
09	02E	539	CUMSHEWA INLET TO SELWYN INLET (APP 6/24/91)
09	02E	540	DARWIN SOUND TO SELWYN INLET (APP 6/24/91)
09	02E	541	JUAN PEREZ SOUND (MANAGEMENT UNITS 2-11, 12) (APP 6/24/91) (AMENDED 30/05/94)
09	02E	542	SEDGWICK (APP 6/24/91)
09	02W	005	TIAN HEAD TO MARBLE I. (OUTSIDE SURFLINE)
09	02W	006	MARBLE I. TO TASU SD. (OUTSIDE SURFLINE)
09	02W	118	RENNEL SD.
09	02W	188	ENGLEFIELD BAY
09	02W	189	SKIDEGATE CHANNEL
09	02W	190	TASU SOUND (MANAGEMENT UNIT 2-42-47)
09	02W	643	SECURITY INLET (APP 05/20/93)
09	02W	644	INSKIP CHANNEL (APP 05/20/93)
09	035	252	STATS 1 AND 2W - SUBS 1 AND 5 (APP 08/24/88)
09	035	253	STATS 1 AND 2W - SUBS 2 AND 5
09	036	259	STATS 1 AND 2E - SUBS 3 AND 11
09	037	000	STATS 1, 2E AND 3
09	038	000	STATS 1, 2E AND 4
09	040	000	STATS 1, 2E AND 2W
09	041	000	STAT AREA 2W & 2E (APP 09/27/88)
09	042	000	STAT AREA 2W & 3
09	044	262	STATS 1 AND 3 - SUBS 2 AND 17
09	045	000	STATS 1 AND 4
09	051	000	STATS 2E, 4 AND 5
09	058	000	STATS 2E AND 3
09	059	272	STATS 2E AND 4 - SUBS 11 AND 21
09	061	279	STATS 2E AND 5 - SUBS 11 AND 25

Appendix Table 2. (Cont'd)

STATISTICAL AREAS			
CR	STAT	SUB	PLACE
09	068	287	STATS 3 AND 4 - SUBS 16, 20 AND 22
09	064	000	STATS 2, 3, 4 AND 5
09	068	289	STATS 3 AND 4 - SUBS 17 AND 21
09	068	290	STATS 3 AND 4 - SUBS 16, 17, 18 AND 21
09	071	000	STATS 3, 4 AND 5
09	072	000	STATS 3 AND 5
09	074	291	STATS 4 AND 5 - SUBS 21 AND 23
09	074	292	STATS 4 AND 5 - SUBS 21, 23 AND 25
09	210	000	STATS 2W, 3 AND 4 (APP 08/19/92)
10	014	077	COMOX (APP 01/23/87)
10	014	079	DEEP BAY (APP 01/23/87)
10	014	085	FRENCH CREEK (APP 01/23/87)
10	014	102	QUALICUM RIVER MOUTH
10	014	191	MANAGEMENT UNIT 14-4
10	014	192	MANAGEMENT UNIT 14-5 (EXCLUDING AREA FROM THE SHORELINE TO 1/2 MILES OFFSHORE.
10	014	193	MANAGEMENT UNIT 14-7
10	014	194	MANAGEMENT UNIT 14-9
10	014	195	MANAGEMENT UNIT 14-10
10	014	196	MANAGEMENT UNIT 14-8
10	014	197	MANAGEMENT UNIT 14-11
10	014	510	MANAGEMENT UNIT 14-4, 5 (QUALICUM) (APP 6/24/91)
10	014	511	MANAGEMENT UNIT 14-9,10,11 (COMOX NORTH) (APP 6/24/91)
10	015	095	LUND (APP 05/12/89)
10	015	159	SLIAMMON PT.
10	016	097	PENDER HARBOUR (APP 05/12/89)
10	016	117	SABINE CHANNEL
10	016	162	JERVIS INLET
10	016	585	FEGAN ISLETS (APP 06/15/92)
10	016	586	PARTINGTON POINT (APP 06/15/92)
10	016	587	FAVADA POINT (APP 06/15/92)
10	016	679	DESERTED BAY (APP 04/11/94)
10	017	096	NANAIMO
10	017	098	PORLIER PASS
10	017	581	HORSWELL CHANNEL (APP 06/15/92) (AMENDED 30/05/94)
10	018	170	SATELLITE CHANNEL
10	018	582	MOSES POINT (APP 06/15/92)
10	018	583	PYM ISLAND (APP 06/15/92)
10	018	584	CAPE KEPPEL (APP 06/15/92)
10	018	614	COWICHAN BAY (APP 11/09/92)
10	019	442	SAANICH INLET (APP 12/18/90) GOSSELIN
10	032	086	GEORGIA STRAIT (APP 11/13/85)
10	034	000	STATS 14 AND 15
10	039	000	STATS 16 AND 17
10	103	000	STATS 14 AND 16 (APP 11/05/93)
10	104	000	STATS 14 AND 17
10	105	000	STATS 17 AND 18 (APP 11/17/87)
10	211	000	STATS 14 AND 18 (APP 11/09/92)
11	012	075	BULL HARBOUR (APP 05/12/89)
11	012	090	KINGCOME INLET
11	012	091	JOHNSTONE STRAIT
11	012	101	PORT HARDY
11	012	103	KNIGHT INLET
11	012	128	GORDON ISLAND GROUP
11	012	129	MALCOLM/BROUGHTON I.
11	012	130	GOLETAS CHAN
11	012	131	ROBSON BIGHT
11	012	132	THOMPSON/BOND SD.
11	012	427	TRIBUNE CHANNEL (APP 20/08/90)
11	012	428	BOND SOUND (APP 20/08/90)
11	012	430	DOUBLE BAY (APP 12/13/90) GOSSELIN
11	012	431	BLINKHORN (APP 12/13/90) GOSSELIN

Appendix Table 2. (Cont'd)

STATISTICAL AREAS					
CR	STAT	SUB	PLACE		
11	012	432	DAGO BAY	(APP 12/13/90)	GOSSELIN
11	012	502	DESERTERS GROUP	(APP 6/24/91)	
11	012	503	BLACKFISH SOUND	(APP 6/24/91)	
11	012	504	CRACROFT POINT	(APP 6/24/91)	
11	012	505	BLINKHORN LIGHT	(APP 6/24/91)	
11	012	576	DUVAL POINT	(APP 06/15/92)	
11	012	577	HANSON ISLAND	(APP 06/15/92)	
11	012	578	FIFE SOUND	(APP 06/15/92)	
11	012	579	NIGEI ISLAND	(APP 06/15/92)	
11	012	609	PORT NEVILLE	(APP 10/01/92)	
11	012	610	BATES PASS	(APP 10/01/92)	
11	012	611	BLACKNEY PASS	(APP 10/01/92)	
11	012	612	NORTH BOUNDARY TO MALCOLM ISLAND	(APP 10/01/92)	
11	012	615	BROUGHTON STRAIT	(APP 11/28/92)	
11	012	707	WINDY POINT	(APP 10/17/94)	
11	012	708	ADAMS RIVER	(APP 10/17/94)	
11	013	076	CAMPBELL RIVER	(APP 05/12/89)	
11	013	092	JOHNSTONE STRAIT		
11	013	133	DISCOVERY PASSAGE		
11	013	134	RIPPLE PT.	(APP 06/10/92)	
11	013	135	KELSEY BAY		
11	013	140	OKISOLLO CHANNEL	(APP 27/10/93)	
11	013	144	SEYMOUR NARROWS		
11	013	421	CHATHAM PT. (GREENSEA BAY)	(APP 08/18/92) (AMENDED 30/05/94)	
11	013	445	BUTE INLET	(APP 2/7/91)	
11	013	506	NODALES CHANNEL	(APP 6/24/91)	
11	013	507	GRANITE PT. (OKISOLLO CHANNEL)	(APP 6/24/91)	
11	013	553	BEAR POINT	(APP 06/10/92)	
11	013	580	DEEP WATER BAY	(APP 06/15/92)	
11	013	647	HELMCKEN POINT	(APP 05/20/93)	
11	013	648	SUNDERLAND CHANNEL	(APP 05/20/93)	
11	098	000	STATS 12 AND 13		
12	006	027	INSIDE SURFLINE - JOSEPH I. TO RENNISON I. (INCLUDES ESTEVAN SD. AND CAAMANO SD.)		
12	006	029	INSIDE THE SURFLINE (MANAGEMENT UNITS 6-11, 13-18)	(AMENDED 30/05/94)	
12	006	030	OUTSIDE SURFLINE - RENNISON I. TO DAY PT.	(APP 05/12/89)	
12	006	223	SUBS 27 AND 29		
12	006	403	WHALE CHANNEL	(APP 23/06/89)	
12	006	404	MCKAY REACH	(APP 23/06/89)	
12	006	405	CAMPANIA SOUND	(APP 23/06/89)	
12	006	406	LEWIS CHANNEL	(APP 23/06/89)	
12	006	407	SQUALLY CHANNEL (MANAGEMENT UNIT 6-5)	(APP 23/06/89) (AMENDED 30/05/94)	
12	006	408	DOUGLAS CHANNEL (MANAGEMENT UNIT 6-2)	(APP 23/06/89) (AMENDED 30/05/94)	
12	006	433	WRIGHT SOUND	(APP 12/13/90)	GOSSELIN
12	006	483	TRUTCH ISLAND	(APP 6/24/91)	
12	006	484	CAMPANIA ISLAND	(APP 6/24/91)	
12	006	485	ARISTAZABAL ISLAND	(APP 6/24/91)	
12	006	486	FIN ISLAND	(APP 6/24/91)	
12	006	487	GIL ISLAND (MANAGEMENT UNITS 6-5, 6, 26, 27, 28)	(APP 6/24/91) (AMENDED 30/05/94)	
12	006	488	DUCKERS ISLAND	(APP 6/24/91)	
12	006	489	YUGOSLAV BAY	(APP 6/24/91)	
12	006	557	BARNARD HARBOUR	(APP 06/15/92)	
12	006	558	WRIGHT SOUND (MANAGEMENT UNIT 6-28)	(APP 06/15/92) (AMENDED 30/05/94)	
12	006	695	MANAGEMENT UNITS 6-11, 13-18	(APP 27/05/94)	
12	006	696	CAAMANO SOUND (MANAGEMENT UNITS 6-9, 10)	(APP 27/05/94)	
12	007	031	INSIDE SURFLINE- DAY PT. TO NORTH END OF GOOSE GROUP (INCLUDES MILBANKE SD. AND SEAFORTH CHANNEL)		
12	007	033	INSIDE SURFLINE - NORTH END OF GOOSE GROUP TO BOUNDARY OF STATS 7 & 8 (INCLUDES GOOSE GROUP AND QUEEN SD.)		
12	007	225	SUBS 31 AND 33		
12	007	392	SEAFORTH CHANNEL	(APP 15/06/88)	

Appendix Table 2. (Cont'd)

