DEPARTMENT OF FISHERIES AND FORESTRY

ANNUAL REPORT

CONSERVATION AND PROTECTION BRANCH

PACIFIC REGION

1969

Officers taking temperatures in a salmon stream.

DEPARTMENT OF FISHERIES AND FORESTRY

ANNUAL REPORT

CONSERVATION AND PROTECTION BRANCH

PACIFIC REGION

1969

W. R. HOURSTON,
DIRECTOR,
DEPARTMENT OF FISHERIES AND FORESTRY,
PACIFIC REGION.

M. P. HOUGHTON,
CHIEF, CONSERVATION AND PROTECTION BRANCH,
DEPARTMENT OF FISHERIES AND FORESTRY,
PACIFIC REGION.

TABLE OF CONTENTS

APPENDIX

ANNUAL REPORT

CONSERVATION AND PROTECTION BRANCH

PACIFIC REGION

1969

INTRODUCTION

The Pacific Region of the Federal Department of Fisheries and Forestry encompasses the Province of British Columbia and the contiguous waters of the Pacific Coast and includes the Yukon Territory. Within this Region the Department has responsibility for administration of the fisheries resources of tidal, and in respect of salmonids, non-tidal waters. Responsibility for other fishes in non-tidal waters has been delegated by the Federal Government to the Province. The primary objective of the Department is to administer fisheries for the purpose of maximizing and sustaining benefits which may be derived from controlled utilization of this renewable resource, one exceeded only by lumbering and mining in its importance to the economy of Canada.

The average annual production of the commercial fisheries is 500 million pounds with an average annual landed value in latter years, of $50 million. The salmon fishery far transcends any other fishery in almost every direction - value, vulnerability and complexity of management. Salmon accounts for approximately 65% of the landed value of fish, halibut for 12-14%, herring for 11-13%, shellfish for 3%, groundfish and other species for 5-6%.

The Region, headed by its Director, is divided into administrative sections called branches, one of which is the Conservation and Protection Branch. This organization has responsibility for management of Pacific Coast fisheries, for the protection of fish environments to ensure continuing stability and productivity of these environments, for protection of the resource from abuses that lead to waste and for ensuring that, within the limits set by law, equality of opportunity to harvest the resource prevails.

FUNCTIONS OF THE BRANCH

To fulfil its responsibilities, the Branch staff carries out four closely inter-related basic functions:

Regulating the rate of harvest of salmon, herring and other species utilized by commercial, sport and Indian foodfish fisheries to foster the wisest use of the resource.

Protecting tidal and non-tidal fish habitats to assure the productivity of these environments.

Enforcing regulations to ensure compliance with measures applied to conserve the resource.

Carrying out public relations and community level educational programs to sell the conservation principle.

These functions may be headed and detailed in summary as follows:

Fisheries Management

- establishment of escapement goals for fish populations in order to maximize sustained yield;
- carrying out spawning ground assessments and related activities to measure escapement levels;
- evaluating spawning and related data in order to predict fish population trends and promulgate long-range regulations;
- monitoring commercial, sport and Indian foodfish fisheries in order to gather and evaluate catch and other data for the purpose of promulgating short-term regulations.

Environmental Protection

- monitoring fish habitats to discover and identify competing water use developments;
- applying or recommending controls to minimize harmful effects of this competition;
- conferring with the biological and professional engineering staff of the Region concerning problems which require their attention and advice;
- carrying out continuing monitoring surveys in order to ensure that controls are being observed and modifying or recommending modifications of controls as conditions change;
- inspecting spawning stream conditions, initiating minor stream clearance and improvement projects, recommending action for major projects and organizing and supervising projects which require contracted services.

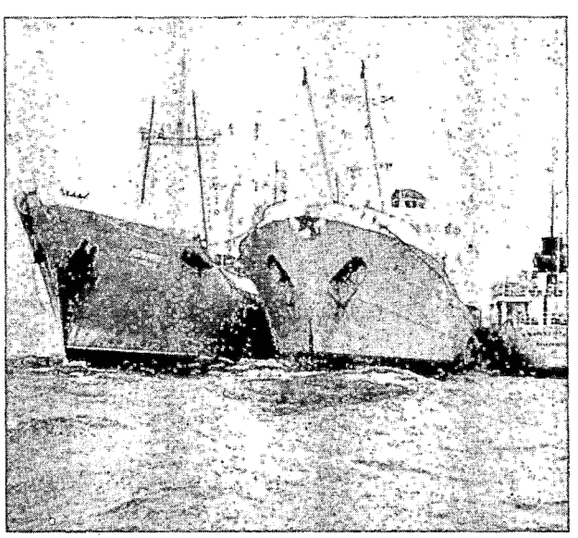
Enforcement of Acts and Regulations

- enforcement of the Fisheries Act and the British Columbia Fishery Regulations which are designed for the protection and conservation of the resource;

Logdriving by private industry in the Stellako River, a salmon spawning stream in the Prince George Sub-district.

A whale being flensed before processing at B. C. Packers Ltd., operation in Coal Harbour, Quatsino Sub-district.

Sockeye salmon spawning in Adams River, a part of the Fraser River system, in the Kamloops Sub-district.



Fishing vessels of the U.S.S.R. on the high seas off the west coast of Vancouver Island.

- enforcement of regulations promulgated by or on behalf of agencies other than the Department of Fisheries and Forestry. For example, regulations are established to protect halibut, fur seals, whales, Fraser River sockeye and pink salmon, groundfish and crustaceans. These regulations may be based upon Fisheries Research Board. scientific investigations or of agencies such as the North Pacific Halibut Fishery Commission or the International Pacific Salmon Fisheries Commission.

Public Relations

- carrying out continuing liaison with all levels and groups of resource users and those who serve them; i.e., commercial fishing industry managers, fishermen and union officials, sport fishermen and their organizations, marina and motel operators who service the sport fishery, native Indians, their councils and agents;

- liaison with field management levels of industry concerning developments and industrial operations which may impinge on the fishery resource environment; carrying out educational activities with workers and supervisory staff in order to relate their work activities and the manner in which they are performed to the success of fish propagation.

This function is of vital importance to each of the other three in that it creates the opportunity to discuss, explain and gain acceptance of necessary regulatory action and to discuss and explain habitat standards in respect of fish propagation and the impact of industrial and domestic developments on the productivity of those habitats.

In addition to these basic functions the Branch is charged with various other responsibilities; e.g., licencing of fishermen, participating in search and rescue operations, monitoring the sales slip program, carrying out special surveys for other governmental agencies, sampling shellfish for toxicity and administering the local sub-district units.

ORGANIZATION OF THE BRANCH

The Branch is organized in two basic units, the administrative section, at Regional Headquarters and the operational section, in ten field districts. The districts are divided into thirty-five field units referred to in this report as sub-districts or areas.

The Branch head has a support staff of ten at Regional Headquarters and is responsible to the Director of the Region. This Headquarters staff administers the field organization which has a complement of approximately 400 permanent and seasonal personnel. This field staff comprises three distinct divisions, viz:-

District Conservation Officers and fishery officers

Marine Service personnel

Marine Repair Station personnel

Administrative Divisions of the Region
(Conservation Districts and sub-Districts)

The Districts vary in size and complexity, according to administrative requirements, from only one sub-district, as in District 10, to six, as in District 8.

Each District is headed by a District Conservation Officer who is in a managerial capacity and is generally responsible for organizing, directing and co-ordinating the implementation of the functions of the Branch and for supervising staff and programmes of the several sub-districts under his charge. This officer reports to the head of the Branch.

District 1 - Headquartered at Kamloops, this is an interior district embracing the Fraser watershed from Boston Bar to headwaters. There are no commercial fisheries. Responsibilities of primary concern in this district are: supervision of the Indian food fishery, protection of the fresh water environment from domestic and industrial pollution and protection against harmful practices by competing water users such as farmers and miners, supervision of the sport fishery insofar as salmon are concerned, and spawning ground suveys. Of these duties, supervision of the food fishery and protection against pollution are the most complex. Sub-district offices are located at Kamloops, Lillooet, Quesnel, and Prince George.

District 2 - Headquartered at New Westminster, this is both a coastal and interior district spanning the Lower Fraser and a portion of the Gulf of Georgia and all of Howe Sound. In addition to the duties mentioned for District 1, patrol of the Fraser River commercial fishery, management of Fraser River salmon stocks after the International Pacific Salmon Commission relinquishes control annually, and the tidal sport fishery are of major concern. Sub-district offices are located at Hope, Chilliwack, Mission, Steveston, and Squamish; officers assigned to special duty, the sport fishery, the Lower Fraser sub-district and Vancouver City waterfront work out of the New Westminster office; a special duty officer is stationed at Abbotsford and works out of the Mission office under direction of the District Conservation Officer. The two special duty officers are primarily concerned with illegal fish operations.

District 3 - Headquartered at Nanaimo, this is a coastal district embracing the lower east coast of Vancouver Island, a small portion of the mainland opposite, and extending along the southern and west coast of Vancouver Island as far as Bonilla Point. The duties are generally as outlined for District 1 with the addition of management of the fisheries which is of major importance. The tidal sport fishery demands much attention, as can be deduced from the fact that over 100,000 people participate in the Gulf of Georgia sport fishery with a good portion of these people operating in Conservation District 3. Sub-district offices are maintained at Comox, Duncan, Victoria, Powell River and Pender Harbour, with the Nanaimo-Ladysmith sub-district fishery officers working out of Nanaimo.

District 4 - Headquartered at Port Alberni, this is a coastal district embracing most of the west coast of Vancouver Island. Duties are generally as outlined for District 1 plus responsibility for management of the fisheries. The salmon troll fishery dominates in this district

OFFICERS IN CHARGE OF DISTRICTS WITH SENIOR BRANCH OFFICERS AT R.H.Q.

Seated (left to right): Bern Hawley, Vic Giraud, Bill Winsby, Maury Houghton, Ron MacLeod, Harry Burrow. Standing (left to right): John Holland, Jim Connor, John Summers, Pat Harrison, Bob Mallory, Les Goodman, Joe Fielden.

District 4 - (cont'd)

with salmon net fishing (on local stocks of chum salmon) generally confined to a short period in autumn. A herring fishery occurs throughout the year but production is generally concentrated in December and January. Sub-district offices are located at Kyuquot, Tahsis and Tofino.

District 5 - Headquartered at Campbell River, this is a coastal district embracing the northeast coast of Vancouver Island, the mainland opposite, and one sub-district on the upper west coast of Vancouver Island. Duties are generally as outlined for District 1 with additional, and major, responsibility in commercial fishery management. Management of the salmon net fishery dominates all other aspects of administration. Herring, groundfish, shellfish, and whales are also fished in this district. Sub-district offices are located at Quatsino, Port Hardy and Alert Bay; the Quathiaski Sub-district officer works out of the Campbell River office.

District 6 - Headquartered at Vancouver, this is a coastal district embracing Smith Inlet, Rivers Inlet, and, for two months each year during June and July sockeye season, part of sub-district No. 11. Duties are generally as outlined for District 1 with additional and major responsibilities in management. The July gillnet fishery for sockeye salmon is the most complex management problem; minor fisheries for other species of salmon and for herring occur. A sub-district office is maintained at Dawson's Landing.

District 7 - Headquartered at Kitimat, this is a coastal district embracing the central coastal region of B.C. Duties are generally as outlined for District 1 with major fishery management responsibilities. Salmon and herring fisheries are extensive; groundfish, shellfish, halibut and other fisheries also occur. Sub-district offices are maintained at Bella Coola and Bella Bella. The Butedale Sub-district officer is headquartered at Kitimat.

District 8 - Headquartered at Prince Rupert, this is a coastal-interior district embracing three coastal Areas adjoining the Prince Rupert region plus three interior sub-districts on the Skeena River watershed. Duties are generally as in District 1 with major management responsibilities added. Salmon and herring fisheries are large; halibut, groundfish, shellfish, and other fisheries are important. Sub-district offices are maintained at Smithers and Terrace where officers for Babine Lake and the Upper Nass Areas are also headquartered; officers assigned to the Nass, Lower Skeena and Grenville - Principe work out of the Prince Rupert office.

District 9 - Headquartered at Queen Charlotte City, this is a coastal district embracing the Queen Charlotte Island. Duties are generally as in District 1 with management responsibilities added. Salmon fisheries are the most complex fisheries to manage; herring, halibut, groundfish, and shellfish are also harvested. Sub-district offices are maintained at Masset and Sandspit; the Central Queen Charlotte Islands Officer is stationed at Queen Charlotte City.

District 10 - Headquartered at Whitehorse, this is an interior district encompassing all of the Yukon Territory. In addition to the typical interior duties outlined in the description of District 1, a minor commercial freshwater fishery and an extensive sport fishery are managed. Only the one office is maintained in the district.

(See further description under District Reports)

Sub-Districts or Areas

There are, as noted, primarily thirty-five administrative field units in the Pacific Region. These units are manned by fifty-four officers, exclusive of District Conservation Officers. The sub-district Fishery Officer manages the commercial, sports and Indian food fisheries which occur in the geographical segment for which he is responsible. The officer protects the resource directly, through application of regulatory controls and the curtailment of abuses, and indirectly, through protection of the fish's environment against pollution and misuse; he administers the Department's business within his sub-district, reporting to and advising the District Conservation Officer, supervising continuing and seasonal staff, budgeting, caring for equipment, prosecuting infractions and generally fulfilling the administrator's function within the geographical bounds of his assigned sub-district.

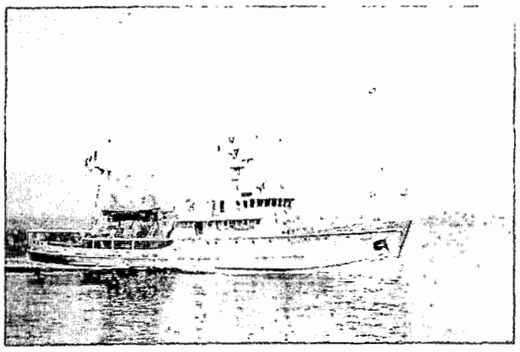
To enable him to fulfill his role, the sub-district officer utilizes money, manpower, and equipment. Money is obtained through submission of annual estimates, an annual submission to the District Conservation Officer wherein an estimate of funds required for seasonal salaries, capital expenditures, etc., is detailed. Equipment used by the field officer runs the gamut from kitchen utensils for seasonal employees to cars, vessels, and aircraft. In the coastal sub-districts, it includes 30' to 60' patrol vessels manned by 1, 2, 3, or 4 men, and the Region Headquarters vessels on assignments, seasonal charter patrol boats operated by 1 or 2 seasonal employees, both inboard and outboard speedboats operated perhaps by the officer himself or else by marine service personnel, river and lake boats designed for spawning ground survey work, rowboats and skiffs, motorcycles which may be carried on a patrol vessel and used to inspect logging operations in remote locales, cars or trucks, chartered aircraft including seaplanes and helicopters, portable rafts and canoes for drifting rivers, snowshoes and any other means that may be available. The officer may use saws, axes, sledges, power saws, and many other small tools for clearing stream obstructions, constructing and erecting boundary signs and the repair and maintenance of buildings and equipment. Prefabricated cabins are erected to house seasonal employees in remote areas where there is no other housing; the maintenance of wharves, floats, sheds, and office-residences to service and house equipment and personnel is the direct responsibility of the Fishery Officer.

The sub-district officer must not only know how to employ the resources of money, manpower and equipment, he must also be able to plan and organize for future needs as conditions change and functions expand. Estimating involves review of current establishments and programming for future needs and developments; using manpower involves not only immediate assignment and delegation of work, but also planning for changes; using equipment involves not only personal ability in the use of the equipment, but also facility in directing others in its use and in maintaining and repairing equipment as well as programming for replacement and acquisition of new equipment.

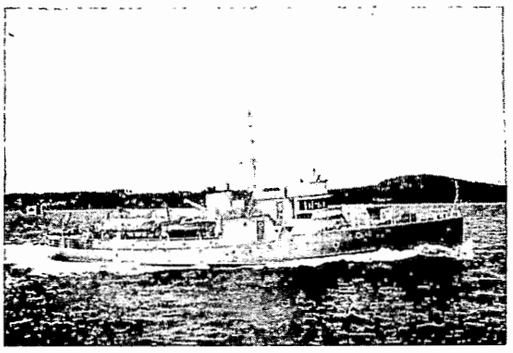
Regulatory Divisions of the Region

In addition to the division for adminstrative purposes into thirty-five field units, the Region is also divided into Regulatory and Statistical units.

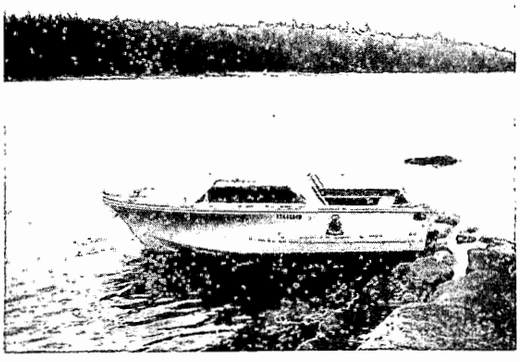
Regulatory units are defined in Schedule "A" of the British Columbia Fishery Regulations for, as Section 9 of the aforesaid regulation describes, "The Purposes of Administration". Schedule "A"



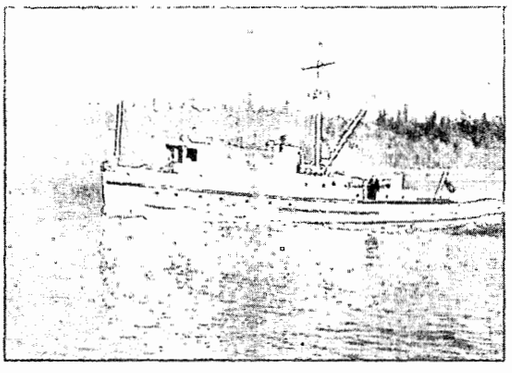
"TANU"
Flagship of the Fleet,
Class "A" Protection Vessel.



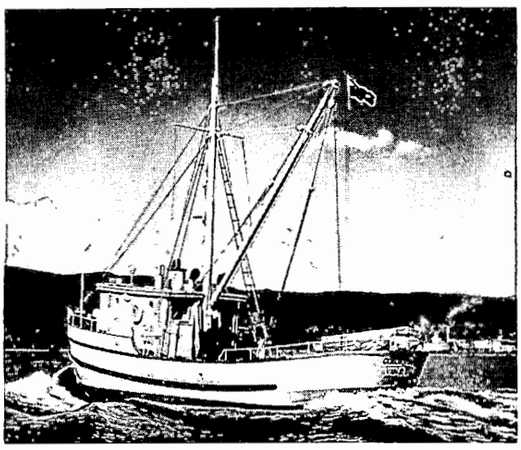
"LAURIER"
Class "A" Protection Vessel.



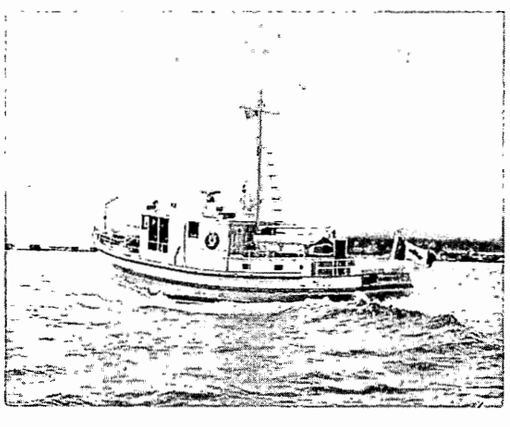
A typical patrol Speedboat.



"ATLIN POST"
Class "A" Patrol Boat.



"COMOX POST"
Class "AA" Patrol Boat.



"SURGE ROCK"
Class "B" Patrol Boat.

Regulatory Divisions of the Region (cont'd)

describes three districts: District No. 1, District No. 2, and District No. 3. Districts No. 2 and 3 are further sub-divided into "Salmon Gillnet" and "Salmon Purse Seine" Areas. Until April 1, 1965, Administrative and Regulatory units generally coincided; however, on that date the field structure of the Conservation and Protection Branch was re-organized. Until April 1, 1965, three District Supervisors headquartered at New Westminster, Prince Rupert and Nanaimo fulfilled the roles now carried out by the ten District Conservation Officers within geographical divisions that corresponded to the Districts described in Schedule "A" of the regulations. The description of Districts was not amended subsequent to the reorganization of the Branch; in other words, for legal purposes, Districts No. 1, 2, and 3 are valid entities whereas Conservation Districts No. 1 to 10, inclusive, do not exist in law. Since, in the management units, legal descriptions of salmon gillnet and salmon purse seine Areas are contained in Schedule "A" of the regulations, no problem exists in so far as management or regulation of the fisheries is concerned.