STATISTICAL AREAS			
CR	STAT	SUB	PLACE
12	007	393	FINLAYSON CHANNEL (APP 15/06/88)
12	007	394	SPILLER CHANNEL (APP 15/06/88)
12	007	395	SEAFORTH/SPILLER CHANNEL (APP 15/06/88)
12	007	398	LAMA PASS (APP 09/08/88)
12	007	429	MATHIESON CHANNEL (MANAGEMENT UNITS 7-9, 10, 11) (APP 12/13/90) (AMENDED 30/05/94)
12	007	443	HUNTER CHANNEL (APP 2/7/91)
12	007	444	MCLAUGHLIN BAY (APP 2/7/91)
12	007	559	PRICE ISLAND (APP 06/15/92)
12	007	560	RAYMOND PASSAGE (APP 06/15/92)
12	007	561	PURPLE BLUFFS (APP 06/15/92)
12	007	562	IDOL POINT (APP 06/15/92)
12	007	692	SOUTH LAREDO SOUND (MANAGEMENT UNIT 7-31) (APP 27/05/94)
12	007	693	MANAGEMENT UNIT 7-17 (APP 27/05/94)
12	007	694	MILBANKE SOUND (MANAGEMENT UNITS 7-1, 2, 3, 18) (APP 27/05/94)
12	008	035	INSIDE SURFLINE - INCLUDES DEAN CHAN, BURKE CHAN AND FITZHUGH SD.
12	008	123	DEAN CHANNEL
12	008	124	BURKE CHANNEL (MANAGEMENT UNITS 8-13, 15) (AMENDED 30/05/94)
12	008	125	FITZHUGH SOUND (MANAGEMENT UNITS 8-3, 4, 16) (AMENDED 30/05/94)
12	008	126	NORTH BENTINCK ARM (AMENDED 30/05/94)
12	008	198	FISHER CHANNEL (MANAGEMENT UNITS 8-4, 5) (AMENDED 30/05/94)
12	008	199	UPPER DEAN CHANNEL (MANAGEMENT UNITS 8-8, 9)
12	008	375	LOWER DEAN CHANNEL (MANAGEMENT UNIT 8-7)
12	008	376	FITZ HUGH SOUND AND FISHER CHANNEL (MANAGEMENT UNITS 8-3, 4, 5, 16) (AMENDED 30/05/94)
12	008	377	DEAN & BURKE CHANNEL, NORTH & SOUTH BENTINCK ARMS.
12	008	378	NORTH AND SOUTH BENTINCK ARMS.
12	008	397	HAKAI PASS (MANAGEMENT UNITS 8-1, 2) (APP 09/08/88) (AMENDED 30/05/94)
12	008	410	NORTH & SOUTH BENTINCK ARMS, BURKE, FISHER, FITZ HUGH CHANNELS (APP 20/07/89)
12	008	435	LABOUCHERE CHANNEL (MANAGEMENT UNIT 8-10) (APP 12/13/90) (AMENDED 30/05/94)
12	008	490	ADDENBROKE (APP 6/24/91)
12	008	491	KOEYE RIVER (APP 6/24/91)
12	008	563	LAGOON BAY (APP 06/15/92)
12	008	564	MANAGEMENT UNIT 8-5 (APP 06/15/92)
12	008	565	KWATNA INLET (MANAGEMENT UNIT 8-14) (APP 06/15/92) (AMENDED 30/05/94)
12	008	566	NALAU PASSAGE (APP 06/15/92)
12	008	600	MANAGEMENT UNIT 8-13 (SOUTH BURKE CHANNEL) (APP 06/19/92)
12	008	601	MANAGEMENT UNIT 8-10, 11, 12, 15 (NORTH BURKE CHANNEL, LA BOUCHERE CHANNEL, NORTH AND SOUTH BENTINCKARS) (APP 06/19/92)
12	008	688	SOUTH BENTINCK ARM (APP 27/05/94)
12	008	689	NORTH BURKE CHANNEL (MANAGEMENT UNIT 8-15) (APP 27/05/94)
12	008	690	SOUTH BURKE CHANNEL (MANAGEMENT UNITS 8-13, 14) (APP 27/05/94)
12	008	691	MANAGEMENT UNIT 8-35 (APP 27/05/94)
12	009	037	INSIDE SURFLINE - RIVERS INLET
12	009	038	OUTSIDE SURFLINE (APP 05/12/89)
12	009	492	MANAGEMENT UNIT 9-1 (APP 6/24/91)
12	009	567	MOSES INLET (MANAGEMENT UNIT 9-7) (APP 06/15/92) (AMENDED 30/05/94)
12	009	568	MANAGEMENT AREA 9-2 (APP 06/15/92)
12	009	569	MANAGEMENT AREA 9-3 (APP 06/15/92)
12	009	570	MANAGEMENT AREA 9-4 (APP 06/15/92)
12	010	039	INSIDE SURFLINE - SMITH INLET
12	010	494	MANAGEMENT UNIT 10-1 (APP 6/24/91)
12	010	571	MANAGEMENT AREA 10-2 (APP 06/15/92)
12	010	572	MANAGEMENT AREA 10-3 (APP 06/15/92)
12	010	573	MANAGEMENT AREA 10-4 (APP 06/15/92)
12	010	574	WYCLEES LAGOON (APP 06/15/92)
12	011	041	INSIDE SURFLINE - QUEEN CHARLOTTE STRAIT AND SEYMOUR/BELIZE INLETS
12	011	495	ROLLER BAY (APP 6/24/91)
12	011	500	MEXICANA POINT (APP 06/10/92)
12	011	575	PINE ISLAND (APP 06/15/92)

Appendix Table 2. (Cont'd)

STATISTICAL AREAS			
CR	STAT	SUB	PLACE
12	011	607	STORM ISLAND (APP 08/18/92)
12	080	300	STATS 6 AND 7 - SUBS 27, 29 AND 31
12	080	303	STATS 6 AND 7 - SUBS 29 AND 31
12	081	000	STATS 6, 7 AND 8
12	082	000	STATS 6, 7 AND 9
12	083	306	STATS 7 AND 8 - SUBS 31, 33 AND 35
12	083	307	STATS 7 AND 8 - SUBS 31 AND 35
12	083	310	STATS 7 AND 8 - SUBS 33 AND 35
12	084	000	STATS 7, 8 AND 9
12	086	313	STATS 8 AND 9 - SUBS 35 AND 37
12	087	000	STATS 8, 9 AND 10
12	088	000	STATS 8, 9, 10 AND 11
12	089	000	STATS 8 AND 10
12	091	315	STATS 9 AND 10 - SUBS 37 AND 39
12	092	000	STATS 10 AND 11
12	130	000	STATS 6 & 8 (APP 05/08/88)
13	020	093	BONILLA PT. TO SOMBRIO PT.
13	020	104	BLUE LINE (BONILLA PT.)
13	020	174	SOMBRIO PT. TO SHERINGHAM PT.
13	020	175	SHERINGHAM PT. TO WILLIAM HEAD
13	020	513	SOMBRIO POINT (APP 6/24/91)
13	020	514	SHERINGHAM POINT (APP 6/24/91)
13	020	515	GLACIER POINT (APP 6/24/91)
13	020	613	SOOKE BAY (APP 11/09/92)
13	020	649	PORT SAN JUAN (APP 05/20/93)
14	020	093	BONILLA PT. TO SOMBRIO PT.
14	020	104	BLUE LINE (BONILLA PT.)
14	020	174	SOMBRIO PT. TO SHERINGHAM PT.
14	020	175	SHERINGHAM PT. TO WILLIAM HEAD
15	093	318	STATS 10, 11 AND 27 - SUBS 40, 41, 70 AND 71
15	093	319	STATS 10, 11 AND 27 - SUBS 40, 42, 71 AND 112
15	096	320	STATS 11, 26 AND 27 - SUBS 42, 68, 69, 70 AND 71
15	097	321	STATS 11 AND 27 - SUBS 41 AND 112
15	097	322	STATS 11 AND 27 - SUBS 42, 69, 70 AND 71
15	097	323	STATS 11 AND 27 - SUBS 42 AND 71
15	097	324	STATS 11 AND 27 - SUBS 42 AND 112
15	100	000	STATS 12 AND 27
17	112	000	STATS 21, 23, 24 AND 25
17	113	343	STATS 21, 23-26 - SUBS 52, 55, 57, 58, 60, 62, 64, 66, 67 AND 68
17	115	365	STATS 23, 24 AND 25 - SUBS 59, 60, 61, 62, 63, 64, 65, 66 AND 67
17	115	366	STATS 23, 24 AND 25 - SUBS 59, 60, 62 AND 66
17	116	367	STATS 23-26 - SUBS 59, 60, 61, 62, 63, 64, 65, 66, 67 AND 68
17	117	368	STATS 23-27 - SUBS 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70 AND 71
17	118	369	STATS 24 AND 25 - SUBS 60, 62, 64, 66 AND 67
17	118	370	STATS 24 AND 25 - SUBS 62 AND 66
17	118	371	STATS 24 AND 25 - SUBS 64, 66 AND 67
17	118	372	STATS 24 AND 25 - SUBS 65 AND 66
17	119	373	STATS 24-26 - SUBS 64, 66, 67 AND 68
18	062	284	STATS 2E, 5 AND 6 - SUBS 13, 26, 27 AND 28
18	077	298	STATS 5 AND 6 - SUBS 26 AND 27
18	077	299	STATS 5 AND 6 - SUBS 26, 27 AND 28
19	094	000	STATS 11 AND 12
19	209	000	STATS 8 & 12 (APP 11/22/88)
20	025	066	ESTEVAN PT. TO BAJO PT. (INCLUDES NOOTKA SOUND) (APP 05/12/89)
20	025	183	NOOTKA SD.
20	025	434	ESPERANZA INLET (MANAGEMENT UNITS 25-11, 12, 13) (APP 12/13/90) (AMENDED 30/05/94)
20	025	438	TLUPANA INLET (MANAGEMENT UNITS 25-4, 5) (APP 12/13/90) (AMENDED 30/05/94)
20	025	439	ESPINOSA INLET (APP 12/13/90) GOSSELIN
20	025	441	ZEBALLOS INLET (MANAGEMENT UNITS 25-9, 10) (APP 12/13/90) (AMENDED 30/05/94)

Appendix Table 2. (Cont'd)

STATISTICAL AREAS			
CR	STAT	SUB	PLACE
20	025	597	MANAGEMENT UNIT 25-6 (APP 06/15/92)
20	025	598	MANAGEMENT UNITA 25-13 (APP 06/15/92)
20	025	650	MAQUINNA POINT (APP 05/20/93)
20	025	651	NOOTKA LIGHT (APP 05/20/93)
20	025	652	FRIENDLY COVE (APP 05/20/93)
20	025	653	EWIN INLET (APP 05/20/93)
20	025	654	ZUCIARTE CHANNEL (APP 05/20/93)
20	025	655	COOK CHANNEL (SPANISH PILOT GROUP) APP 05/20/93
20	025	656	MARVINAS BAY (APP 05/20/93)
20	025	657	VILLAVERDE ISLANDS (APP 05/20/93)
20	025	658	BLIGH ISLAND (APP 05/20/93)
20	025	659	NUCHATLITZ INLET (APP 05/20/93)
20	025	660	BURDWOOD POINT (APP 05/20/93)
20	025	682	MUCHALAT INLET (MANAGEMENT UNITS 25-1, 2, 3) (APP 27/05/94)
20	025	683	ESPERANZA INLET/NUCHATLITZ INLET (MANAGEMENT UNITS 25-11, 12, 13 /25-14) (APP 27/05/94)
20	025	684	MANAGEMENT UNIT 25-4 (APP 27/05/94)
20	025	685	MANAGEMENT UNIT 25-7 (APP 27/05/94)
20	025	686	MANAGEMENT UNIT 25-15 (APP 27/05/94)
20	025	687	BOSTON POINT (APP 27/05/94)
20	025	702	HOISS POINT (APP 13/10/94)
20	025	703	GALIANO BAY (APP 13/10/94)
20	025	704	PRINCESS ROYAL POINT (APP 13/10/94)
20	025	705	ESCALANTE POINT (APP 13/10/94)
20	026	068	TATCHO PT. TO CAPE COOK (APP 05/12/89)
20	026	094	KYUQUOT SD.
20	026	440	TAHSISH INLET (APP 12/13/90) GOSSELIN
20	026	616	KASHUTL INLET (APP 12/17/92)
20	026	617	OUOUKINSH INLET (APP 12/17/92)
20	026	618	KYUQUOT CHANNEL (APP 12/17/92)
20	026	619	AMAI INLET (APP 12/17/92)
20	026	620	CACHALOT INLET (APP 12/17/92)
20	026	621	CROWTHER CHANNEL (APP 12/17/92)
20	026	622	TAHSIS INLET (APP 12/23/92)
20	027	070	LAWN PT. TO TOPKNOT PT (APP 05/12/89)
20	027	112	WINTER HARBOUR (AAP 05/12/89)
20	027	184	QUATSINO SD.
20	120	374	STATS 25 AND 26 - SUBS 67 AND 68
20	121	000	STATS 26 AND 27
20	140	382	STATS 25 AND 27 - SUBS 66, 67 AND 71
21	021	176	NITINAT BAR
21	021	379	MANAGEMENT UNIT 21 (INSIDE SURFLINE - BETWEEN PACHENA PT. & CARMANAH PT.) (AMENDED 30/05/94)
21	021	516	CARMANAH POINT (APP 6/24/91)
21	021	517	CLO-00SE (APP 6/24/91)
21	021	518	PACHENA POINT (APP 6/24/91)
21	023	054	INSIDE SURFLINE - ALBERNI INLET
21	023	056	INSIDE SURFLINE - CAPE BEALE TO BOUNDARY OF STATS 23 AND 24
21	023	057	OUTSIDE SURFLINE - CAPE BEALE TO LOUDOUN CHANNEL (APP 05/12/89)
21	023	073	BAMFIELD (APP 05/12/89)
21	023	113	FINGER BANK (APP 05/12/89)
21	023	179	TREVOR CHANNEL
21	023	180	INSIDE SURFLINE - UCLUELET INLET
21	023	519	STAMP POINT TO SPROAT NARROWS (APP 6/24/91)
21	023	520	SPROAT NARROWS TO TEN MILE POINT (APP 6/24/91)
21	023	521	TEN MILE POINT (APP 6/24/91)
21	023	522	SPROAT NARROWS (APP 6/24/91)
21	023	523	STAMP POINT (APP 6/24/91)
21	023	524	GULLIES (APP 6/24/91)
21	023	599	NAHMINT BAY (APP 06/15/92)
21	023	625	BARKLEY SOUND (APP 05/20/93)
21	023	661	DUNSMUIR POINT (APP 05/20/93)

Appendix Table 2. (Cont'd)

STATISTICAL AREAS				
CR	STAT	SUB	PLACE	
21	023	662	IMPERIAL EAGLE CHANNEL (APP 05/20/93	
21	023	663	LOUDOUN CHANNEL (APP 05/20/93	
21	024	062	INSIDE 50 FATHOM LINE - 49TH PARALLEL TO RAFAEL PT. (APP 05/12/89)	
21	024	182	CLAYOQUOT SD.	
21	024	664	TOFINO INLET (APP 05/20/93	
21	024	665	BRABANT CHANNEL (APP 05/20/93	
21	024	666	EPPER PASS (APP 05/20/93	
21	024	680	MILLAR CHANNEL (APP 04/11/94)	
21	024	681	SHELTER INLET (APP 04/11/94)	
21	114	000	STATS 23 AND 24	
22	013	000	GEORGIA STRAIT SPORT NORTH	STAT 013
22	014	000	GEORGIA STRAIT SPORT NORTH	STAT 014
22	015	000	GEORGIA STRAIT SPORT NORTH	STAT 015
22	016	000	GEORGIA STRAIT SPORT NORTH	STAT 016
23	017	000	GEORGIA STRAIT SPORT SOUTH	STAT 017
23	018	000	GEORGIA STRAIT SPORT SOUTH	STAT 018
23	028	000	GEORGIA STRAIT SPORT SOUTH	STAT 028
23	029	000	GEORGIA STRAIT SPORT SOUTH	STAT 029
23	19A	000	GEORGIA STRAIT SPORT SOUTH	STAT 19A (APP 22/03/93)
23	29A	000	GEORGIA STRAIT SPORT SOUTH	STAT 29A
23	29B	000	GEORGIA STRAIT SPORT SOUTH	STAT 29B
23	29C	000	GEORGIA STRAIT SPORT SOUTH	STAT 29C
23	29D	000	GEORGIA STRAIT SPORT SOUTH	STAT 29D
23	29E	000	GEORGIA STRAIT SPORT SOUTH	STAT 29E
24	020	000	JUAN DE FUCA SPORT	STAT 020
24	19B	000	JUAN DE FUCA SPORT	STAT 19B (APP 22/03/93)
25	001	000	NORTHERN SPORT STAT 1	
25	002	000	NORTHERN SPORT STAT 2	
25	003	000	NORTHERN SPORT STAT 3	
25	004	000	NORTHERN SPORT STAT 4	
25	005	000	NORTHERN SPORT STAT 5	
25	02E	000	NORTHERN SPORT STAT 2E	
25	02W	000	NORTHERN SPORT STAT 2W	
26	006	000	CENTRAL SPORT STAT 006	
26	007	000	CENTRAL SPORT STAT 007	
26	008	000	CENTRAL SPORT STAT 008	
26	009	000	CENTRAL SPORT STAT 009	
26	010	000	CENTRAL SPORT STAT 010	
26	011	000	CENTRAL SPORT STAT 011	
26	012	000	CENTRAL SPORT STAT 012	
26	030	000	CENTRAL SPORT STAT 030	
27	021	000	WESTCOAST VANCOUVER ISLAND SPORT	STAT 021
27	022	000	WESTCOAST VANCOUVER ISLAND SPORT	STAT 022
27	023	000	WESTCOAST VANCOUVER ISLAND SPORT	STAT 023
27	024	000	WESTCOAST VANCOUVER ISLAND SPORT	STAT 024
27	025	000	WESTCOAST VANCOUVER ISLAND SPORT	STAT 025
27	026	000	WESTCOAST VANCOUVER ISLAND SPORT	STAT 026
27	027	000	WESTCOAST VANCOUVER ISLAND SPORT	STAT 027
27	23B	000	WESTCOAST VANCOUVER ISLAND SPORT	STAT 023 OUTSIDE
28	23A	000	WESTCOAST VANCOUVER ISLAND SPORT	STAT 023 INSIDE
29	0FW	000	FRESHWATER SPORT	
33	062	000	STATS 2E, 5 AND 6	
33	077	000	STATS 5 AND 6	
33	124	000	STATS 3-6	
34	098	000	STATS 12 AND 13	
36	055	000	TAKU RIVER	
36	056	000	STIKINE RIVER	
36	057	000	YUKON RIVER	
37	000	000	JFN & GSN	
45	000	000	JSN & GSN	
46	107	000	STATS 16 AND 29	

Appendix Table 2. (Cont'd)

STATISTICAL AREAS			
CR	STAT	SUB	PLACE
46	110	000	STATS 17 AND 29A
47	000	000	AK STAT AND SUBAREA UNKN
47	031	000	AK ??
47	031	087	AK ALASKA STAT AREA 101
47	031	105	AK ALASKA STAT AREA 104
47	031	107	AK ALASKA STAT AREA 152
47	031	110	AK ALASKA STAT AREA 106
47	031	111	AK ALASKA SOUTHERN INTERMEDIATES 105,109,110
47	031	114	AK ALASKA STAT AREA 114
47	031	116	AK KETCHIKAN, ALASKA
47	057	608	YUKON RIVER MOUTH (APP 08/21/92)
48	000	000	BC UNKNOWN
53	000	000	GSTR & SWTR
56	006	027	INSIDE SURFLINE - JOSEPH I. TO RENNISON I. (INCLUDES ESTEVAN SD. AND CAAMANO SD.)
56	006	028	OUTSIDE SURFLINE - JOSEPH I. TO RENNISON I. (INCLUDES THE HORSESHOE)
56	006	029	INSIDE THE SURFLINE (NORTH LAREDO CHANNEL AND LAREDO SOUND) (AMENDED 30/05/94)
56	006	030	OUTSIDE SURFLINE - RENNISON I. TO DAY PT.
56	006	222	SUBS 27 AND 28
56	006	223	SUBS 27 AND 29
56	006	224	SUBS 29 AND 30
56	006	483	TRUTCH ISLAND (APP 6/24/91)
56	006	484	CAMPANIA ISLAND (APP 6/24/91)
56	006	485	ARISTAZABAL ISLAND (APP 6/24/91)
56	006	695	MANAGEMENT UNITS 6-11, 13-18 (APP 27/05/94)
56	006	696	CAAMANO SOUND (MANAGEMENT UNITS 6-9, 10) (APP 27/05/94)
56	007	031	INSIDE SURFLINE- DAY PT. TO NORTH END OF GOOSE GROUP (INCLUDES MILBANKE SD. AND SEAFORTH CHANNEL)
56	007	032	OUTSIDE SURFLINE - DAY PT. TO NORTH END OF GOOSE GROUP
56	007	033	INSIDE SURFLINE - NORTH END OF GOOSE GROUP TO BOUNDARY OF STATS 7 & 8 (INCLUDES GOOSE GROUP AND QUEEN SD.)
56	007	034	SOUTHSIDE SURFLINE - NORTH END OF GOOSE GROUP TO BOUNDARY OF STATS 7 & 8 (INCLUDES NE CORNER OF GOOSE BANK, THE RIDGE AND THE BITE)
56	007	225	SUBS 31 AND 33
56	007	226	SUBS 33 AND 34
56	007	392	SEAFORTH CHANNEL (APP 15/06/88)
56	007	393	FINLAYSON CHANNEL (APP 15/06/88)
56	007	394	SPILLER CHANNEL (APP 15/06/88)
56	007	395	SEAFORTH/SPILLER CHANNEL (APP 15/06/88)
56	007	667	CAPE MARK (APP 05/20/93)
56	007	668	DAY POINT (APP 05/20/93)
56	007	669	CAPE SWAINE (APP 05/20/93)
56	007	670	MOODY BANKS (APP 05/20/93)
56	007	692	SOUTH LAREDO SOUND (MANAGEMENT UNIT 7-31) (APP 27/05/94)
56	007	694	MILBANKE SOUND (MANAGEMENT UNITS 7-1, 2, 3, 18) (APP 27/05/94)
56	008	035	INSIDE SURFLINE - INCLUDES DEAN CHAN, BURKE CHAN AND FITZHUGH SD.
56	008	036	OUTSIDE SURFLINE - INCLUDES SE CORNER OF GOOSE BANK
56	008	123	DEAN CHANNEL
56	008	124	BURKE CHANNEL
56	008	125	FITZHUGH SOUND
56	008	397	HAKAI PASS (APP 09/08/88)
56	009	037	INSIDE SURFLINE - RIVERS INLET
56	009	038	OUTSIDE SURFLINE
56	009	492	MANAGEMENT UNIT 9-1 (APP 6/24/91)
56	009	671	MANAGEMENT UNIT 9-12 (APP 05/20/93)
56	030	072	AREA 30 - INCLUDES NW, SW, AND SE CORNERS OF GOOSE BANK
56	076	297	STATS 7, 8 AND 30 - SUBS 34, 36 AND 72
56	078	000	STATS 6, 7, 8, 9 AND 30
56	080	300	STATS 6 AND 7 - SUBS 27, 29 AND 31
56	080	301	STATS 6 AND 7 - SUBS 27, 30 AND 31

Appendix Table 2. (Cont'd)

STATISTICAL AREAS			
CR	STAT	SUB	PLACE
56	080	302	STATS 6 AND 7 - SUBS 29, 30, 31, 32 AND 33
56	080	303	STATS 6 AND 7 - SUBS 29 AND 31
56	080	304	STATS 6 AND 7 - SUBS 30, 32 AND 34
56	081	000	STATS 6, 7 AND 8
56	082	000	STATS 6, 7 AND 9
56	083	305	STATS 7 AND 8 - SUBS 31, 33, 34 AND 35
56	083	306	STATS 7 AND 8 - SUBS 31, 33 AND 35
56	083	307	STATS 7 AND 8 - SUBS 31 AND 35
56	083	308	STATS 7 AND 8 - SUBS 33, 34 AND 35
56	083	309	STATS 7 AND 8 - SUBS 33, 34, 35 AND 36
56	083	310	STATS 7 AND 8 - SUBS 33 AND 35
56	083	311	STATS 7 AND 8 - SUBS 33, 35 AND 36
56	083	312	STATS 7 AND 8 - SUBS 34 AND 36
56	084	000	STATS 7, 8 AND 9
56	085	000	STATS 7 AND 30
56	086	313	STATS 8 AND 9 - SUBS 35 AND 37
56	086	314	STATS 8 AND 9 - SUBS 36 AND 37
56	090	000	STATS 8 AND 30
56	130	000	STATS 6 & 8 (APP 05/08/88)
57	010	039	INSIDE SURFLINE - SMITH INLET
57	010	040	OUTSIDE SURFLINE
57	010	387	SUBS 39,40 - SEA OTTER GROUP INSIDE & OUTSIDE SURFLINE APP(19/12/86)
57	010	493	VIRGIN ROCKS (APP 6/24/91)
57	011	041	INSIDE SURFLINE - QUEEN CHARLOTTE STRAIT AND SEYMOUR/BELIZE INLETS
57	011	042	OUTSIDE SURFLINE - CAPE SCOTT TO YANKEE SPOT
57	011	099	STEAMER GROUNDS
57	011	100	SCOTT ISLANDS
57	011	127	YANKEE SPOT
57	011	495	ROLLER BAY (APP 6/24/91)
57	011	497	CAPE SCOTT (APP 6/24/91)
57	011	498	COOK BANK (APP 6/24/91)
57	011	499	CAPE SUTIL TO CAPE SCOTT (APP 6/24/91)
57	011	500	MEXICANA POINT (APP 6/24/91)
57	011	575	PINE ISLAND (APP 08/19/92)
57	012	075	BULL HARBOUR
57	012	090	KINGCOME INLET
57	012	091	JOHNSTONE STRAIT
57	012	101	PORT HARDY
57	012	103	KNIGHT INLET
57	012	128	GORDON ISLAND GROUP
57	012	129	MALCOLM/BROUGHTON I.
57	012	130	GOLETAS CHAN
57	012	131	ROBSON BIGHT
57	012	132	THOMPSON/BOND SD.
57	012	427	TRIBUNE CHANNEL (APP 20/08/90)
57	012	426	BOND SOUND (APP 20/08/90)
57	012	502	DESERTERS GROUP (APP 6/24/91)
57	012	503	BLACKFISH SOUND (APP 6/24/91)
57	012	504	CRACROFT POINT (APP 6/24/91)
57	012	672	RIPPLE PASSAGE (APP 05/20/93)
57	012	673	DESERTERS GROUP TO NUMIS ISLAND (APP 05/20/93)
57	079	000	STATS 10, 11 AND 12
57	092	316	STATS 10 AND 11 - SUBS 39, 40 AND 41
57	092	317	STATS 10 AND 11 - SUBS 40 AND 42
57	094	000	STATS 11 AND 12
58	029	044	SOUTH MOUTH (MANAGEMENT UNITS 29-6, 7, 9) (APP 27/05/94)
58	029	045	NORTH MOUTH (MANAGEMENT UNIT 29-10) (APP 27/05/94)
58	029	385	FRASER RIVER GENERAL (MANAGEMENT UNIT 29-3) (AMENDED 30/05/94)
58	29A	386	FRASER RIVER MOUTH
60	000	000	WA STAT AND SUBAREA UNKN
60	200	000	WA POINT ROBERTS TO OLYMPIA/WASH NET FISHERY (APP 01/19/87)
60	201	000	WA POINT ROBERTS (APP 31/01/88)

Appendix Table 2. (Cont'd)

STATISTICAL AREAS			
CR	STAT	SUB	PLACE
60	202	000	WA SAN JUAN ISLANDS (APP 31/01/88)
60	203	000	WA POINT ROBERTS & SAN JUAN ISLANDS (APP 31/01/88)
60	204	000	WA SKAGIT BAY (APP 31/01/88)
60	205	000	WA SOUTH PUGET SOUND (SEATTLE TO OLYMPIA) (APP 31/01/88)
60	206	000	WA HOOD CANEL (APP 31/01/88)
60	207	000	WA SOUTH PUGET SOUND (SEATTLE TO OLYMPIA & HOOD CANAL (APP 31/01/88)
60	208	000	WA PUGET SOUND (SKAGIT BAY TO OLYMPIA (APP 31/01/88)
80	000	000	HS COMMERCIAL HIGH SEAS (APP 05/17/89)
81	000	000	HS RESEARCH HIGH SEAS (APP 05/17/89)
82	000	000	HS NATIVE HIGH SEAS (APP 05/17/89)
90	000	000	FRESHWATER COMMERCIAL (APP 05/17/89)
91	000	000	FRESHWATER RESEARCH (APP 05/17/89)
92	000	000	FRESHWATER NATIVE (APP 05/17/89)
93	000	000	FRESHWATER TEST (APP 05/17/89)
94	000	000	FRESHWATER BROOD COLLECTION (APP 05/17/89)
95	000	000	FRESHWATER MISCELLANEOUS (APP 06/12/89)
99	0FW	000	ESCAPEMENT (APP 03/06/93)

Appendix Table 3. List of gear types and their codes.