Statistical Divisions of the Region

In the management of fisheries it is necessary to regulate, in so far as possible, on the basis of local population dynamics. A local population, for this purpose, is deemed to consist of stocks which are more or less indigenous to a particular geographic segment. It is necessary that landings of fish be identified as to area of catch so that an understanding of the effects of a particular fishery on local populations can be obtained. A sales slip system for reporting all catches, or landings, has been used on the coast since 1951. The basic unit on which the sales slip system is based is the statistical Area with all catches identified as to statistical Area of production. The statistical Areas are numbered from 1 to 30 and coincide for the most part with coastal sub-districts (some of the latter contain more than one statistical area), except that seaward boundaries are extended to embrace offshore waters and one additional unit is identified - Area 30, which embraces certain offshore waters in Queen Charlotte Sound. The reason for the offshore extension of boundaries is, of course, that it is necessary that there exists some means of identifying catches of fish by trollers, trawlers, long-liners, herring seiners, crab fishermen and others to a particular sub-district for management purposes.

Although the sales slip system is administered by the Economics Branch, field officers of the Conservation and Protection Branch are responsible for maintaining close liaison with fish buyers to assure that all purchases and other required information are recorded on sales slips and that the designated copies reach the Regional Headquarters on time.

Marine Service

This service consists of 32 vessels which are classified by size and number of crew as follows:

Class "A" Protection Vessels - the three vessels in this class are larger patrol ships, manned by up to thirty men. The three vessels, "Tanu", "Laurier", and "Howay", are under direction of the Chief of the Branch who assigns them to particular areas of service and function.

Marine Service (cont'd)

When instructed to by the Branch Chief and upon assignment to a sub-district, the vessel master reports for the duration of his patrol to the local fishery officer. In general, the main functions of these vessels is to carry out off-shore and high seas patrols to protect our territorial waters from encroachment by foreign nationals and to enforce regulations prohibiting salmon net fishing in waters lying seaward of the offshore "Surf Line".

Classes "A" and "AA" Patrol Boats - manned by up to seven men, these boats are generally assigned to specific Areas and work under direction of the local fishery officer. Three of these boats, "Kitimat", "Atlin Post", and "Chilco Post" work on assignment from the Branch Chief.

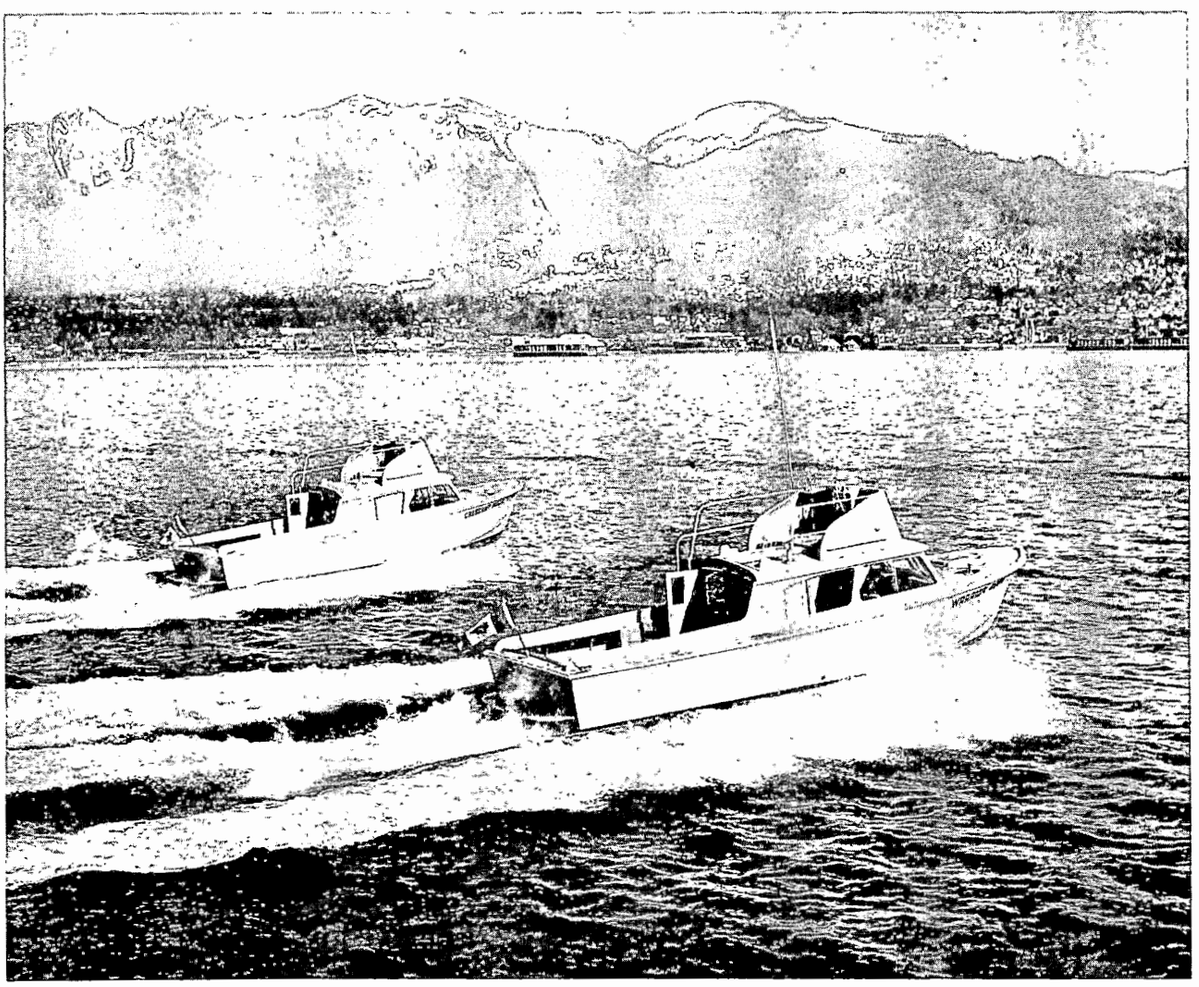
Class "B" and "BB" Patrol Boats - manned by either one, two, or three men, these boats are assigned to specific Areas and work under direction of the local fishery officer.

Most ships' masters other than Protection vessel masters, are under direction of local fishery officers. Ships and crews are in a sub-district for a purpose: to provide transportation for the fishery officer and to provide assistance to the fishery officer in such diverse activities as collecting statistics, law enforcement, stream inspection and clearance and other general duties such as painting and placing fishing boundary signs and the maintenance and upkeep of field equipment.

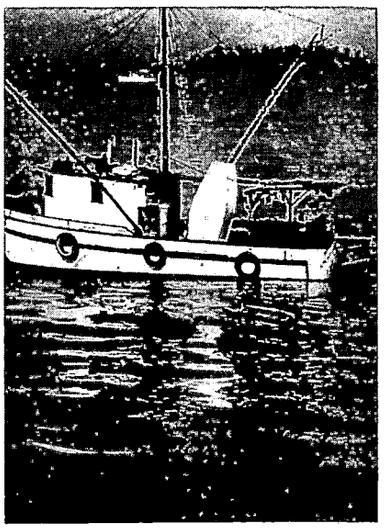
This marine patrol service is annually supplemented by the addition of charter aircraft. Two aircraft are chartered on a term basis, that is, for a fixed number of hours during each summer and autumn; these aircraft are usually six-passenger Beaver float planes, and three-passenger Cessnas, as may be required from time to time, and are well suited to the type of work for which they are engaged. In addition to patrols for protection purposes, the aircraft are used for spawning surveys in remote and otherwise inaccessible areas. From time to time during the year, District Conservation Officers may authorize charter of other aircraft for special duties - usually each district has an allotment of funds to cover such contingencies.

Marine Repair Stations

There are two stations, one in New Westminster and one in Prince Rupert, each staffed by an Engineer in charge and supporting staffs of nine and three men respectively. The stations are maintained to provide facilities necessary to service the patrol fleet and the large number of smaller units , such as speedboats. These establishments are under the direction of the Regional Marine Officer who is a member of the Branch Headquarters Staff. Under his direction also is the Assistant Marine Officer, stationed at Prince Rupert.



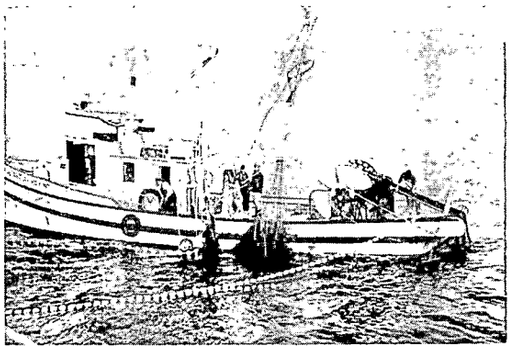
CLASS "BB" PATROL BOATS.



Salmon Troll Fishing.

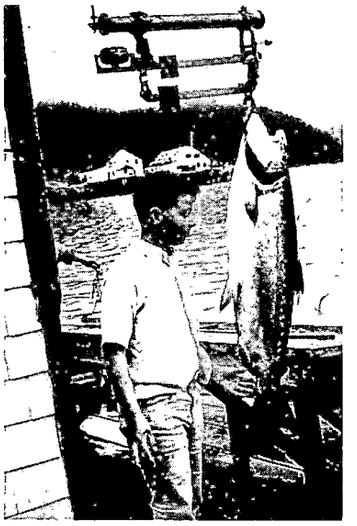
Sport Fishing for Salmon
Discovery Passage,
Quathiaski Sub-district.

Salmon Gillnet Fishing.



Salmon Purse-Seine Fishing
with a Drum Seine.

Herring Purse-Seine Fishing
with a Table Seine.



56 lb. Chinook taken by
sport fishing in Rivers Inlet.

THE FISHERIES OF 1969

The total of all fish landings in 1969 was 174.5 millions of pounds for a landed value to fishermen of $47.5 million compared with 1968 figures of 267.2 and $57.3 respectively. While the poundage showed a sharp decline as the result of the generally poor salmon catches and a practically negligible herring fishery, value held up well on account of halibut and salmon prices. One bright spot in the salmon fishery was the catch of Fraser River sockeye, 957 thousand pieces, the highest for this cycle in ten years. Chum landings were only a third of the ten-year record 1968 season but were approximately double the 1965 brood year. Most disappointing was the pink return with a total hardly more than one quarter of the strong brood year. Rivers Inlet sockeye were weak, as was expected, and landings were comparable to those of the brood years. Coho landings were down sharply with the exception of Vancouver Island where they held not far below the ten-year average. The catch of chinooks, 1.1 million pieces, exceeded the ten-year average by a small margin and was comparable to the previous three years.