DESCRIPTION	CODE
Other Gear	01
Ocean Sport	07
Salmon Gillnet, Commercial	10
Other Gillnet/Set Net	11
Dip Net/Scoop Net	12
Drift Net	13
Drag net/Bag Net, Indian	14
Mixed Gillnet and Seine	15
Salmon Seine, Commercial	20
Other Seine (Not Beach)	21
General Troll	30
Troll Freezer	31
Troll Day	32
Troll Ice	33
Handline, Indian	36
Hatchery Rack	40
Spawning Ground	41
Freshwater Fish Trap	42
Gaff (Wild Fish)	43
Freshwater Net (Mixed)	45
Freshwater Sport	47
Trawl	50
Midwater Trawl	51
Pair Seine	52
Fishway (Permanent)	60
Weir (Temporary)	61
Carcass Weir	62
Fish Wheel	63
Juvenile Weir	64
Fyke Net	66
Electroshocker	67
Beach Seine	70
Diving	80
Hand	81
Spear/Arrow/Harpoon	85
Deadpitch	83
Unknown	88
Other trap	90
Salmon Trap, Indian	91
Mixed	99

Appendix Table 4. Site Codes for freshwater sampling with corresponding codes for Statistical Area and Rabcode.

AREA	SITE	SITE NAME	RABCODE
	2726	1ST LAKE	
	47	35 1/2 MILE CREEK	
	2725	36 MI CREEK	
	1315	ANDERSON CREEK/SWVI	
	2202	BEDWELL BAY	
	767	BLUE GROUSE LAKE	
	240	BLUE LAKE	
	2555	BRANNEN LAKE	
	2730	BROWNS BAY CREEK	92-4000
	1558	CAMPBELL RIVER/GSML	
	798	CAUSEWAY BAY	
	1	CHRISTIAN CREEK/GSML	
	65	COLD CREEK	
	657	CONSTITUTION CREEK	
	2	DAVIS CREEK	
	346	DEER BAY	
	1670	ECHO LAKE	
	1968	EPP CREEK	
	256	EVANS CREEK	00-0400
	1712	FIRST L	
	2650	FLORA LAKE	
	440	FOUR-MILE CREEK	93-1000-070-010
	1668	FRANCIS LAKE	
	2651	FRANCIS+DARLINGTON L	
	138	FRANCIS+FLORA LAKE	
	2744	FRANCIS+FLORA+DARLIN	
	2533	GEORGE HALLS CREEK	
	225	GRANDON CREEK	
	2201	GREEN LAKE	
	447	GREY CREEK	
	2701	GRILSE CREEK	
	1385	HELLDIVER LK.	
	2592	HURRY CREEK	
	2225	INK LAKE	
	98	IRON RIVER	
	233	JIMMY CHARLIE SLOUGH	
	380	K2 SWAMP	
	1977	KAMAT LAKE	
	1379	KAMENT + HENRY CR.	
	381	KANYON CREEK	
	2227	KILLARNEY LAKE	
	712	LITTLE LOST LAKE	
	372	LITTLE MOUNTAIN CHAN	
	27	LOG DUMP	
	2616	LONESPOON CREEK	
	2226	LOOKOUT CREEK	
	1611	LOST LAKE	
	766	LOWER LOST LAKE	
	2209	MARY COVE	
	1515	MAYO POND	
	2215	MILL LAKE	
	591	MITCHIE CREEK	
	2623	MONINGTON POND	

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
	845	MOSQUITO CREEK/QCI	95-9300-030
	59	MOSQUITO LAKE/BC	
	407	NAPOLION CREEK	
	1554	NESOOK	
	1970	ONE MILE LAKE	
	2638	ONE-MILE CREEK	
	1955	ONION LAKE	
	1321	OWEN BAY CREEK	
	396	PERRY RANCH	
	1709	PINK CREEK	
	435	PINK/WILLOW CR	
	1956	PIPELINE CREEK	
	2580	PIXIE LAKE	
	1074	PORCUPINE RIVER	
	311	PORPOISE BAY	00-0600-020-200
	232	POST CREEK	
	291	QUINSAM LAKE	
	1957	REES CREEK	92-2600-010
	2230	REGINAL LAKE	
	1642	RENNIE CREEK	92-2800-110-020
	2220	RICHARD LAKE	
	212	SALMON R/GSVI	92-1700
	2612	SALMON SLOUGH/UPFR	
	2613	SAMSON CREEK	
	1926	SANDOWN CREEK	
	2600	SANDY CREEK/GSVI	
	2608	SCHOOLHOUSE CREEK	
	461	SEAL BAY	
	2707	SECOND L	
	1892	SECOND LAKE	
	2705	SHELLEY LAKE	
	2635	SIXTY-SEVEN CREEK	
	472	SKULLEY CREEK	
	1631	SOAMES CREEK	
	1517	ST MARY LAKE	
	2607	SUTERBROOK CREEK	03
	312	THOMPSON RIVER SOUTH	
	454	THORNTON CR ESTUARY	
	1871	TYEE LAKE	40-1030
	58	VARIOUS STREAMS/LAKE	
	2217	VENNER BROOK	
	1947	WEST LAKE	
	1516	WESTON LAKE	
	169	WHITE DUCK LAKE	
	773	WILLIMAR+FORBUSH LKS	
	113	WILLOW CREEK/BC	
	2614	WINDEBANK CREEK	
	1985	WYLIE CR	
001	2436	AWUN RIVER	
001	2637	BLACKWATER CREEK	
001	1644	BLUEJACKET CREEK	
001	1919	CHOWN BROOK	
001	419	GOLD CREEK UPPER/BC	
001	415	GOLD CREEK /BC/QCI	
001	354	KING CREEK	94-4000-080
			92-2646
			00-0450-010
			94-3600
			94-3900-020
			94-4600
			94-4700-001
			94-4000-060
			94-4000-060

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
001	337	KING CREEK LOWER	94-4000-080
001	327	KING CREEK UPPER	94-4000-080
001	1331	MAMIN RIVER	94-3900
001	421	MARIE LAKE	94-4000-060
001	121	MASSET	
001	1518	MASSET INLET OCEAN	
001	1328	NADU CREEK	94-4400
001	2548	PT.CLEMENTS R&G	
001	173	SEWELL INLET	
001	2634	WATUN CREEK	94-4500
001	418	WILSON CREEK/QCI	94-4000-090
001	60	YAKOUN RIVER	94-4000
001	129	YAKOUN RIVER LOWER	94-4000
02E	1322	AGNES CREEK	29-2129
02E	2452	ALDER ISLAND CREEK	95-9400-820
02E	2451	ARROW CREEK	95-9400-820
02E	2339	BAG HABOUR CREEK	95-2200
02E	1990	BELJAY CR	95-9300-125
02E	179	BIG GOOSE CREEK	95-0800
02E	2549	BLAINE CREEK	29-8361
02E	859	BRAVERMAN CREEK	95-0325
02E	1332	CHARLIE HARTIE C.	29-2134
02E	1647	CLINT CREEK	95-0670
02E	1921	COATES CREEK	94-1800
02E	1942	CONGLOMERATE POINT	
02E	457	COPPER CREEK/QCI	95-0100
02E	2337	CRESENT INLET CREEK	95-1000
02E	1943	CUMSHEWA HEAD	
02E	2331	DANA CREEK #1	95-0870
02E	2332	DANA CREEK #2	95-0880
02E	2333	DANA CREEK #3	95-0900
02E	1920	DEENA RIVER	95-8500
02E	1329	DEEP CREEK/QCI	
02E	2307	DENNA CREEK	95-8500
02E	2155	EAST NARROWS CREEK	95-8270
02E	2453	FORGOTTEN CREEK	95-2040
02E	1658	GATE CREEK/QCI	95-9300-290
02E	2720	GATEWAY STHD CLB	
02E	2551	GECKIE CREEK	
02E	2459	GEORGE BAY CREEK	95-2265
02E	2500	GIRARD CREEK	29-2137
02E	1323	GORE BROOK	29-2111
02E	2076	GOSSET BAY CREEK	94-0710
02E	494	HAANS CREEK	95-8800
02E	2457	HAIDA CREEK	NONE
02E	2456	HARRIET CREEK	95-2500
02E	2550	HOME CREEK	
02E	1324	HONNA RIVER	94-0600
02E	2077	HUSTON R.H. & L.H. CREEKS	NONE
02E	2438	HUTTON INLET CREEK HEAD	95-1700
02E	2439	HUTTON INLET CREEK L.H.	95-1720
02E	2440	HUTTON INLET CREEK R.H.	NONE
02E	2075	INDIAN CABIN CREEK	94-0815
02E	2444	ISLAND BAY CREEK L.H.	95-2108
02E	2445	ISLAND BAY CREEK R.H.	95-2100

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
004	361	CEDAR RIVER/SKEENA	43-1500
004	2631	CHICKEN CREEK	
004	363	CLEAR RIVER/SKEENA	63-1400
004	464	CLEARWATER CREEK	42-0900
004	1999	CLIFFORD CREEK	47-0900
004	1894	COLDWATER CREEK/SKNA	42-0500
004	451	COPPER R. LOWER/SKNA	44
004	450	COPPER R. UPPER/SKNA	44
004	365	COPPER RIVER/SKNA	44
004	404	CULLON CREEK	47-0400
004	405	DATE CR+KISPIOX R	
004	2576	DATE CREEK	47-0100
004	568	DEEP CREEK/SKNA	43-0200
004	2554	DENISE ARM	
004	297	DIANA CREEK	96-0250-010
004	831	DRY CREEK/BC	43-1300
004	303	EBY STREET	
004	2542	ECSTALL CREEK	40-0100-160
004	476	EMERSON CREEK	
004	1932	ERLANDSEN CREEK	40-1000-010
004	597	FORT BABINE	
004	2384	FOUR MILE CREEK	48-9530
004	142	FULTON RIVER	48-6400
004	376	FULTON+BABINE RIVER	
004	2255	GITWANYOW SCH	
004	1982	HADENCHILD CR	43-1500-020
004	465	HATCHERY CREEK	48-4810
004	466	HATCHERY CREEK NORTH	48-4810
004	468	HATCHERY CREEK SOUTH	48-4810
004	61	HAYS CREEK	29-0049
004	2633	HERMAN CREEK	42-0600
004	473	HERMAN LAKE	42-0600
004	1981	HODDER CREEK	29-2148
004	469	HOTSPRINGS SUBSTAT	
004	2624	HOWE CREEK	
004	2698	KALUM	
004	1648	KATHLYN CREEK	46-3500
004	2544	KHYEX RIVER	40-0200
004	119	KISPIOX RIVER	47
004	176	KISPIOX RIVER TRIBS	47
004	2722	KITSEQUECLA RIVER	45
004	1190	KITSUMKALUM LAKE	43
004	336	KITSUMKALUM R LOWER	43-0000-000-000-000-000-993
004	369	KITSUMKALUM R UPPER	43-0000-000-000-000-000-992
004	53	KITSUMKALUM RIVER	43
004	1929	KWITWANCOOL CHAN.	40-2200-030
004	1312	KITWANCOOL RIVER	40-2200-030
004	1917	KITWANGA RIVER	40-2200
004	293	KLOIYA CREEK	96-0250
004	1377	KOFOED BROOK	
004	171	LAKELSE RIVER	42
004	817	LEAN-TO-CREEK	43-0300
004	1983	MCCULLEY CR	47-0200

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
004	2371	MCDONELL LAKE SYSTEM	44-0000-000-000-000-000-992
004	2573	MCQUEEN CREEK	47-0140
004	387	MORICE LAKE OUTLET	46-5500
004	343	MORICE LAKE/SKNA	46-5500
004	54	MORICE RIVER	46-5500
004	2377	MORRISON CREEK/04	48-4810
004	1719	MURDER CREEK	47-0300
004	2574	NANGESE RIVER	47-1400
004	2375	NANIKA RIVER	46-5500-190
004	1918	OLDFIELD CREEK	29-0046
004	274	OONA RIVER	97-9300-130
004	2504	OWEN CREEK	46-5500-050
004	2383	PIERRE CREEK	48-7600
004	143	PINKUT CREEK	48-9000
004	2545	PR.RUPERT SCHLS	
004	467	SANDHALL CREEK	
004	2376	SCHULBUCKHAND CREEK	42-1000
004	2630	SEELEY CREEK	
004	2543	SHAWATLAN R.	96-0350
004	2597	SHEGUNIA RIVER	40-0200
004	1375	SHULBUCKHAND CREEK	
004	2541	SILVER CREEK	96-0400
004	2301	SKEENA RIVER	40
004	2596	SKUNSNAT CREEK	47-0800
004	1311	SOCKEYE CREEK/BC	42-1200-010
004	2212	SPRING CREEK	43-0100
004	2546	STEWART SCHOOLS	
004	1528	SUSKWA	46-0700
004	2329	SWAN LAKE	NONE
004	2575	SWEETIN RIVER	47-1100
004	2372	TAHLO CREEK	48-4800
004	2629	TEA CREEK	
004	1308	TELKWA RIVER	46-3800
004	340	TERRACE	
004	2611	TERRACE SCHOOLS	
004	2292	THOMAS CREEK	44-0800-040
004	172	THORNHILL CREEK	40-1030
004	839	TOBOGGAN CR	46-2400
004	2577	TROUT CREEK/SKNA	46-2300
004	2385	TWAIN CREEK	48-7700
004	2628	TWO-MILE CREEK	
004	2626	UPLANDS SPRING	
004	1309	WILLIAMS CREEK	42-1200
004	300	WOLFE CREEK	96-0150
004	1522	ZYMOETZ	44
005	2669	BONILLA LAKE	
005	2390	CURTIS CREEK	97-8200-638
005	2672	CURTIS LAKE	97-8200-638
005	2673	DEVON LAKE	97-8200-570
005	2683	LOWE LAKE	
005	2391	MIKADO CREEK	97-8200-560
005	2389	QUINSTONSTA RIVER	97-8500-665
005	2211	UNION PASS LAKE	97-8200-230
006	2210	ANGLER COVE LAKE	91-7680

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
006	1524	BISH CREEK	91-9100
006	1384	CECIL CREEK	91-9000-250
006	200	CHIST CREEK	91-9000-300
006	255	DALA RIVER	91-8900
006	1891	FIRST LAKE	
006	403	HARTLEY BAY CR UPPER	91-5000
006	308	HARTLEY BAY CREEK	91-9500
006	2585	HARTLEY BAY LAKE	91-5000
006	2694	HARTLEY BAY SCH.	
006	64	HIRSCH CREEK	91-9000-050
006	470	HOTSPRINGS #1 CREEK	91-8655
006	471	HOTSPRINGS #2 CREEK	91-8655
006	1382	HUMPHREYS CREEK	91-9000-200
006	1934	KEMANO RIVER	91-8500
006	1916	KEMANO SCHOOLS	
006	166	KILDALA RIVER	91-8880
006	1950	KITIMAT LOWER	91-9000
006	146	KITIMAT RIVER	91-9000
006	1306	KITIMAT SCH	
006	1949	KITIMAT UPPER	91-9000
006	2681	KITLOPE LAKE	91-8300
006	1395	LITTLE WEDEENE	91-9000-080
006	1048	MARSHALL CR/GSML	91-7260
006	1951	MCKAY CR.	91-9000-350
006	2369	MOORE CREEK/06	91-9008
006	2627	WATHL CREEK	91-8980
006	1525	WEDEENE RIVER	91-9000-100
007	123	BELLA BELLA	
007	199	GULLCHUCK RIVER	97-2250-725
007	2393	KAINET RIVER	91-6300
007	209	KAKUSHDISH CREEK	97-2250-655
007	414	KITASOO BAY	97-4200-80
007	409	KITASOO CREEK	97-4200-085
007	406	KLEMTU CREEK	97-4200-080
007	2365	KUNSOOT RIVER	97-2250-725
007	2363	KWAKUSDIS RIVER	97-3300-344
007	2682	LONG LAKE	
007	2598	MARY COVE CREEK	97-4400-491
007	856	MCLAUGHLIN BAY	
007	214	MCLAUGHLIN BAY CREEK	97-2500-135
007	923	MCLAUGHLIN LAKE	97-2500-135
007	2435	MUSSEL RIVER	91-6650
007	201	NEEKAS RIVER	91-5700
007	1946	PINE CREEK	91-5520
007	2364	TANKEEAH RIVER	91-5800
007	1371	TROUT BAY	
008	2428	AIRPORT SIDE CHANNEL	N/A
008	408	ATNARKO RIVER	91-2910-600
008	79	ATNARKO RIVER LOWER	91-2910-600
008	1940	ATNARKO RIVER UPPER	91-2910-600
008	71	BELLA COOLA R LOWER	91-2910
008	1364	BELLA COOLA RIVER	91-2910
008	139	BELLA COLA TRIBS	91-2910
008	2289	CENTRAL COAST SCHOOLS	

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
008	1335	CLAYTON FALLS CR	91-2900
008	2305	DEAN RIVER	91-3225
008	62	FISH CR+AIRPORT CHAN	
008	84	FISH CREEK	57-5200-932
008	1948	HAGENSBORG SLOUGH	
008	613	HOTNARKO LAKE	91-2910-600-250
008	2304	KIMSQUIT RIVER	91-3275
008	2426	KLONNIK CREEK	N/A
008	2663	KOEYE RIVER	91-2048
008	2204	MARTIN LAKE	91-3880
008	2531	MARTIN RIVER	91-3880
008	2303	NAMU RIVER	91-2090
008	77	NECLEETSCONNAY R	91-2912
008	1966	NIEUMIAMUS CR	91-2928
008	2425	NOOKLIKONNIK CREEK	N/A
008	211	NOOS + SAL	
008	1967	NOOSESECK RIVER	91-2964
008	1389	NOOSGULCH	91-2910
008	375	NUHALK	
008	2733	NUSATSUM	91-2910-330
008	2688	PORT JOHN LAKE	90-4800-994
008	72	SALLOOMT RIVER	91-2910-3000
008	2427	SKIMITX CREEK	N/A
008	140	SNOOTLI CREEK	91-2910-200
008	1904	TALEHO CAN. RIVER	91-2928
008	73	THORSEN CREEK	91-2910-050
008	250	THORSEN/NUHALK	
008	1965	WALKER I. STREAMS	
008	2367	Was Namu river, now 2303	91-2090
009	2461	ASHLULM CREEK	91-1282-320
009	1964	CHUCKWALLA R.	91-1300-050
009	2464	INZIANA RIVER	91-1282-750
009	2515	KILBELLA RIVER	91-1300
009	2144	NEECHANZ RIVER	91-1282-550-010
009	438	OWIKENO LAKE	91-1282-800
009	2244	RIVERS IN-HAKAI PASS	
009	439	RIVERS INLET SEAPENS	
009	2156	SHEEMAHANT RIVER	91-1282-650
009	1906	SHOT BOLT BAY	N/A
009	2392	SMOKEHOUSE CREEK	91-0228-230
009	265	WANNOCK R. ESTUARY	91-1282
009	136	WANNOCK RIVER	91-1282
009	2294	WASHWASH RIVER	91-1282-780
010	379	DOCEE RIVER	91-0228
010	2665	NEKITE RIVER	91-0400
011	497	VILLAGE BAY CREEK	90-5160
011	2593	VILLAGE BAY LAKE	90-5160
011	2532	WARNER BAY CREEK	90-8295
012	983	ANUTZ LAKE	92-1300-120
012	1667	BLUEBELL CREEK	92-0900-930
012	2621	BROUGHTON IS STREAMS	90-6400
012	1627	CHARLES CREEK	90-6600
012	164	CLUXEWE RIVER	92-1100
012	1660	DESERTED R /GSML	90-2255
012	344	DEVEREUX CREEK	90-5300-010

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
012	19	EMBLEY CREEK	90-7200
012	2674	FULMORE LAKE	90-4600
012	417	GILFORD IS CREEKS	90-6300-250
012	631	GLENDALE CHANNEL	90-4900-10
012	2675	GLENDALE LAKE	90-4900-10
012	1654	GLENLION RIVER	92-0860
012	483	HYDE CREEK/NWVI	92-1280
012	1318	KAKWEIKEN FISHWAY/JNST	
012	353	KAKWEIKEN RIVER/GSML	90-6100
012	2622	KENNETH RIVER	90-7800
012	275	KEOGH RIVER	92-1000
012	2308	KILPALA RIVER	92-1300-040
012	2514	KOKISH RIVER	92-1400
012	416	LOOSE LAKE	
012	2719	MILLS CREEK (Bear Creek)	92-1210
012	2685	NAHWITTI LAKE	92-0300
012	2604	NAHWITTI RIVER	92-0300
012	122	NIMPKISH	
012	1373	NIMPKISH LAKE	92-1300
012	2288	NIMPKISH R&G CLUB	
012	437	NIMPKISH RIVER	92-1300
012	436	NIMPKISH RIVER LOWER	92-1300
012	184	O'CONNOR LAKE BCFW	
012	783	P.HARDY/QUATSE	
012	2222	PORT HARDY F+W	
012	315	QUATSE LAKE	92-0900
012	339	QUATSE RIVER	92-0900
012	2603	QUATSESE RIVER	92-0900
012	2667	REID FISHWAY	
012	1887	ROSELLE LAKE	
012	1338	ROUGH BAY CR	
012	481	SCOTT COVE CREEK	90-6300-370
012	1336	SIMOOM SOUND CREEK	90-6350
012	1320	STUART ISLAND	
012	276	TSITIKA RIVER	92-1500
012	1640	TSULQUATE RIVER	92-0800
012	1897	WOODS CREEK	
012	995	WOSS LAKE	92-1300-210
012	432	WOSS RIVER	92-1300-210
013	1305	APRIL POINT	N/A
013	109	BEAR RIVER PIP/JNST	92-1800
013	2286	CAMPBELL R. F&W CLUB	
013	692	CAMPBELL R. ESTUARY/JNST	
013	1671	CAMPBELL R. SCHOOLS	
013	95	CAMPBELL RIVER/JNST	92-2600
013	110	CAMPBELL TRANSITION	92-2600
013	257	CASEY CREEK	92-2580
013	1317	CORTEZ ISLAND	
013	131	DEEPWATER BAY	29-6450
013	420	DISCOVERY PASSAGE	
013	462	DREW HARBOUR CREEK	92-2300-310
013	1915	GILLARD PASS	
013	492	GRANITE BAY CREEK	92-2300-810
013	2511	HANSEN CREEK	90-3050-700
013	2677	HEYDON LAKE	90-4300

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
013	2729	HIDDEN HARB/QUADRA	
013	493	HYACINTHE CREEK	92-2300-270
013	498	HYACINTHE+MCKERCHEN	
013	1063	JASPER LAKE	
013	7	MEMEKAY RIVER	92-1700-170
013	8	MENZIES BAY	
013	147	MENZIES CREEK	92-2500
013	1060	MENZIES LAKE	92-2500
013	1386	MOHUN CREEK	92-2520
013	2231	NUNN'S CREEK	92-2600-002
013	2293	ORFORD RIVER	90-3400
013	2666	PHILLIPS CHANNEL	90-3900
013	2687	PHILIPS LAKE	90-3900
013	2718	PHILLIPS RIVER	90-3900
013	2510	QUADRA I. ENH. SOC.	
013	1641	QUADRA IS. STREAMS	92-2300
013	1657	QUATAM RIVER	90-3335
013	290	QUINSAM LAKE UPPER	92-2600-010
013	106	QUINSAM RIVER	92-2600-010
013	1378	QUINSAM RIVER LOWER	92-2600-010
013	210	QUINSAM RIVER UPPER	92-2600-010
013	400	QUINSAM RIVER WATERSHED	92-2600-010
013	1288	SALMON RIVER/QUINSAM	92-1700
013	1319	SIMMS CREEK	92-2640
013	2556	SONORA I. STREAMS	
013	1900	ST. AUBYN LAKE	92-2000
013	2229	TROUT CREEK	92-2520
013	28	WELCH CREEK	92-2520-040
013	2170	WHITE RIVER	92-1700-080
013	227	ANNIE CREEK	92-3520
014	1656	BAYNES SOUND STR.	
014	75	BEACH CREEK	92-3640
014	1898	BEULAH CREEK	92-3150-200
014	83	BEVAN CREEK	
014	2741	BIG QUALICUM ESTUARY	
014	2746	BIG QUALICUM MARINE	
014	100	BIG QUALICUM RIVER	92-3500
014	778	BIG QUALICUM WATERSHED	92-3500
014	108	BLACK CREEK	92-2710
014	1978	BLOEDEL CREEK	92-2900-020
014	1040	BRADLEY LAKE	92-2900-020
014	1280	BROOKLYN CREEK	92-2780
014	402	CAMERON L+QUALICUM	
014	205	CAMERON LAKE	92-3600-950
014	2742	CAMERON RIVER	92-3600-050
014	1879	CHEF CREEK	
014	2507	CHICKADEE LAKE	
014	1881	COAL CREEK	92-3000
014	208	COMOX BAY	
014	206	COMOX LAKE	92-2800-110-010
014	82	COMOX LAKE + TOMA CR.	
014	2699	COMOX VALLEY	
014	1880	COOK CREEK/GSVI	92-3412
014	268	COURTENAY	
014	2610	COURTENAY SCHLS	