The herring fishery, closed to all operations except the bait and food fisheries, returned 4.4 million pounds valued at $221,000. An intensive program was continued to increase spawning stocks and to establish guidelines essential to the management of any future major herring fishery. Halibut landings of 33.8 million pounds, the highest in six years, combined with an average price of 42.6¢ per pound returned a record $14.4 million.

Salmon sport fishermen caught 281.1 thousand pieces in 1969, a decline of some forty thousand from 1968. The effort, represented by 305,500 boat - days was 20,000 greater that last season and showed the continuing annual increase in saltwater salmon sport fishing activity. The non-tidal sport fisheries continued to attract large numbers of the public throughout British Columbia and the Yukon Territory. Participation and interest in the sport fisheries, both tidal and freshwater, is ever-increasing as access roads are developed, not only to freshwater fishing areas, but also to many points along the coast from which trailered and car-top boats can be launched for saltwater fishing. This, of course, means expanding responsibility for Branch officers, not only in collecting catch and fishing effort data, enforcing regulations and recommending management action, but also in protection of the salmon environment newly opened to the public.

Approximately the same number of salmon, 362 thousand, as in 1968 were taken by Native Indians for home consumption. By far the largest numbers were taken from the sockeye runs to the Fraser River system, and a very significant part of the Branch officers' responsibilities in the areas concerned was administration and management of this fishery.

REPORTS FROM DISTRICTS

DISTRICT 1

Fisheries

Commercial Fisheries - nil

District 1 (cont'd)

Sport Fishery (Non-tidal waters) - the Sport Fishery in this District for Coho and Chinook salmon, in most areas, remains a relatively small one. However, it has been noted during the past two seasons in the Thompson River area from Little Shuswap downstream to Lytton that a fairly extensive sport fishery for Chinook salmon, particularly "Jack" Chinook, has developed rapidly. Last season a much larger catch, of migrating Chinook salmon, than ever before was taken in the Thompson River rapids area upstream from Lytton.

The number of salmon taken was estimated to be approximately 3,200 to 3,500 Chinooks, mostly "Jack" Chinook and 250 Cohos with the bulk of the catch from the main Thompson River with the lesser numbers from the South Thompson River.

Changes in gear and techniques in the opinion of the writer develop relatively slowly in the non-tidal fishing areas in this District. The basic method is bait fishing with salmon roe and the use of large weighted spoons with some red coloration. Unorthodox lures such as "Buzz Bombs" have been observed, used in only a minor way to date.

Fishing pressures the past two seasons have increased markedly. Additional closures by Regulation for the protection of Chinook salmon from sport fishing were implemented on several additional smaller spawning streams this past year. These were Bessette Creek, Deadman Creek, Finn Creek, Lewis Creek, Salmon River and the upper Fraser River above McBride, B.C.

These closures were in addition to the closures to sport fishing on the lower and middle Shuswap Rivers from September 1st to October 31st; The Nicola River; the Raft River from August 15th to September 30th; the Stellako River system.

Indian Food Fishery

In 1969, Indian Food Fishery conducted primarily on the various stocks of Sockeye in the Fraser River saw a catch of some 101,000 pieces of salmon. This represents possibly the largest number of salmon taken in the areas of District 1 than ever before.

The Fraser River area from North Bend to Lillooet saw the largest number of participants and the greatest effort and the largest catch of all the Indian fisheries in the District. The Chilcotin areas on the other hand showed the lightest catch as well as a light and spasmodic effort due to the sub-dominant Chilcotin runs. The Native people in the Fort St. James areas experienced a much more productive year on the early and late Stuart Sockeye escapements compared to the almost negligible return in this fishery in 1968. Elsewhere in the District the Indian fishery reflected a more or less normal pattern.

There are approximately 9,000 to 9,500 Indian people residing in this District and in 1969 Free Food Permits were issued to 1,384 persons, a definite increase from the 1,132 issued in 1968, 1,115 in 1967 and 959 in 1966. These were issued, all to heads of families.

Fishery Officer attending Police Court
in connection with a violation of Fishery Regulations.

Indian Food Fishery (cont'd) District 1

The fishing week in the areas from North Bend to Lytton to Lillooet to Churn Creek in the Fraser River was changed in 1969 from Monday, Tuesday, Wednesday, and Thursday in each week to Thursday, Friday, Saturday, and Sunday in each week. This change was agreed to after requests from the Native people in this section of the Fraser River.

This fishing week of course includes the week-end and a fishing pattern change was noticed very quickly. The catch in these areas was the highest ever recorded and the effort and number of participants increased quite noticeably.

Many Indians applied for permits to fish the Fraser River from Bands in the Okanagan and Shuswap areas that had never before fished there. This was reflected in the increase of numbers of permits issued.

Again this year a special closure to the Indian Permit Fishery was implemented in the Fraser River areas as far as Prince George to assist in the protection of the depressed early Stuart Sockeye stocks. The closures were in two parts - a one day fishery on Tuesday in each week during the period July 4, 1969 to July 20, 1969 inclusive from Petch Creek to Lytton and from Lytton to Prince George on each Tuesday during the period July 13, 1969 to July 26, 1969 inclusive.

Spawning Summary

Sockeye - Sockeye escapements to the District in 1969 were considered moderately successful, generally.

The dominant run to the Stuart Lake area and for the early Fraser-Francois run - normally called the Nadina River, was tallied at 417,000 Sockeye up from the 292,000 in 1965 but still well below the 675,000 estimated in 1961.

The encouraging feature in these areas was the comeback noted in the early Stuart stocks to 125,000 Sockeye from the 23,000 in 1965. The Driftwood River at the head of Takla Lake was well seeded. The late Stuart escapements of 205,000 Sockeye showed a slight decline from that of the brood year; however, the early Nadina showed a very good increase. The number of Sockeye to the early Nadina was estimated at 36,920 up from the 15,200 in 1965. The Stellako escapement of 49,300 showed an increase from the 39,000 on the grounds in 1965.

The number of spawners in the Chilko escapement reflected its sub-dominant year; however, 75,000 seeded the grounds, up from the 50,000 in 1965. The Horsefly system supported the major Fraser River Sockeye run in 1969. A total of 310,000 were enumerated on the grounds as compared to 400,000 in 1965. Cooler water temperatures than normal, however, may present reproductive problems.

Mitchell River which drains into the head of Quesnel Lake showed 13,000 Sockeye spawners up considerably from the 3,000 in the brood year of 1965.

In the Thompson River system the early Sockeye runs to Scotch Creek with 3,400, Seymour River with 7,300 spawners and the Raft with 5,600 Sockeye, all compared closely with the brood year. The late Sockeye run to the Adams River, which on this cycle is composed mainly of

"Jacks", showed only 46,000 fish, down from the 55,000 in 1965, 58,000 in 1961 and down considerably from the 257,000 counted in 1957. Other Sockeye escapements to the late segment also showed decreases from the brood year.

The Okanagan River estimate of 2,500 Sockeye spawners was very light and compares with the lower return recorded of 2,440 in 1961. This year, the escapement is less than one half of that in the brood year and the past ten-year average of about 16,000 spawners

The total Sockeye escapement to this District in 1969 showed a fairly well balanced total of 844,000 spawners up slightly from the 775,000 estimated in 1965, and down considerably from the 1,253,000 counted in 1961 and the 1,663,000 fish in 1957.

Coho - Coho returns to this District in 1969 generally showed considerable improvement over the low brood year escapements in 1966. However, with one or two exceptions in Bessette Creek and the Salmon River the runs in 1969 were still below average.

Adams River with 800 spawners, Salmon River with 1,300 compared to 900 in 1966, and the lower and middle Shuswap Rivers with 1,400 in 1969 compared to 800 in the brood year, all showed improved returns.

In summary, the Coho escapements to the South Thompson - Shuswap in 1969 totalled an approximate 6,8000 - 7,000 spawners compared to 6,200 in 1968 and 4,200 in 1966. The North Thompson areas showed a total of 6,600 Coho compared to 5,800 in 1968 and 5,200 in the brood year of 1966. The average for the past 7 years has been 7,000 Coho in the North Thompson areas and this year is classed as light to medium. The Coho escapement in the District showed a slight improvement over the brood year and is classed as light to medium.

Pink - Pink salmon escapements to this District in 1969 were not in the same magnitude of that recorded in 1967. Early observations indicated a substantial escapement to the main Thompson River area; however, a sharp decrease from 450,000 spawners in the brood year, 1967 to 248,000 utilizing these large spawning areas was noted in 1969. Another major area in the upper Fraser Pink spawning grounds, Seton Creek, supported approximately 200,000 spawners, down slightly from the brood year estimate of 275,000 but much stronger than the 95,000 recorded in 1965 and the 121,000 in 1963. Bridge River showed 13,000 spawners in 1969, much improved over the 6,500 observed in the brood year.

Unlike 1967 and 1965, the Pink migration to destinations upstream in the Quesnel and the Adams Rivers was not in evidence in 1969. Observations carried out showed the spawnings took place in the established conventional areas of the Thompson River, from Spences Bridge to Savona, and in the Seton and Bridge River system near Lillooet, B.C.

Chinook - Chinook salmon escapements in the District for 1969 were classed as light to medium and showed strength in many areas above that of the brood year.

In the upper Fraser areas the escapements were estimated as generally light to the upper Nechako, Stellako, Stuart, McGregor and Willow Rivers with medium supplies to the Salmon, Torphy and Slim Rivers and all compared generally to the brood year.

Spawning Summary (cont'd) District 1

The Chilko River showed a healthy escapement of Chinooks, estimated at 7,000, similar to 1964 but up strongly from the 2 to 5,000 noted in 1965. The 1969 peak of spawning was reached on September 16th with a good spawning success. Near Tete Jaune, B.C., in the main stem Fraser spawning grounds, the number of 1,100 to 1,500 compared with 1964 and was up from the 500 Chinook spawners observed in 1965. Peak of spawning was a week earlier on August 25th. Spawning peaks for Chinooks were generally a week to ten days earlier throughout the District.

Other smaller spawning escapements in the Cariboo sub-district showed modest increases over the brood year.

Further south in the Thompson drainage, Chinook escapements were estimated in medium numbers in the Lower Shuswap, South Thompson and Adams Rivers. The Adams and South Thompson Rivers showed the heaviest Chinook escapements the writer has witnessed in 6 years and are up considerably from that in the brood year. Other escapements compared favourably or were slightly improved over the brood year estimate. The "Jack" Chinook escapements, while not in the same percentages as in 1968, again showed in substantial numbers.