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
014	2602	COWIE CREEK	92-3200
014	67	CRAIG CREEK	92-3825
014	207	CRUICKSHANK RIVER	92-2800-110
014	305	CRUICKSHANK+PUNTLEDGE	
014	2512	DENMAN ISLAND	
014	1878	DUDLEY MARSH	
014	2206	ENGLISHMAN CHANNEL	
014	213	ENGLISHMAN RIVER	92-3800
014	2291	ENGLISHMAN RIVER # 2	
014	1316	FILLONGLEY CREEK	92-3100-130
014	266	FRENCH CREEK	92-3700
014	2506	GRAHAM LAKE	
014	2661	GRANT CREEK	
014	97	HART CREEK	92-2950
014	247	HEADQUARTERS CREEK	92-2800-010-030
014	1899	HORNBY ISLAND	
014	2743	HORNE LAKE+HEADQUARTERS	
014	80	HORNE LAKE	92-3500
014	101	HUNTS CREEK	
014	1259	KITTY COLEMAN CREEK	92-2740
014	102	LITTLE QUALICUM RIVER	92-3600
014	2697	LITTLE RIVER/GSVI	92-2770
014	1258	MILLARD CREEK	92-2830
014	391	MORRISON CREEK	92-2800-020
014	392	MUNDY'S CHANNEL	
014	76	NILE CREEK	92-3480
014	1930	OYSTER CHANNEL	92-2700
014	277	OYSTER RIVER	92-2700
014	115	PUNTLEDGE RIVER UPPER	92-2800
014	105	PUNTLEDGE RIVER	92-2800
014	68	PUNTLEDGE+TSOLUM RIVER	
014	1685	QUALICUM SCHOOLS	
014	111	ROSEWALL CREEK	92-3400
014	1199	ROY CREEK	92-2880
014	1514	SHAW LAKE	92-3520
014	70	SHAWS CREEK	92-3520
014	2002	SPIDER LAKE + KAMAT LAKE	
014	1976	SPIDER LAKE	
014	69	THAMES CREEK	92-3460
014	278	TRENT RIVER	92-2900
014	2601	TSABLE RIVER	92-3000
014	116	TSOLUM RIVER	92-2800-010
014	1883	WASHER CREEK	92-2950
014	1882	WATERLOO CREEK	92-3340
014	426	WOLF CREEK/BC	92-3184
015	2662	EAST LAKE	
015	2605	OKEOVER CREEK	90-2950
015	2200	OKEOVER INLET	
015	2221	REFUGE CREEK	90-3100-580
015	124	SLIAMMON CREEK	90-2910
015	2606	THEODOSIA CREEK	90-3000
016	283	ANDERSON CREEK/GSML	90-0100-020
016	448	ANGUS CREEK	90-1915
016	1608	BURNET CREEK	90-1910
016	1986	CHAPMAN CREEK	90-1600

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
016	2557	CHASTER CREEK	90-1550
016	1632	FLUME CREEK	90-1580
016	2219	HALFMOON BAY CREEK	90-1640
016	190	JITCO CREEK	
016	1072	KELLY CREEK	90-2725
016	1653	KLEIN CREEK	90-1700-080
016	2712	LANG CHANNEL	
016	444	LANG CREEK	90-2720
016	1989	LANGDALE CREEK	90-1525
016	26	MACLEAN BAY	N/A
016	1300	MCNAB CREEK	90-1370
016	489	MEADOW CREEK/BC	29-3180
016	1294	MIXAL CREEK	29-2150
016	1295	MIXAL LAKE	29-2150
016	1299	MYRTLE CREEK	90-2770
016	2526	POWELL RIVER SCHOOLS	
016	443	POWELL RIVER	
016	2527	RAINY RIVER/GSML	90-1400
016	1296	ROBERTS CREEK	90-1575
016	2528	SAKINAW LAKE	90-1700
016	125	SECHELT	90-1990
016	449	SECHELT AREA STREAMS	
016	1715	SECHELT CREEK	90-1990
016	191	SKWAWKA CREEK	90-2300
016	2284	SKWAWKA RIVER	90-2300
016	331	SLARKEDUS + MISSION	
016	482	SLIAMMON LAKE	90-2910
016	1911	SUNSHINE COAST SCHOOL	
016	2619	SUNSHINE COAST STREAMS	
016	2594	TEXADA ISLAND STREAMS	
016	2570	VANCOUVER BAY CHANNEL	
016	49	VANCOUVER BAY	
016	195	VANCOUVER RIVER LOWER	90-2200
016	196	VANCOUVER RIVER UPPER	90-2200
016	178	VANCOUVER RIVER	90-2200
016	1293	WAKEFIELD CREEK WHITTALL CREEK	90-1610
017	445	BARNABY SWAMP	90-2710
017	425	BEAVERTAIL CREEK	
017	63	BECK CREEK	
017	423	BLACKJACK SWAMP	92-4295
017	424	BONSALL CREEK	92-4300-100
017	356	BRANDON ISLAND	92-4705
017	357	BRANNEN LAKE+MILLSTONE	
017	338	CHARMAN CREEK	92-4200
017	2589	CHASE RIVER+MILLSTONE CREEK	
017	81	CHASE RIVER	
017	204	CHEMAINUS RIVER	92-4290
017	151	COWICHAN LAKE SCHOOLS	92-4700
017	2290	DEADWOOD CREEK	
017	378	DIVER LAKE	92-4300-100
017	2599	DUNSMUIR CREEK	
017	429	HASLAM CREEK/BC	92-4300-080-100
017	422	HASLAM LAKE	92-4300-20
017	446	HOLDEN LAKE	92-4300-20
017	1610		92-4305

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
017	430	HONG KONG CREEK	92-4295
017	1933	MALASPINA COLL.	
017	427	MALASPINA SEAPENS	
017	2216	MATTHEW CREEK	
017	203	MILLSTONE RIVER	92-4200
017	2269	MILLSTONE RIVER SPU	
017	428	NANAIMO AREA STREAMS	
017	2695	NANAIMO F&G	
017	126	NANAIMO RIVER	92-4300
017	328	NANAIMO RIVER UPPER	92-4300
017	2539	NANAIMO SCH	
017	267	NANOOSE CREEK	92-3900
018	1289	WALKERS CREEK	92-4595
018	2208	WOLFE LAKE	92-4300-095
018	1291	BEAR CREEK/GSVI	92-4800-400
018	2223	BEAVER CREEK	92-4800-520
018	2587	BINGS CREEK	92-4800-060-650
018	2716	BONSALL SLOUGH	
018	74	COBBLE QUARRY BCFW	
018	1629	COONSKIN CREEK	92-4800-725
018	367	COWICHAN ESTUARY	
018	185	COWICHAN LAKE BCFW	92-4800
018	2538	COWICHAN LAKE TRIBS	92-4800
018	2660	COWICHAN RIVER @ DUNCAN	92-4800
018	118	COWICHAN RIVER	92-4800
018	335	COWICHAN RIVER LOWER	92-4800
018	324	COWICHAN RIVER UPPER	92-4800
018	2250	COWICHAN SCHOOLS	
018	368	COWICHAN SIDE CHANNEL	
018	1042	CRANBERRY LAKE	
018	1913	CUSHEON CREEK	92-4750-100
018	2536	DISCOVERY SCHOOL	
018	2502	FULFORD CREEK	92-4750-200
018	2721	GANGES CREEK	
018	1047	GLENORA CREEK	92-4800-020-050-130
018	1884	GRANT LAKE	
018	2552	GULF ISLAND SCHLS	
018	488	HAGAN CREEK	92-5500
018	296	KELVIN CREEK	92-4800-020-050
018	2664	KOKSILAH FISHWAY	92-4800-020
018	355	KOKSILAH RIVER	92-4800-020
018	2537	L. COW. SAL. ENH SO.	
018	341	MESACHIE CREEK	92-4800-580
018	342	MESACHIE ESTUARY	
018	2586	QUAMICHAN LAKE	92-4800-055
018	386	ROTARY PARK	
018	1912	SALTSPRING ISLAND	
018	484	SHAWNIGAN CREEK	92-5000
018	2535	SHAWNIGAN LAKE SCH	
018	399	SKUTZ FALLS	92-4800-390
018	50	VANCOUVER ISLAND BCFW	
018	1187	WESTHOLME CHANNEL	
019	487	COLQUITZ RIVER	92-6000
019	1292	CRAIGFLOWER CREEK	92-6100

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
019	349	GOLDSTREAM ESTUARY	
019	295	GOLDSTREAM RIVER	92-5200
019	1914	LESTER PEARSON COLL.	
019	486	REAY CREEK	92-5600
019	6651	SAANICH INLET	N/A
019	2534	SANDHILL CREEK/GSVI	92-5700
019	485	TOD CREEK	92-5400
019	2540	VICTORIA SCHOOLS	
020	347	DEMAMIEL CREEK	93-0300-050
020	2579	FAIRY LAKE	93-1000-070-010
020	1873	GORDON RIVER	93-1100
020	442	GRANITE CREEK	93-1000-070-010
020	441	HARRIS CREEK/BC	93-1000-120
020	2285	LENS LAKE	93-1000-150
020	21	MARYVINE CREEK	93-0300-200
020	13	PLESTID CREEK	
020	93	SAN JUAN RIVER	93-1000
020	490	SOOKE RIVER	93-0300
020	1643	VEITCH CREEK	93-0200
021	2670	CHEEWHAT LAKE	93-1400
022	2678	HOBITON LAKE	93-1500-200
022	332	LITTLE NITINAT RIVER	93-1500-450
022	395	NITINAT LAKE	93-1500
022	2652	NITINAT RIVER UPPER	93-1500
022	114	NITINAT RIVER	93-1500
022	480	PARKER CREEK	93-1500-550
023	12	ALBERNI ENH SOC	
023	1313	ALBERNI SCHOOLS	
023	2588	ALBERNI VALLEY STREAMS	
023	91	ASH RIVER	93-2300-250
023	16	BEAVER CREEK LOWER	93-2300-350
023	15	BEAVER CREEK UPPER	93-2300-350
023	360	CARNATION ESTUARY	
023	2731	CHINA CREEK	93-2240
023	2234	DIXON LAKE	
023	2233	DORAN LAKE	
023	96	ELSIE LAKE	93-2300-250
023	294	GREAT CENTRAL LAKE	
023	2676	HENDERSON LAKE	93-2500
023	1972	JUNE LAKE	
023	14	LANTEMAN CREEK	93-2300-250-050
023	1392	LOWRY LAKE	
023	633	LUNDBOM LAKE	
023	456	MAGGIE RIVER	93-3200
023	389	MCBRIDE CREEK	93-2300-660
023	413	NAHMINT RIVER	93-2400
023	1630	PACHENA RIVER	93-1800
023	104	ROBERTSON CREEK	93-2300-000-000-000-000-991
023	89	ROGER CREEK	93-2300-020
023	1388	SARITA RIVER	93-2000
023	90	SOMASS RIVER	93-2300-000-000-000-000-991
023	1523	SPROAT LAKE	93-2300-100
023	318	SPROAT RIVER	93-2300-100
023	92	STAMP RIVER	93-2300-000-000-000-000-992
023	2696	THORNTON CREEK	

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
023	128	THORNTON CREEK/SWVI	93-3300
023	2693	THORNTON VOL	
023	2706	TOQUART RIVER	93-3100
023	1971	TOY LAKE	
024	1314	AHOUSAT	
024	1886	ANGORA CREEK	93-3600-450
024	1037	CLAYOQUOT	
024	1902	CYPRE RIVER	93-4100
024	1963	HOTSPRINGS COVE	
024	455	IITHPAYA LAGOON	93-3600-020
024	2680	KENNEDY LAKE	93-3600
024	94	KENNEDY RIVER	93-3600
024	453	KENNEDY RIVER LOWER	93-3600-000-000-000-000-994
024	170	KENNEDY RIVER UPPER	93-3600-000-000-000-000-993
024	388	KOOTOWIS CREEK	93-3500
024	23	LOST SHOE CREEK	93-3380
024	2581	MAGGIE LAKE	93-3200
024	2684	MEGIN LAKE	93-4600
024	393	MURIEL CREEK	29-8654
024	394	MURIEL LAKE	29-8654
024	66	NAZKO RIVER	07-3200
024	24	SANDHILL CREEK/SWVI	93-3400
024	397	STAGHORN CREEK	93-6300-070
024	1885	THUNDEROUS CREEK	29-3100
024	1901	TOFINO	
025	2366	BARR CREEK	93-6560
025	5	BENSON RIVER	93-8800-310
025	2485	BOLTON LAKE	NONE
025	1905	BURMAN RIVER	93-5400
025	88	CANTON CREEK	93-5950
025	1381	CONUMA ESTUARY	
025	117	CONUMA RIVER	93-5900
025	1380	CONUMA RIVER UPPER	93-5900
025	85	DESERTED LAKE	93-6100
025	1091	DESERTRED RIVER/NWVI	93-6100
025	2330	EHATISHT CREEK	93-6750
025	2310	ESCALANTE RIVER	93-5200
025	30	GOLD RIVER/NWVI	93-5500
025	1974	HEBER CREEK	93-5500-200
025	1340	LEINER RIVER	93-6390
025	1984	MUCHALAT LAKE	93-5500-300
025	87	SUCWOA RIVER	93-6000
025	1939	SUCWOA RIVER UPPER	93-6000
025	1553	SUMAS RIVER	00-0600
025	1339	TAHSIS RIVER	93-6400
025	86	TLUPANA RIVER	93-5800
025	1896	WILSON CREEK/SWVI	
025	1557	ZEBALLOS RIVER	93-6700
026	1889	CLANNINICK CREEK	93-7620
026	2679	JANSEN LAKE	93-7535
026	1025	KYUQUOT	
026	1035	MCKAY COVE CREEK	93-7610
026	2690	POWER LAKE	93-7820
026	2558	VANCOUVER ISLAND WEST SCH.	
027	6	ALICE LAKE OUTLET	93-8800

Appendix Table 4. (Cont'd)

AREA	SITE	STREAM NAME	RABCODE
027	1628	AWEISHA CREEK	93-9210
027	2309	CAYEGHLE CREEK	93-8600
027	2516	COLONIAL RIVER	93-8600-010
027	2708	COLONIAL+CAYEGHLE	
027	1341	CORDY CREEK	
027	1626	GOODSPEED RIVER	93-9050
027	1334	HECATE COVE CREEK	
027	370	JOHN MACK SLOUGH	
027	1969	JOHNNY CREEK	93-9060
027	1342	MAHATTA RIVER	93-8300
027	351	MARBLE RIVER	93-8800
027	1343	MONKEY CREEK	93-8330
027	1344	NEQUILTPAALIS CREEK	93-8700
027	174	PORT HARDY/STEPHENS	
027	1337	QUATSINO CREEK	29-0030
027	175	STEPHENS CREEK	93-8950
027	2513	VANCOUVER ISLAND NORTH SCH.	
027	1006	WANOKANA CREEK	93-8990
027	1888	WASHLAWLIS RIVER	93-8910
027	998	WAUKWAAS CREEK	93-8900
028	1875	B.C. RAIL CHANNEL	29-3031
028	2258	BRANDT CREEK CHANNEL	
028	2259	BRANDT CREEK DIVERSION	
028	2207	BRENNAN PARK CHANNEL	
028	2736	CATES PARK	
028	1908	COAST MOUNTAIN	
028	2740	DEEP BAY	
028	78	DEEP BAY CREEK	
028	2590	DRYDEN CREEK	90-1300-030-010
028	1390	ELAHO RIVER	90-1300-210
028	2715	FISHWEIR CHANNEL	
028	2228	GRAFTON LAKE	90-1000-030
028	2260	HIXON CHANNEL	
028	1363	HOWE SOUND SCHOOLS	
028	2713	JACK SLOUGH	
028	1181	JUDD SLOUGH	90-1300-040
028	2287	KEITH CREEK	90-0800-010
028	1923	KING EDWARD BAY CREEK	
028	1349	MALKIN CREEK	
028	1358	MAPLEWOOD CREEK	90-0700-100
028	2530	MCNAIR CREEK	90-1430
028	1874	MOODIE'S CHANNEL	93-1300-050-011-050
028	10	MOSSOM CREEK	90-0320
028	226	NOONS CREEK	29-9152
028	2609	NORTH SHORE STREAMS	
028	1655	NORTH VAN. SCHLS	
028	1185	PARADISE CHANNEL LOWER	
028	307	PARADISE CHANNEL UPPER	
028	2508	PEMBERTON F&G	
028	2732	PORTEAU COVE	
028	2572	RED MOUNTAIN CREEK	190-1300-140-200
028	2203	REED POINT	
028	1347	RICHARDS CREEK	29-4193

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
028	1361	RODGERS CREEK	90-0940
028	1346	TERMINAL CREEK	90-1000-040
028	2257	TIAMPO CHANNEL	
028	2261	TOWER CHANNEL	
028	1298	TUWANEX	
028	2714	WELDWOOD CHANNEL	
028	1359	WEST VANCOUVER SCH	
028	193	WEST VANCOUVER LAB	
28A	1527	BROTHERS CREEK	90-0900-010
28A	1922	BURRARD INLET	
28A	103	CAPILANO RIVER	90-0900
28A	334	CAPILANO RIVER LOWER	90-0900
28A	323	CAPILANO RIVER UPPER	90-0900
28A	222	CAPILANO WATERSHED	90-0900
28A	1637	CYPRESS CREEK	90-0970
28A	1065	DEEP COVE	
28A	1639	EAGLE HARBOUR CREEK	90-0988
28A	348	FALSE CREEK PENS	
28A	1638	HASTINGS CREEK	90-0800-020
28A	1355	HORSESHOE BAY	
28A	221	INDIAN ARM	
28A	220	INDIAN RIVER	90-5000
28A	330	LIONS BAY	
28A	2135	LYNN CREEK	90-0800
28A	1357	MCCARTNEY CREEK	90-0690
28A	1351	MCKAY CREEK	97-5000-155
28A	2553	MOSQUITO CREEK/GSML	90-0850
28A	261	NORTH VANCOUVER OUT SCHOOL	
28A	1360	NELSON CREEK	90-0900
28A	112	SEYMORE RIVER	90-8500
28A	2000	VANCOUVER SCHLS	
28B	217	ASHLU CREEK	90-1300-140
28B	2656	ASHLU+ELEHO+SQUAMISH	
28B	2488	BRITANNIA CREEK	NONE
28B	216	CHEAKAMUS RIVER	90-1300-050
28B	2529	DAKOTA CREEK	90-1430-010
28B	2079	FURRY CREEK	NONE
28B	333	LITTLE STAWAMUS RIVER	90-1200
28B	1184	MAMQUAM RIVER	90-1300-020
28B	2711	MASHITER CHANNEL	90-1300-020-010
28B	1931	MCNAB CHANNEL	90-1370
28B	383	MEIGHAN CREEK	90-1300-020-005
28B	282	OUILLET CREEK	90-1490
28B	218	SHOVELNOSE CREEK	90-1300-180
28B	319	SQUAMISH RIVER	90-1300
28B	153	TENDERFOOT CREEK	90-1300-050-013
28B	304	TENDERFOOT LAKE	90-1300-050-013
28B	285	WILSON CREEK/GSML	90-1595
029	358	FRASER RIVER LOWER	00
029	325	FRASER RIVER UPPER	00
29A	2218	AIRPORT CREEK	
29A	2723	COUGAR CANYON CREEK	00-0160
29A	1137	PEACH CREEK	
29A	2521	RICHMOND SCHLS	
29A	2522	STEVESTON H. SCH	
29A	228	WEST GLADE	

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
29B	1302	CLAYBURN CREEK (STONE CREEK)	00-0460-010
29B	2306	COGHLAN CREEK	00-0300
29B	2582	COTTONWOOD CHANNEL	
29B	2430	COTTONWOOD REACH	00
29B	2520	DELTA SCHOOLS	
29B	223	L. CAMPBELL RIVER	90-0080
29B	1616	L. CAMPBELL+SERPEN RIVER	
29B	1383	NATHAN CREEK	00-0360
29B	287	NICOMEKL RIVER	90-0100
29B	183	NICOMEKL+L. CAMPBELL	
29B	248	SALMON RIVER/VAN	00-0300
29B	288	SERPENTINE RIVER	90-0200
29B	189	SURREY REARING BCFW	
29B	1615	SURREY SCHOOLS	
29B	2213	YORKSON CREEK	00-0260
29C	2328	ALBION FERRY	00
29C	2262	ALOUETTE CHANNEL	00-0200-050
29C	182	ALOUETTE RIVER	00-0200-050-020
29C	302	ALOUETTE RIVER SOUTH	00-0200-050
29C	243	BLANEY CREEK	00-0200-050-020-020
29C	2738	BOISE CREEK	00-0200-750
29C	314	BRUNETTE RIVER	00-0100
29C	1301	BURNABY LAKE	
29C	1987	BURNABY SCHOOLS	
29C	2615	CORBOLD CREEK	00-0200-740
29C	1353	HOY CREEK	00-0180-100-020
29C	1352	HYDE CREEK/LWFR	00-0200-060
29C	281	KANAKA CREEK	00-0290
29C	1354	LAURENTIAN CREEK	29-4981
29C	11	MACINTYRE CREEK	00-0200-80
29C	1710	OR CREEK	00-1800-150
29C	2739	PITT LAKE	00-0200
29C	2429	PITT RIVER (LOWER)	00-0200
29C	249	PITT RIVER (UPPER)	00-0200
29D	310	3-B SIDE CHANNEL	
29D	279	BIG SILVER CREEK	01-1800
29D	219	BILLY HARRIS SLOUGH	
29D	152	BIRKENHEAD RIVER	01-4100
29D	2727	CHEHALIS + SQUAKUM	
29D	181	CHEHALIS RIVER/LWFR	
29D	167	CHEHALIS RIVER+WEAVER CREEK	
29E	154	CHEHALIS RIVER/BC	01-0400
29D	1164	CHILQUA CREEK (THOMPSON CREEK)	00-0500-020
29D	1944	COGBURN CREEK (FIFTEEN MILE C)	01-1600
29D	168	COGBURN+BIG SILVER CREEK	
29D	237	COHO CREEK	01-0400-080
29D	499	COQUITLAM RIVER	00-0180
29D	1011	CRAZY CREEK	03-4300-060
29D	165	CRAZY+PYE+INCH CREEK	
29D	2639	DE BOVILLE SLOUGH	
29D	1348	DRAPER CREEK	00-0500-010
29D	1394	ELBOW CREEK	01-0400-010
29D	229	HARRISON RIVER	01-0000-000-000-000-99
29D	479	HATZIC LAKE	00-0500

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
29D	1529	HAYWARD LAKE	
29D	2509	HICKS CREEK	00-0790-070
29D	1928	HICKS CREEK POND	00-0790-070
29D	239	HICKS+MARIA CREEK	00-0700-070
29D	150	INCHES CREEK	00-0522-020-005
29D	1545	LAGACE CREEK	00-0500-060
29D	1975	LILLOOET RIVER LOWER	01-0000-000-000-000-000-991
29D	1909	LILLOOET RIVER UPPER	01-0000-000-000-000-000-992
29D	1953	MAISAL CREEK	01-0400-060
29D	1155	MARIA SLOUGH	00-0700
29D	2245	MISSION SCHOOLS	
29D	1161	MORRIS LAKE/LWFR	01-0500
29D	309	NICOMEN SLOUGH	00-0552
29D	2728	NICOMEN+MARIA	
29D	56	NORRISH CREEK	00-0552-020
29D	1910	PEMBERTON CREEK	01-4400
29D	2710	PRETTY'S CHANNEL	
29D	1191	RAILROAD CREEK	01-5000
29D	2640	SEABIRD CHANNEL	
29D	316	SIDDLE CREEK	00-0552-070
29D	241	SIDDLE CREEK LOWER	00-0552-070
29D	99	SIDDLE CREEK UPPER	00-0552-070
29D	1362	SILVERDALE CREEK	00-0435
29D	1356	SILVERMERE LAKE	
29D	2571	SMOKEHOUSE CHANNEL	
29D	236	SOUAWKUM CREEK	01-0100
29D	1960	STATLU CREEK	01-0400-040
29D	244	STAVE CREEK	00-0400
29D	1961	TROUT CREEK/LWFR	01-0700
29D	2595	TROUT LAKE CR. (HATCHERY CR.)	01-0700
29D	2523	TYNEHEAD ZOO. SOC.	
29D	1617	UNION CREEK	
29D	235	WEAVER CREEK/BC	01-0500-010
29E	1907	WEST SLOUGH	
29E	2524	WETLAUFER'S CHANNEL	
29E	137	WHONNOCK+NATHAN CR.	
29E	1157	WORTH CREEK	00-0552-020-010
29E	2519	ABBOTSFORD SCHLS	
29E	1153	BARRETT CREEK	00-0600-020-013
29E	1941	BROWN CREEK	92-2800-030
29E	51	CENTRE CREEK	00-0600-020-180
29E	251	CHILLIWACK LAKE	00-0600-020
29E	107	CHILLIWACK RIVER	00-0600-020
29E	1345	CHILLIWACK SCHOOLS	
29E	284	COQUIHALA RIVER	00-0800
29E	2724	DEPOT CREEK (BROWN CREEK)	00-0600-020-250
29E	230	DOLLY VARDEN CREEK	00-0600-020-000-000-000-993
29E	1618	ELK CREEK	00-0640-020
29E	246	FOLEY CREEK	00-0600-020-160
29E	187	FRASER VALLEY/BCFW	

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
29E	460	FROSST CREEK	00-0600-020-020-060
29E	2700	HOPE SLOUGH	
29E	2709	HOPEDALE CHANNEL	00-0600-020-010-010
29E	1129	HOPEDALE SLOUGH	00-0600-020-010-010
29E	2205	KAWADAWA CHANNEL (SUCKER CREEK)	00-0800-010
29E	1301	LINDEMAN LAKE	00-0600-20-200
29E	1124	LITTLE CHILLIWACK RIVER	00-0625
29E	286	LONZO CREEK (MARSHAL CR/LWFR)	00-0600-050
29E	180	LUCKAKUCK CREEK	00-0625-030
29E	1141	RYDER CREEK	00-0600-020-050
29E	231	SALWEIN CREEK	00-0600-020-008
29E	313	SALWEIN+SLESSE CREEK	
29E	1531	SILVERHOPE CREEK	00-0790
29E	245	SLESSE CREEK	00-0600-020-130
29E	2004	SWELTZER CREEK	00-0600-020-020
29E	1962	TAMIHI CREEK	00-0600-020-090
29E	329	VEDDER CROSSING	00-0600-020
29E	234	VEDDER RIVER	00-0600-020-000-000-000-992
29E	159	WHALEACH CREEK (JONES CREEK)	00-0735
29E	1530	YOLA CREEK	00-790-060
29F	299	BONAPARTE RIVER LOWER	02-5000
29F	298	BONAPARTE RIVER UPPER	02-5000
29F	252	BONAPARTE RIVER	02-5000
29F	1619	BRIDGE RIVER	00-1900
29F	1387	COLDWATER RIVER	02-2500-360
29F	1876	DEADMAN CHANNEL	
29F	254	DEADMAN RIVER	02-7000
29F	2648	DOUGLAS LAKE	
29F	1534	GATES RIVER/UPFR	00-1800-650
29F	1624	KAMLOOPS SCHOOLS	
29F	2566	LILLOOET SCHOOLS	
29F	157	LOON CREEK BCFW	
29F	1925	MERRITT SCHOOLS	
29F	2078	NAHATLATCH RIVER	00-1200
29F	2649	NICOLA RIVER UPPER	02-2500
29F	253	NICOLA RIVER	02-2500
29F	1533	SETON RIVER (LOWER)	00-1800-000-000-000-000-992
29F	1532	SETON RIVER (UPPER)	00-1800-000-000-000-000-992
29F	2394	SPENCES BRIDGE	02
29F	2647	SPIUS+MAKA CREEKS	
29F	160	SPIUS CREEK	02-2500-250
29F	2653	THOMPSON RIVER	02
29F	188	THOMPSON RIVER NORTH	04
29F	1649	TRANQUILLE RIVER	02-9000
29F	2462	VOGHT CREEK	NONE
29F	1620	YALAKOM RIVER	00-1900-150
29G	2618	BEAVER LAKE	
29G	2737	CARIBOO RIVER LOWER	06-3810
29G	352	CARIBOO RIVER UPPER	06-3810
29G	2567	CARIBOO S. SCH.	
29G	273	CHILCOTIN RIVER	05
29G	2671	CHILKO LAKE	05-3835
29G	272	CHILKO RIVER	05-3835