Water Conditions and Water Levels - the break up in 1969 after one of the most severe winters on record, 1968-69, progressed slowly, but moderately, with not too much noticeable disruption to areas of salmon habitat.

The run-off was relatively steady and light and provided several peaks and favourable conditions for salmon migrations, particularly the early Sockeye and Chinook. Some exceptionally early arrivals to the early Stuart Sockeye spawning grounds were noted in 1969.

The summer was cool with more or less normal rainfalls. The feature during the summer and into early fall was the below normal cool water temperatures that awaited the Sockeye on the spawning grounds. Coho rearing was very favourable during the summer in the Thompson River drainage.

During the fall, more rain than normal fell and provided good fall water levels particularly for Coho and fall Chinooks.

The past winter was relatively mild and "open", with a much below average snow pack which, to the end of February this year, was approximately less than half of normal throughout the Fraser River drainage.

Environment, Multiple Water Use

Pollutions - this subject is rapidly comprising the most complex and time consuming area of work for the officers in this District.

Public awareness this past two years, in the opinion of the writer, has changed markedly. The number of incidents of potential pollution and pollutions reported by general public has more than doubled this past year, with a result that patrols and investigations of pollutions and effluent disposal systems in the large areas of salmon habitat in this District result in one of the major duties of the officers.

For documentation, some of the major industrial operations on or adjacent to spawning, rearing, and migration areas on the many hundreds of miles of salmon habitat in this District are as follows:

16 sawmills on the Thompson River drainage alone, and 32 in the District;

4 large pulp mills, 2 oil refineries, 1 brewery;

2 chemical plants.

Recently, documentation of mines in this District was completed by the field officers, revealing 52 mines of varying description and modes of operation. Many of these have to be checked on a regular basis with close liaison to the technical staff at the Regional Office.

Large population areas encompassed in three cities, seven towns, numerous villages, and unincorporated communities discharge effluent directly and indirectly into the Fraser River drainage. These all require a great deal of involvement by the officers.

The use of insecticides and pesticides in mosquito control, grasshopper control, and the many forms of industrial and agricultural sprays for the control of weeds, pests etc. also required close liaison and surveillance by the local field officers. On a good many of these spraying operations, the standards and tolerances were set by technical personnel at the Regional Office; however, it remained for the local officer to maintain proper control to safeguard the salmon resource.

Train wrecks this past year also required the immediate service of the field staff to prevent, where possible, indiscriminate dumping of potential harmful material from the right-of-ways.

Referral of many varied pollution matters to the technical staff at the Regional Office, was more or less commonplace for the officers in this District. In the opinion of the writer, the field staff perform the most important role by far of any agency in the prevention and control of the growing pollution threat to the salmon resource. Contacts made by the field officers with persons and firms to assist in the prevention of pollution were too numerous to document, but as previously stated, occupy a very sizeable portion of the working hours of the officers in this District.

Industrial Development - some of the major existing developments in the area were outlined briefly under the previous heading of pollution; however, a few of the new industrial developments anticipated would be as follows:

The new pulp mill at Quesnel to operate in 1972; enlargement of Weldwood plywood plant in Quesnel; new $12 million sawmill complex at Fort St. James; tripling the production of the Kamloops pulp mill; continuous C.P. Railway and C.N. Railway work on their road bed, bridges, and new sidings for expected heavy increase in traffic with coal movement to Roberts Bank; clearing of P.G.E. Railway right-of-way completed to Takla Lake; completion of $13 million cement plant on the

South Thompson River; extensive highway and bridge construction on Highway #16 east of Prince George and Highway #5 north of Kamloops; possible location of new pulp mills near Fraser Lake and on Shuswap drainage; completion of diatomacious earth processing plant near Quesnel.

Other major developments are related to the rapidly increasing urban and municipal developments, particularly in the cities of Prince George and Kamloops, which in a good many instances border areas of salmon habitat. These projects usually follow industrial expansion and bring many additional problems that can and do affect salmon environment.

Agricultural development and expansion is also increasing steadily. In the Thompson Valley from Chase to Lytton, the Nicola and Deadman Creek drainages, Salmon River and Bessette Creek areas, and to a degree in the Chilcotin, there has been a remarkable increase in land clearing due to the increased need of alfalfa for cattle production. The bench lands and grass lands are being rapidly transformed into cultivated land, all of which to a degree is changing the salmon environment.

Obstructions and River Diversions - stream clearance work in this District is a more or less continuing programme carried out for the most part under supervision of the field officer. However, this past year a stream clearance technician operated in this District and organized stream clearance programmes in the Stuart, Trembleur, Takla drainage, in Swift Creek, and in the upper Fraser area and some North Thompson and Nicola River areas. All these projects were carried out with close liaison with the local officers.

Beaver activity, the cause of a good many of the more serious type of obstructions, remained more or less constant last year. Close contact was maintained with Provincial Wildlife Branch Regional Offices in Prince George, Kamloops, and Penticton, but the more effective method of communication was maintained with the local Conservation Officers in the field. A good deal of assistance was received on the beaver problem from this agency and it is to be maintained and developed this coming year.

Incidents of river diversions also increased again because of the development in the Interior of the Province. Trans Mountain Oil Pipeline and West Coast Transmission Gas Pipe Line together with the construction of the Northern Provincial Gas Pipe Line all requested assistance from this office because of several instances of repair work and remedial work on their salmon stream crossings.

Many instances of stream improvement work were attended to by field officers in areas of salmon habitat. These involved many instances of water diversion projects for agricultural irrigation and protection of land and dwellings from run-off water levels.

Gravel Removal - incidents of large gravel removal operations were not too prevalent in this District in 1969, and excellent co-operation was again received from local Provincial Land Branch personnel, particularly on referral to this office on special land use permits.

Gravel Removal (cont'd) District 1

The major problems in this field were the numerous small indiscriminate acts of gravel removal and the movement of gravel by persons wishing to protect their property by dyking; other incidents that required considerable attention were the seemingly annual maintenance work of water diversion intakes in many industrial and agricultural projects.

Gravel Removal Orders were recommended this past year for several rivers in this District because of anticipated future demands that will be placed on them.

The above-mentioned rivers are the Quesnel River from the Fraser River to Quesnel Forks; the Nicola and Coldwater Rivers because of the heavy agricultural demand for irrigation; Portage Creek between Anderson and Seton Lakes, the South Thompson River because of rapidly increasing industrial and population expansion, and Bessette Creek because of its close proximity to industrial and agricultural interests.

Logging Operations - the forest industry is by far the most important and largest industry in the District and is now more or less directly related to the pulp industry which controls a good part of the forested lands in the interior of British Columbia.

New developments in this industry would be the steady acquisition of established lumbering concerns, many of whom have large quotas, by the large pulp producing companies in Prince George, Quesnel, and Kamloops.

Log drives are comparable roughly to that conducted in 1968. The major operation was that on the Quesnel River and Cariboo River where 256,000 logs or 4.6 m.c.f. were watered between May 23rd and the first week of July. This is an increase of .6 m.c.f. over 1968. The Fraser River operation by Weldwood of Canada showed 3.2 m.c.f. of log driving from Woodpecker to Quesnel; this also showed an increase of .6 m.c.f. over last year.

A small clean up drive took place in the lower Shuswap River in 1969 where ½ million feet were watered for delivery to Armstrong Sawmills at Enderby.

The few remaining logs in the South Thompson River were towed in a boom to Kamloops and it is believed that this will be the last movement of logs on this valuable spawning river.

A log drive, under permit, of some 7 million board feet was conducted last year on the Tachie River by Takla Logging Ltd. All logs floated well in the upper portion of the river but there were problems later due to the lower than normal water levels; the second drive was cancelled.

Other drives in this District took place on the main Fraser River from points above Prince George to Skelley Sawmills and to Upper Fraser Sawmills, and from a site near the Sheep Creek Bridge outside of Williams Lake, downriver to Hunter Creek below Hope, B.C.

There were also log movements by towing on several large lakes in 1969. On Stuart Lake, some 30 million board feet were floated to Fort St. James and on Francois Lake, some 2½ million board feet were towed down the lake to be lifted out and trucked to Fraser Lake Sawmills. Smaller log towing operations were observed on Shuswap Lake and Adams Lake on the Thompson drainage.

Logging Operations (cont'd) District 1

Logging operations throughout the District again showed strong increases in 1969. Areas of logging on or adjacent to salmon spawning streams were conducted on Stuart Lake, Tachie River, Trembleur Lake, Francois Lake, Nadina Lake, Nechako River, Stuart River, McGregor River, Torphy River, Willow River, and the Bowron River.

Logging activity also intensified on the Quesnel and Cariboo Rivers and the upper Horsefly River system. Lesser amounts were noted on the Chilcotin drainage.

The Thompson River system also showed increased logging activities on the North Thompson areas of Lion Creek, McTaggart Creek, Clearwater River, and the Barriere River. In the South Thompson system, increased activity was noted in the upper Adam River, Adam Lake, Seymour River, and Shuswap Lake, Mable Lake and Wap Creek, Momich River and Cayenne Creek, and new logging activities commenced in the upper drainage areas of the lower and middle Shuswap River and the Eagle River.

Water Licence Applications - there were 329 applications for water licences processed in the District during 1969 and of these, there were 88 recommended for screening to protect the salmon habitat. This number is down slightly from that recorded in 1968. An increased effort was made last year, particularly in the Kamloops sub-District, to catalogue all water diversions into the Water Diversion Index. Inspector D.D. Aurel has worked more or less full time on this programme. He has inspected slightly over 200 diversions of which 93 were found to be satisfactory, 47 faulty, and the remainder were not installed. Inspections at present are being made on 1963 and 1966 applications.

Placer Mining Applications - the number of placer mining applications processed through this office and sub-District office in 1969 totalled 67. The locations were checked wherever possible; however, in a great many cases the applicants could not be contacted as very few resided in the local area. Again it was found that the majority of applications were speculative, where, for example, in the Lillooet sub-District, out of the 23 applications processed in 1969, only 2 were found to be operating.

In eight instances it was recommended for protection of the salmon resource, and upheld in six, that no placer mining licence be issued.

The checking of existing operations, particularly in the Quesnel River system and areas adjacent to Lillooet, continued for the prevention of possible pollution effects, also formed part of the local officer's routine duties.

Enforcement

The practice of dip-netting by non-Indian persons fishing along the Sockeye migration routes of the Fraser River was again encountered this past year. Ten persons were apprehended committing this illegal activity, with six charged with illegal possession, three with operating a dip net, and one with obstructing a Fishery Officer.