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
29G	238	ED LEON SLOUGH	
29G	2668	HANCEVILLE	
29G	29	HORSEFLY RIVER	06-5460
29G	2263	IANSON CHANNEL	
29G	135	MCKINLEY CREEK	06-5460-480
29G	2238	MCKINLEY LAKE	06-5460-480
29G	2283	MITCHEL RIVER	05-5800-050
29G	1093	SKOW KALE	
29G	22	WILLIAMS LAKE SCHOOLS	
29H	280	BAEZAECO RIVER	07-3650
29H	2237	BOSK LAKE	06-5460-480
29H	326	COTTONWOOD RIVER	00-5100
29H	377	DAVIDSONS LANDING	
29H	2236	ELBOW LAKE	
29H	2692	QUESNEL LAKE	06
29H	382	QUESNEL LAKE OUTLET	06
29H	155	QUESNEL RIVER	06
29H	2745	QUESNEL TOWNSITE	06
29H	2311	WEST ROAD RIVER -BLACKWATER	07
29I	263	BOWRON RIVER	00-6300
29I	1304	CHILAKO RIVER	08-0500
29I	1890	DOMO CREEK	00-6660
29I	127	FONTONIKO CREEK	00-6200-070-070
29I	410	FORT ST. JAMES	
29I	134	INDIAN POINT CREEK	00-6300-240
29I	412	JAMES CREEK	00-6200-070-030
29I	1924	N. THOM. SCH.	
29I	1661	NADINA RIVER	08-2700-990
29I	2467	NAUTLEY RIVER	NONE
29I	345	NECHAKO RIVER	08
29I	1609	PENNY	
29I	270	PENNY CDP	
29I	1651	PRINCE GEORGE SCH	
29I	1625	SALMON RIVER/PRINCE GEORGE	00-5800
29I	145	SEBACH RIVER	00-6200-020
29I	262	SLIM CREEK	00-6600
29I	317	SLIM LAKE	00-600
29I	2517	SPRUCE C. WLDLF A.	
29I	1621	STELLAKO RIVER	08-2700
29I	158	STUART RIVER	09
29I	401	STUART RIVER UPPER	09
29I	269	WILLOW RIVER	09
29J	364	ADAMS RIVER UPPER	03-1800-000-000-000-000-992
29J	259	BARRIERE RIVER	04-0700
29J	1622	BLUE RIVER	04-6000
29J	2525	CHRISTIAN CREEK/UPFR	04-0600-150
29J	2617	CLEARWATER RIVER LOW/BC	04-1500
29J	162	CLEARWATER RIVER UPR/BC	04-1500
29J	1623	COOK CREEK/THOM	04-6200
29J	260	DUNN CREEK	04-1300-010
29J	935	DUNN LAKE	04-1300-010
29J	1374	FENNEL CREEK	04-0700-150
29J	1945	FINN CREEK	04-5000
29J	258	LEMIEUX CREEK	04-1200
29J	491	LION CREEK	04-4800

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
29J	350	LOUIS CREEK	04-0600
29J	264	MANN CREEK (BLACKWATER RIVER)	04-1400
29J	130	MCTAGGART CREEK	04-1300-010-010
29J	1519	MCTAGGART LAKE	04-1300-010-010
29J	45	RAFT RIVER/BC	04-1700
29J	398	SWIFT CREEK	00-8200-050
29J	271	TETE JAUNE	00
29J	496	WIRE CACHE CREEK	04-4210
29K	2395	ADAMS RIVER LOWER	03-1800-000-000-000-991
29K	1650	ARMSTRONG/SHUSWAP SCH	
29K	373	BESSETTE CREEK	03-5400-350
29K	1303	DUTEAU CREEK	03-5400-350-040
29K	156	EAGLE RIVER/THOM	03-4300
29K	1652	FORTUNE CREEK	03-5400-120
29K	2505	HIDDEN LAKE	03-5400
29K	289	KINGFISHER CREEK	03-5400-210
29K	186	LARDEAU RIVER	34-5400-040
29K	1952	LITTLE RIVER/UPFR	03-0000-000-000-000-992
29K	2518	LUMBY WILD. ASSOC.	
29K	384	MISSION CREEK/BC	31-6300
29K	1297	PERRY RIVER	03-4300-050
29K	132	SALMON RIVER/THOMPSON	03-5200
29K	1958	SHUSWAP RIVER MIDDLE	03-5400-000-000-000-992
29K	48	SHUSWAP RIVER	
29K	161	SHUSWAP RIVER LOWER	03-5400-000-000-000-991
29K	2559	VERNON SCHOOLS	
050	2399	ALSEK RIVER	NONE
050	1997	KLUKSHU RIVER/ALSEK	99-2050
055	2314	BIG TATSAMENIE LAKE	NONE
055	2317	FLANIGAN SLOUGH	
055	2315	HACKETT RIVER	89
055	3	INKLIN RIVER	80-0000-000-000-000-992
055	2313	LITTLE TATSAMENIE LAKE	NONE
055	2312	LITTLE TRAPPER LAKE	NONE
055	1064	NAKINA RIVER	83
055	2326	SILVER SALMON RIVER	83-2000
055	2003	TAKU RIVER LOWER	80
055	46	TATSAMENIE LAKE	80-6200
055	4	TULSUQUAH RIVER	81-0000-000
056	1992	BLANCHARDS SLOUGH/STIK	
056	1993	CLEARWATER SLOUGH/STIK	
056	2704	DUDIDONTU RIVER	
056	1996	FISH & GAME SL/STIKINE	
056	2327	ISKUT RIVER	51
056	1991	KATATI LAKE/STIKINE	
056	1995	LITTLE RED SL/STIK	
056	1031	LITTLE TAHLAN	54-3300
056	1062	NAHLIN RIVER	87
056	2126	SNETTISHAM CAN/US	
056	1935	STIKINE RIVER	50
056	2689	TAHLTAN LAKE	54
056	1994	TOSAKILI CREEK/STIK	50-0200
056	2335	VERRETT RIVER	51-2300
056	2686	YUKON LAKES	

Appendix Table 4. (Cont'd)

AREA	SITE	SITE NAME	RABCODE
057	2316	BIG SALMON RIVER	NONE
057	2325	DAWSON	60
057	2320	FISHING BRANCH RIVER	NONE
057	2319	KLUANE RIVER	NONE
057	2321	MINTO	60
057	2324	MOOSE ROCK	60
057	2323	SHEEP ROCK	60
057	2318	TATCHUN RIVER	NONE
057	2437	TESLIN RIVER	61
057	2322	WHITE ROCK	60
057	163	WHITEHORSE	60-0000
057	1973	WOLF CREEK/YUKON	
057	959	YUKON RIVER	60-0000
999	9999	MIXED	99-9999

Appendix Table 5. Location and codes for port and creel sampling.

CODE	NAME
001	STEVESTON
002	VANCOUVER
003	VICTORIA
004	NAMU
005	PRINCE RUPERT/PORT EDWARD
006	PORT HARDY
007	TOFINO
008	UCLUELET
009	HISTORICAL
010	HISTORICAL
011	HISTORICAL
012	GEORGIA STRAIT MOBILE
013	SKIDEGATE/QUEEN CHARLOTTE CITY
014	WINTER HARBOUR
015	MASSET
016	CAMPBELL RIVER
017	COMOX/COURTENAY
018	FRENCH CREEK/NANAIMO/COWICHAN
019	WHITEHORSE
020	DAWSON CREEK
021	TEST FISHERY
022	OFFSHORE
023	BAMFIELD
024	SHEARWATER
100	ANGLER'S ANCHORAGE
101	TSARTLIP RAMP
103	CATTLE POINT
104	PEDDER BAY
105	CHEANUH MARINA
106	SIDNEY ANGLERS RAMP
107	JAMES BAY
108	FLEMMING BEACH
109	PACIFIC LIONS
110	OAK BAY MARINA
111	HALL'S BOATHOUSE (GOLDSTREAM)
112	SOOKE HARBOUR MARINA
200	BRECHIN
201	SCHOONER COVE
202	FRENCH CREEK
203	BOWSER BILL'S
205	CHEMAINUS KINSMEN RAMP
206	IVY GREEN MARINA
207	COWICHAN BAY
208	LADYSMITH ROTARY RAMP
209	CROFTON RAMP

Appendix Table 5. (Cont'd)

CODE	NAME
210	STONE'S MARINA
211	SILVA RAMP
212	CHARLAINE RAMP
300	TYEE SPIT
301	FRESHWATER
302	PAINTER'S
303	KITTY COLEMAN
304	BIG ROCK
305	SALMON POINT
306	PACIFIC PLAYGROUNDS
307	COMOX MUNICIPAL
308	AIRFORCE BEACH
309	BATES BEACH
310	DEEP BAY
311	CAMPBELL RIVER BOAT RENTALS
312	SPORTFISHING CENTER
313	APRIL POINT
314	UNION BAY
315	DOLPHIN'S
316	BROWN'S BAY
317	DISCOVERY MARINA
320	STUART ISLAND RESORT
321	BIG BAY
322	SONORA ISLAND
323	DENT ISLAND
324	EAGLE ROCK LODGE
330	KEN FORD'S
400	PLANETARIUM
401	MCDONALD BEACH
402	CAPILANO BOAT RAMP
403	SEWELL'S WEST
404	SUNSET MARINA
405	SEWELL'S EAST
406	SMITTY'S MARINA
407	SECRET COVE
408	TAYLOR'S GARDEN BAY
409	MADEIRA MARINA
410	WESTVIEW
411	BEACH GARDEN'S RESORT
412	LUND
413	EGMONT
414	IRVINE'S LANDING
416	CRESCENT BEACH
417	SARGEANT'S BAY
418	COOPER'S GREEN

Appendix Table 5. (Cont'd)

CODE	NAME
419	LOWE'S RESORT
420	DUNCAN COVE RESORT
421	KENT'S BEACH
422	SECHELT
423	GIBSON'S MARINA
424	GIBSON'S BEACH
425	TSAWWASSEN BEACH
426	FISHERMAN'S COVE ESSO
427	14TH STREET RAMP
430	BUCCANEER
601	BAYSHORE MARINA
604	CANADIAN PRINCESS
801	SEABEAM ENTERPRISES
802	POETT NOOK
803	TOQUART BAY
900	PORT HARDY GOV'T RAMP
902	QUARTERDECK MARINA
904	PORT MCNEILL MUNICIPAL RAMP
905	PORT MCNEILL MUNICIPAL WHARF
906	ALDER BAY CAMPSITE
908	TELEGRAPH COVE
910	SAYWARD FISH AND GAME RAMP
912	SAYWARD MACMILLAN BLODEL RAMP
914	KLEMTU (KITASOO)
989	SIDNEY
990	Not Used by IVQ
991	BELLA BELLA/SHEARWATER
992	ZEBALLOS
993	LUND/PENDER HARBOUR
994	KETCHIKAN
995	SOINTULA
996	BLAINE
997	BELLINGHAM
998	PORT ALBERNI
999	COAL HARBOUR

Appendix Table 6. Ranges in weight that categorize the various grades of salmon along with their associated codes.

WEIGHT (lbs)	CODE
-2	0002
2/4	0204
+2	0200
3	0003
3/5	0305
-4	0004
4/6	0406
4/7	0407
4/8	0408
-5	0005
5/7	0507
5/8	0508
+5	0500
5/12	0512
6/9	0609
-7	0007
7/9	0709
7/10	0710
7/11	0711
+7	0700
-8	0008
8/10	0810
8/12	0812
+8	0800
+9	0900
-10	0010
+10	1000
-11	0011
11/18	1118
-12	0012
12/16	1216
12/18	1218
12/19	1219
+12	1200
16/19	1619
+16	1600
18/30	1830
+18	1800
+19	1900
+30	3000
mixed	0000

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Chum
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post-orbital hypural 63
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Otolith

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number 78
removal 78

P

Pink

key 14
mark sample sizes 94

R

Rabcode 57

Ray -see **Fin-**

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 code 164