Six persons were charged with illegal possession in areas where salmon selling was conducted. Two vehicles and a number of Sockeye salmon used in connection with these violations were forfeited to the Crown.

Enforcement (cont'd) District 1

There were no prosecutions in the Sport Fishery in this District in 1969; however, the number of warnings issued increased considerably in this fishery due to the number of additional closures in many rivers and streams for the protection of Chinook salmon.

Expanded patrols and some movement of personnel was arranged on the spawning grounds during the spawning periods to keep down, as much as possible, the incidence of molesting.

Continued patrols, as previously stated, were also conducted on the many areas of Chinook and Coho sport fishing. An increased programme of informing the sport fishing public of the many new closed areas for salmon angling was also attempted this past year.

Concentrations of extra personnel were also implemented last year on matters dealing with pollution from logging operations and from sawmills situated particularly on the Thompson drainage. The 16 mills in this area on or adjacent to salmon spawning streams were visited, some on several occasions; in six cases, registered letters were sent, warning operators and pointing out Section 33 of the Fisheries Act.

Predators

Predation by bears in this District is generally minimal. Concentrations are found on several spawning grounds but at present are not considered a conservation factor. Largest concentrations of grizzly are found on the upper Bowron River areas, with lesser numbers on the Torphy and McGregor Rivers. Black bears are occasionally observed on many streams but only in light numbers.

Mergansers and other diving ducks are found on most of the spawning rivers and are most noticeable during the fry emergence in the spring. Their numbers, however, have never been seriously considered as a threat to the salmon resource.

Administration

The Williams Lake Fishery Officer position was transferred to Kamloops where it was placed under the direction of the District Officer. Inspector D.D. Aurel took on this position in late June, 1969 and since that time is performing duties in the District and is responsible to the District Officer. He is a Saskatoon Institute of Technology graduate and is a welcome addition to the District field staff. At present, he is performing specialized duties in the Kamloops sub-District.

The last half of 1969 saw the commencement of duties by Fishery Officers performed under the guideline of a contract under the General Technical Group and the increase in salaries and other concessions gained in the agreement is commendable.

It is anticipated that the new improved pay scale for Patrolmen will attract a wider range of suitable applicants.

Information, Educational and Other Programmes

(a) Public relations are probably one of the most important functions of the field officers in this District where a large percentage of the general public are unaware of the Department's areas of responsibility in conserving and managing the salmon resource.

Information, Educational and Other Programmes (cont'd) District 1

Field officers and this office, in a broad sense, are involved in public relations each day they are on duty and in contact with the many levels of Government, Industry, and the public.

Last year, in excess of 1,200 school children viewed departmental films in their class rooms, mostly with local Fishery Officers in attendance.

Frequent meetings also were attended with the many other allied users of the water resource in this District, i.e., the forest industry, mining and agricultural interests and heavy construction groups.

Many meetings were attended by all local officers from formal Tribal Council affairs to meetings on Reserves with the many Indian groups on matters dealing particularly with closures to food fishing and regulations. The need for conservation and proper management of the fishery resource was stressed.

All officers attended many local Fish and Game Branch meetings in their communities where most are members. In these groups, contact was maintained with Sport fishermen representatives, particularly in areas where closures to angling have been implemented for the protection of the spawning stocks of Chinook salmon.

The writer attended 5 meetings last fall and winter to explain the Department's views on Chinook and Coho salmon conservation on the spawning grounds.

(b) Assistance by the field officers in this District to other branches of the Department was offered in many instances, particularly to the Resource Development Branch and again from this office on an almost daily basis. Other Branches to which frequent assistance was rendered were the Consumer Branch, Emergency Planning Officer, Information Branch, Administration Branch, Economics Branch, Financial Advisor, and senior staff members. Assistance was also rendered to the Fisheries Research Board during field trips.

(c) The field officers are in contact frequently, and this office daily, with the many Provincial Government Departments in the major centres of the District. B.C. Forest Service, Dept. of Lands and Forests, Water Rights Branch, Department of Highways, Fish and Wildlife Branch are those most often contacted. These contacts are established and maintained because of the absolute necessity of keeping these Provincial Departments informed on the day to day responsibilities of the Department of Fisheries in environmental protection of the widespread areas of salmon habitat in the District.

All levels of Municipal Government in Cities, Towns, Villages, and Districts were at one time visited, many on several occasions, throughout the year, on matters pertaining mostly to pollution and stream improvement works.

An almost continuous liaison was maintained with the many R.C.M. Police Detachments throughout this District to keep them abreast of our activities and regulations and to request assistance in enforcement and prosecution matters.

Close contact also was maintained with the many Indian Affairs agencies situated throughout the District.

A close relationship and liaison was once more proferred representatives of the International Pacific Salmon Fisheries Commission and the writer is grateful for the assistance and spirit of co-operation received by officers in this District from this allied group.

DISTRICT 2

Fisheries

Commercial Fisheries

(a) Salmon - in 1969, 1,411,400 salmon were caught by gillnets in this District during the period from March 17th to November 26th. This is compared to 1,223,500 salmon in 1968 and a ten-year average of 1,157,500 pieces. The value of the salmon catch amounted to $3,207,000 as compared to $2,966,000 in 1968 and to a ten-year average of nearly $2,500,000.

The highest Sockeye catch (986,000) in ten years, worth $2,117,000 was the bright spot in 1969 for Fraser River fishermen. During the last week of July, 1,062 gillnetters in 68 hours caught themselves 570,000 Sockeye. The 1969 Fraser River Pink salmon run failed to show in numbers and just over a quarter of a million were caught in District 2.

The catch of Chum salmon was somewhat less than half the previous years catch but was considerably better than the brood years of 1965 and 1966. Because of a very poor salmon year coastwise, the Department allowed extra fishing time on Chums in Johnstone Strait. This made less fish available to the Fraser River gillnetters for their two two-day openings in November.

The pattern of salmon gillnetting in the Fraser River and off the mouth, followed the pattern of recent years, the greatest effort and resulting catch occurring during the first twenty hours. The next twenty hours would see the main effort concentrating in the area near and off the rivermouth.

The 1968 closure of Howe Sound to all commercial fishing remained in effect throughout 1969. The area was closed to meet the growing recreational needs of Lower Mainland sport fishermen.

In 1969, gillnetting was permitted on 54 days outside the Fraser River and on 74 days inside the river as compared to 78 outside and 82 inside days in 1968. The 24 days drop in outside fishing occurred in the latter half of April and the first part of May and in September, October and November. In 1968, 4 days a week Chinook fishing was permitted on the outside; in 1969, this was reduced to 2 days a week. The reduction in fishing time was necessitated because of the light Chinook return to the Fraser River during the early part of 1969. Only two days of gillnetting were permitted to fishermen after September 12, 1969, compared with 13 days in 1968.

Commercial Fisheries (cont'd) District 2

Gillnetting commenced at 8:00 a.m. March 17th in the Fraser River with 103 boats taking a catch of 186 Chinooks during a two day fishing week, compared to a 1968 fleet of 143 boats taking 200 odd Chinooks for the same opening week.

The fleet size increased week by week until it was 215 boats by mid-April, the opening date of fishing outside the Fraser River. Chinook catches continued to be slow and with the exception of the 32 hour fishery outside on opening date, the fishery was restricted inside and outside to two days per week until June 25th.

At the end of June when the International Pacific Salmon Fisheries Commission took over, the gillnet fleet numbered 559 boats, up from 1968 when 456 boats fished, and averaged 9 Chinooks each week.

Two large mesh openings on July 2 and July 9 permitted 413 boats to take 2,207 Chinooks on the first and 390 boats to take 2,353 Chinooks during the latter opening. The large mesh opening protected the early Sockeye stocks to the Stewart Lake system.

Sockeye fishing started slowly and built to a peak during the week ending August 2nd, when 1,062 boats in a 68 hour fishing period, caught 570,000 Sockeye. This was one week earlier than the 1968 peak, which produced 300,000 Sockeye for the same number of boats in a 48 hour period.

After the main Sockeye run had passed, fishing times were reduced to 38 hours - 24 hours, and then 12 hours per week to the end of August. The fleet reduced itself in size to about 800 boats during the same time.

The Commission relinquished control at midnight, Saturday, October 11th, 1969. The District was then closed until November 10th to permit a good escapement of early and middle Chum stocks of the Fraser River and its tributaries.

A limited exploitation of Chum salmon was permitted during a 48 hour fishery commencing November 10th, when 682 boats caught 26,135 Chum salmon and a 48 hour fishery inside the Blue Line, commencing on November 24th added another 29,853 Chum for 691 boats participating. By comparison the two day mid-November opening in 1968 produced 72,500 Chums for 843 boats and the second weeks fishery reaped another 61,000 Chum for 700 boats.

In addition to the gillnet fishery a small number of trollers took 1,304 Chinook and 141 Coho during the year. The catch was mostly taken in late April and early May off the mouth of the Fraser River.

(b) Herring - in this District, there is no commercial herring fishery for reduction; this is prohibited by the British Columbia Fishery Regulations. The figures (see Table 2) represent mainly food fishing operations. There are numerous bait operations, including a few herring ponds operated by Marinas. The latter continues to develop and it is expected to see larger increases in the use of fresh herring as sport fish bait. Many sport fishermen prepare their own bait and their catch is not recorded in the Annual Catch Statistics.

(c) Halibut, Groundfish, Shellfish - as will be seen from the table, no halibut and only a small amount of groundfish is caught in the District. The catch is mainly taken off the mouth of the Fraser River by trawl.

Shellfish landings in Areas 28, 29 A & B, 29 C & E were valued at $246,000 to the fishermen, up from last years income of $185,000.

Sport Fishery — District 2

The sport fishing season in 1969 must be considered poor in the Lower Mainland - Vancouver - Howe Sound area. A catch of 21,000 salmon compares to 38,000 in 1968, 24,000 in 1967, and 38,000 in 1966.

The effort was up considerably to an estimated 62,500 boat days, the highest in 4 years, with an average of 0.3 salmon per boat. This compared to 60,400 boat days averaging 0.6 salmon in 1968, 51,000 boat days averaging 0.47 salmon in 1967 and 61,000 boat days averaging 0.6 salmon in 1966.

The winter Chinook fishery in Horseshoe Bay - English Bay and Ambleside was generally good during the January to March period; however, severe winter conditions in early 1969 hampered the sport fishing effort. Catches landed consisted of Chinook with very few blueback, totalling some 2,400 salmon, weighing from 2 to 43 pounds. Average weight for the Chinooks was slightly above 8 pounds.

White Chinooks returning to the Squamish system appeared in early July; however, the run was light. Record fish reported was a 44 pounder caught off Britannia. Mature Chinook catches, as well as grilse, remained in short supply throughout areas of District 2 until November when some good catches were recorded at Horseshoe Bay and Gibsons of winter Chinooks. Fair fishing in the Ambleside - Pt. Atkinson - Bell Buoy commenced also in early November for Chinooks to 8 lbs. Limits were taken in December at Horseshoe Bay - Bell Buoy and North Arm Jetty.

Bluebacks appeared in the sport fishery in February and catches were light and as the season progressed little improvement was noted in Coho catches. Sport catch of Coho is down about 5,000 pieces from the 1968 season. Average weight for Coho was 5 lbs. Grilse became more abundant in the southern section of the gulf area during June and July and Coho made up 75% of the grilse population with the remainder being Chinooks.

The Pink salmon run expected in Howe Sound failed to materialize and only small numbers were taken in the sport fishery. The same applied to the run to the Indian River at the head of Indian Arm. Sportfish boundary was moved to the mouth of the Indian River during the peak of the run.

Chum salmon catches taken by the sport fishery remain very light and only a few were taken in the Lower Howe Sound and the Sandhead area.

The Bar Fishery on the Fraser River declined in effort and catch, as the following table indicates:

1969 - 19,600	fishermen	- 3,100	salmon all species
1968 - 26,600	"	- 7,500	" "
1967 - 16,000	"	- 6,250	" "
1966 - 25,700	"	- 11,500	" "
1965 - 39,355	"	- 16,150	" "

The Matsqui Bar, a very popular fishing bar south of Mission Bridge is out of use due to bridge construction of the new Mission Bridge.

Indian Food Fishery

Over 120,000 salmon and steelhead were taken in the Indian fishery in Conservation District 2 in 1969. This compares with 103,000 in 1968, 96,000 in 1967, and 145,000 in 1966.

Indian Food Fishery (cont'd) District 2

Most of the Indian fishery in District 2 takes place in the Fraser River between the Mission Bridge and Boston Bar in the Fraser Canyon. Of the 360 permits issued in 1969, 168 were issued in the Chilliwack sub-district, 128 at Mission, 27 at New Westminster, 1 at Steveston, and 36 at Squamish. As usual, upwards of 1,000 Indian fishermen actively fished the permits, as some are utilized on a "family" basis. Only 1 permit was issued for salt water use.

Almost all permit holders use setnets to take their fish, i.e., a length of salmon gillnet set or anchored in the river with one end usually attached to shore. Maximum length of net permitted is 60 feet.

A few free-floating lengths of gillnet are used, and on occasion a very limited number of dipnets, gaffs and spears.

Spawning Summary

Sockeye - overall escapement of 170,853 is considered good. Compares favourably to 68,267 in 1965, 125,332 in 1961, and 84,553 in 1957.

The escapement to the artificial spawning channel at Weaver Creek was some 17,000 Sockeye, also another 40,000 spawned in the creek proper, a resounding success. It is estimated that another 100,000 were taken by the fishing industry in the Straits of Juan de Fuca, Gulf of Georgia, and the Fraser River.

Coho - the overall escapement of 45,400 to this District is considered light and less than 1966 brood year stocks.

Pink - the total escapement of Pinks in 1969 was 1,068,500 as compared to 1,141,165 in 1967, and 831,856 in 1965 when early Pink run escapement was considered far below a satisfactory level.

In 1969 the Pink escapement to the Chilliwack - Vedder River system was considerably less than half the 1967 escapement, though the water levels during the escapement period were near ideal.

Chinooks (Springs)- the overall escapement of Spring salmon to this District of approximately 34,300 fish has to be considered light and a decline from the brood year. The escapement of 7,500 white Springs to the Harrison River was considered light and was similar to the brood year.

The extra month and a half winter closure (February 1st to March 15th) in effect for the last 5 years coupled with the two day extension of weekly closed time during the spring has assisted the Upper Fraser River Chinook escapement, possibly more than the Lower Fraser.

Chum - the escapement to the Fraser River and its tributaries is estimated at some 390,000 as compared to 822,000 in 1968 and to some 185,000 in the brood year 1965 and some 430,000 in the brood year 1966. The escapement to the main stem was estimated to around 85,000 as compared to 150,000 in 1968, 54,400 in 1965 and to 69,500 in 1966.

The Harrison system which includes the Chehalis and its tributaries and sloughs had an escapement of 145,000, Squawkum 12,000, and Weaver Creek including the artificial spawning channel 10,500, while the Stave River is credited with 75,000. The Vedder River is credited with 52,000 as compared to 168,000 in 1968.

Spawning Summary (cont'd) District 2

The Squamish River system, the small Howe Sound streams and the Indian River received Chum escapements which were more than double the brood year and could be classed not less than satisfactory.

Weather Conditions and Water Levels - District 2 has many different geographical areas and it is consequently difficult to give a report covering weather conditions in the whole district. Temperatures may vary as much as 30 to 40 degrees from one end of the District to the other end and as to variance in precipitation, it is considerable. However, one outstanding feature of the weather in 1969 was the exceedingly cold weather in the January and February period, a low of 22 degrees.

Total precipitation for the period March 1, 1969 to February 28, 1970 was 37 inches.

The exceedingly low temperatures in January and February, 1969, with the ice covering on the Fraser River to mid-February, were responsible for the slow rise in water levels on the Fraser River commencing in the middle of April with the annual run-off to peak in June. Warm weather during July and August was the cause of slightly below normal water levels, cooler weather in September brought normal levels with only seasonal variations to the end of the year.

Fry Salvage - the spring run-off being gradual and the water levels being generally normal, fry salvage operations were at a minimum with a small amount being done in the Mission sub-district at Inches Creek and on the Chehalis flats.

Herring - in 1969 immature herring were discovered in the Gulf areas in June and July, their spawning had been discovered earlier in the year in U.S. waters. Research Board personnel, on May 17th, discovered 3.2 miles of medium intensity herring spawn in Birch Bay and on May 22nd, 0.9 miles of medium spawn in Hale.

Environment, Multiple Water Use

Pollution - the major sources of water pollution of vital concern to the fisheries, are municipal, manufacturing, swimming, steam electric power cooling and agricultural, all to be found in this District. Municipal sewage includes those wastes from domestic and other sources discharged through municipal sewer systems. Industrial wastes vary in character and often contain oxygen-consuming ingredients as well as many industrial chemicals. The steel industry produces discharges of organic and mineral pollutants. There were more than 280 primary metal and metal fabricating industries, such as steel mills, iron foundries, and tool manufacturers in this District at last count. Chemical industry (93 in this area) wastes include acids, alkalis and toxic materials. Large amounts of sulphur solution and sulphite liquor can be discharged by the pulp and paper industry. (35 locally) The petroleum industry (there are 3 refineries on Burrard Inlet) produces organic and mineral pollutants, such as phenols, oils and hydrocarbons, as well as other wastes. Poisonous cyanides, chromium, suspended solids and oil are among the wastes from the automobile industry.

Officers clearing an obstruction to migrating salmon in a spawning stream.

Environment, Multiple Water Use (cont'd) District 2

Industrial Developments - naturally in an area where more than one million people live and work, there is considerable development, be it residential, commercial, industrial, institutional, recreational or agricultural. All such development has a direct or indirect effect upon the fisheries of the region.

In 1969 on the lower Fraser River, 2 steel companies, Horton Steel and Pacific Continuous Steel, acquired land on Tilbury Island in the Delta Municipality and commenced plant development. On the same island the British Columbia Hydro and Power Authority acquired land and commenced construction of a plant to liquify and store natural gas. The new plant will allow Hydro to take gas from the Westcoast Transmission pipeline during the eight to ten warmest months of the year and store it for release during the cold weather months when the demand by customers is greatest. Some 625 million cubic feet will be stored at -260°F.

Titan Steel, located on 25 acres behind Fraser-Surrey Docks in Surrey Municipality installed another $1,000,000. of equipment in its wire mill. The Fraser-Surrey Docks, now 150 acres in size, saw in late 1969, work commence on the site of Johnstone Terminals loading facilities for shipment to Japan of wood chips for manufacture of pulp and paper.

Obstructions and River Diversions - the following is a resume of stream clearance and improvement work carried out in sub-districts in which this type of work is necessary.

Chilliwack Sub-District - beaver dams had to be removed in the following creeks to permit salmon to migrate: Ryder, Lorenzetti, Street, Sucker, and some of the back channels of the Vedder River. This work was performed by field staff. A farmer at Lorenzetti Creek assisted the Department at no cost by using his own time and equipment to remove a beaver dam every two weeks for a two month period. Samdbags had to be used in a number of places where culverts prevented easy access to the upstream portions of small creeks for migrating Coho.

Mission Sub-District - beavers appear on the increase. The removal of beaver dams from time to time seems to be necessary to permit the passage of fish, but these dams are almost immediately rebuilt and silting of the spawning ground and isolation of fry result. From the following streams beaver dams had to be removed: Bell's, Chehalis River Sloughs, Maria Slough, Nicomen Slough, Hick's Creek. In addition, debris had to be cleared from Bouchier and Silverdale Creeks.

Lower Fraser Sub-District - with the mild open winter of 1969, conditions were ideal for the movement of beaver. A large increase was noted in the size of the beaver population on the Campbell, Coquitlam, Silver-Widgeon and in the tributaries of the Upper Pitt River. A trapping programme was organized by the co-operation of the Fish and Wildlife Branch to reduce populations. Dams on the Silver-Widgeon and Upper Pitt River tributaries are to be removed prior to the 1970 salmon migration to enable migrants to pass through to the present non-usable spawning areas.

Obstructions and River Diversions (cont'd) District 2

Squamish Sub-District - beaver were present in the upper reaches of Gates Creek, and Mr. E. Ward complained late in December that they were blocking the creek. Mr. J. Decker, trapper, was notified, and he promised to trap them at the appropriate time.

B.C. Hydro cleared right-of-way for new transmission line following the Birkenhead, Poole, and Gates. Contractors were responsible and were clearing debris from these creeks until late winter, and will be resuming early in 1970.

Weldwood of Canada Ltd. logged the Ashlu flats, and in so doing, removed some of the accumulation of logs piled up by river action over the years.

Further work is required at the top end of Judd's Slough to ensure a flow of water in 1970. In September 1969, R. D. Branch cleaned the culvert and excavated the slough at the top end approximately 1 foot deeper for 200 yards downstream at a cost of $252.00 and again between November 28 - 30, $3,208.00 was spent on a wingdam, rip-rap, and gravel on the access road.

Vancouver Sub-District - although not an obstruction, construction work on hydro electric towers, close to the Indian River was watched carefully during the year, to ensure that river crossings were kept to a minimum, and that no damage occurred to spawning areas of the stream.

Gravel Removal

Chilliwack Sub-District - in a number of locations, large quantities of gravel are removed during low water periods from bars in the Fraser River. Some of these gravels are stockpiled for use during the high water periods. During August a private firm was given permission by Regional Headquarters to remove gravel from the Vedder River. The Municipality of Chilliwack did again, as in past years, clear out the shale traps at Elk and Dumville Creeks. In addition, the ditch from the shale trap on Elk Creek to Highway 401 was cleaned.

Mission Sub-District - no problems encountered in this regard in the Mission sub-district. Most farmers and operators of heavy equipment are aware of the departmental requirements. All stream beds are frequently checked to prevent unauthorized removal of gravels.

Lower Fraser Sub-District - four permits were issued under the Gravel Removal Order for removal of dry gravel bars and riverbank protection work in the North and South Alouette Rivers. No applications were received for gravel removal from other streams in the area.

Vancouver Sub-District - again as in 1968, there were minor gravel removal problems on the Capilano and Seymour Rivers, as well as in Lynn Creek; most of these problems were resolved very quickly with no adverse effect on the fishery.

Squamish Sub-District - five permits for gravel removal on the Mamquam and Squamish Rivers were issued in 1969.

A number of other requests for gravel were refused because of the location being adjacent to or on the site of the spawning grounds in the Mamquam River.

The flood control project was carried out by the District of Squamish in co-operation with the province of British Columbia, Department of Lands, Forests, and Water Resources, Water Resources Service, Water Investigation Branch and the area dyked was the left bank of the Squamish River from the confluence with the Mamquam River south.

Construction Aggregates Ltd., since purchased by Ocean Cement, furthered plans to obtain gravel from the Sechelt area, but no construction was started in 1969.

There is a great deal of interest in obtaining gravel from rivers for fill and roads because of the low cost.

Logging Operations - all sub-districts, except the Steveston and Vancouver sub-districts, have logging operations carried out and problems resulting therefrom. Logging clauses entered into contracts between logging companies and the Forestry Branch of the Provincial Government, associated with the harvesting of timber.

Chilliwack Sub-District - logging is carried out in all watersheds producing salmon in the sub-district. Roads built by logging outfits are pushing further into the more remote valleys. Chilliwack Lake is skirted on its east side by a logging raod for almost the entire length.

Logs cut are processed at Bowman's Mill in Chilliwack, the other big mill in the sub-district at Boston Bar burned down, and of course the majority of logs cut are still floated down the Fraser River, boomed at Hunter Creek and towed to New Westminster mills.

Trends in the Fishing Industry

The first gillnetters in the $50,000.00 price range appeared in 1968. This trend continued as additional vessels with the most sophisticated gear in electronics, fishing gear, and comfort, replaced the older type boat.

In September of 1968, the Honourable Minister of Fisheries, Jack Davis, announced phase 1, relating to the licence control programme for salmon fishing vessels in British Columbia. In the fall of 1969, phase 2 of the programme was announced setting production levels and fees based on landed values.

Enforcement

A total of 163 violations were prosecuted in the District during 1969, 15 commercial, 86 sport, and 62 involving the Indian Food Fishery.

Fines imposed by the courts on defendants in District 2 in 1969 totalled $7,536.00. In a number of cases, fines levied were not paid and the individuals concerned served time in gaol instead.

Enforcement (cont'd) District 2

Sales from forfeitures totalled $664.72 bringing total cost to violators to $8,180.72.

It should be noted that the majority of fines levied in connection with the Indian Food Fishery were imposed on persons other than Indians.

The public seems to grow more aware, due to publicity over radio, television, and newspapers, about regulations and closed seasons. The heavy fines imposed in cases of serious offences, the seizures of vehicles and gear used in the commission of offences in addition to constant patrols by boat and vehicle, tend to reduce the number of violations.

A continuing effort by officers, patrolmen and guardians, and the use of modern and updated equipment will aid in keeping violations to a minimum.

Predators

Sea Lions - nil

Hair Seals - a small number were destroyed in the Steveston and Mission sub-district by departmental personnel.

Bears (Grizzly and Black) - even though present in the more remote and mountainous areas of the various sub-districts, no kills were reported.

Grayfish (Dogfish) - on the increase in the Gulf, giving rise to some considerable complaint on the part of commercial as well as sport fishermen.

Killer Whales - occasional migrations are reported in the Gulf of Georgia, in the Howe Sound area and in the Fraser River as far upstream as the Deas Tunnel.

Mergansers - found on the salmon streams during spawning time gobbling up eggs and during the fry migrations when they have been seen feeding on these immatures.

Administration

Staff - two additional patrolmen were employed this past season, one assisting the Sport Fishery Officer in the Lower Howe Sound - Point Grey area during the peak of the sport fishing effort from the middle of May to the middle of October. The other man covered the Vancouver waterfront as patrolman assisting the Fishery Officer and carrying out a troll log book survey.

Equipment - the equipment in the District is satisfactory, as long as the trend in modernizing the equipment is continued, more and better boats obtained and improvements in the F/M communication setup continued. One additional portable F/M set was obtained and put to good use; unfortunately the installation of the planned Hope repeater station did not materialize to permit communications

Administration (cont'd) District 2

into the Hope and Canyon area beyond. It is expected that this station will be in operation prior to the 1970 Sockeye run.

Information, Educational and Other Programmes

(a) All employees, be they Fishery Officers, boat crew members or seasonal patrol staff, carry out full programmes of public relations by answering numerous queries in person and by mail that come flooding in. The interest in environmental controls, sports involving the streams, rivers, and tidal waters, ecology and many more interests given prominence in the last few years, have created many more questions to be answered by the men in the field and the offices.

Student projects involving data on fishing, etc., primarily from our High Schools, are constantly on the increase and are handled by the District and sub-district offices. Officers attend and speak at Fish and Wildlife meetings and attend "Career Days", help for students entering the labour force.

Dignitaries from home and abroad are shown the different facets of the fishing industry in British Columbia and come away favourably impressed.

(b) This Conservation District gives assistance to and receives help in the performance of the various duties from the Resource Development Service (Biologists, Engineers and Technicians) on an almost daily basis, assists the Economics Service considerably in the compilation of data and has many contacts with the Information and Consumer Service and the Inspection Service.

(c) The Conservation District, through its officers, had considerable contact with the following agencies during the course of 1969: -

Government Agencies	Purpose of Contact
Federal - Indian Affairs	Checking status of Indians, employment possibilities
- Public Works	Dykes, flood control, gravel removal, dredging, etc.
- Mines and Technical Services (Water Rights)	Pollution samples, water levels, stream controls
- R.C.M.P.	Liaison and law enforcement
Provincial - Fish & Wildlife, Dept. of Rec. & Con.	Law enforcement, liaison, assistance, water licences & applications, pollution
- Commercial Fisheries Branch	Fishing companies and buyers, licences
- Public Works	Dykes, gravel removal
- Highways	Spraying herbicides, road and bridge construction
- B.C. Hydro	Spraying right-of-ways
Municipal Offices and Officials	Gravel removal, pollution, river bank protection, stream clearance and mosquito control

Information, Educational and Other Programmes (cont'd) District 2

International Pacific Salmon Fisheries Commission	Daily contact on gear and catch figures, commercial and Indian Food Fisheries, spawning escapements, spawning channels and projects, pollution and water licences.

DISTRICT 3

Fisheries

Commercial Fisheries

(a) Salmon - commercial fishing in District 3 showed considerable improvement in three of the five species of salmon in comparison to recent years. Sockeye, Pinks, and Chinooks were recorded in above average numbers compared to the past five years. Supplies of Cohos were very light and much below average. Chums available to the fishery increased in the Strait of Georgia from the Johnstone Strait supply but decreased from the Juan de Fuca source.

The troll fishery remained generally unchanged from recent years with effort down only minimally due to boat licence restrictions and July - August closures during the weekends.

The Juan de Fuca Pink salmon "on year" cycle was weak with returns in the order of the modest 1968 run.

(b) Herring - there was no herring fishery for reduction purposes in District 3 for the third year in a row. Herring for food and bait was taken by gillnets, beach seines, otter trawl and a small food fishery by purse seines.

Bait requirements for the sport fishery is an increasing need with herring ponds established in many localities.

(c) Halibut, Groundfish and Shellfish - the halibut fishery in District 3 in minor in all respects with individuals being caught incidentally to the hook and line cod fishery.

Groundfish effort and returns remain slightly depressed compared to the average over the past five years. Areas 17, 18, and 20 provided the bulk of returns from this fishery.

The shellfish production of Conservation District 3 continued at a similar pace to the 1965-1967 level but was up by about 20% over 1968 returns. There was some improvement in toxicity levels on the mainland when the closure in Jervis and Sechelt Inlets was lifted late in the year. Clam sampling for toxicity levels was maintained throughout the summer months in the District.

Launching ramp facilities for sport fishing boats at
French Creek, Courtenay-Comox Sub-district, District No. 3.

Sport Fishery

Salt water sport fishermen recorded over 215,000 salmon and grilse in District 3 during 1969. This was better than the previous two years and comparable to the good year of 1966. Poor catches of Cohos were offset by above average landings of Chinooks. Juan de Fuca sportsmen experienced excellent returns of Pinks and Cowichan Bay "buzz-bombers" landed almost 1,000 Chum salmon.

The overall increase in effort was 5% above 1968 and reflects the continuing interest and participation by locals and tourists in this activity. Facilities in the form of marinas, boat ramps, and boat rental agencies, although on the increase, were sorely pressed to meet the needs of the rapidly increasing boating public.

Sport fishing methods are also improving with much emphasis on live herring and herring "strip" lures. Mooching, "strip-casting", and "buzz-bombing" are becoming more popular as sportsmen gain experience in these fields.

Problems associated with enforcement on the 12-inch minimum length requirement on grilse were again prominent in many localities.

Restrictions were again required in several stream estuaries where added protection to salmon runs was deemed necessary.

Indian Food Fishery

Indian food fishing was again active during 1969 in all sub-districts. Rather abundant supplies of Chum salmon were available to Natives during upstream migration.

Good use was made of stripped Chinooks at the Big Qualicum River project with these being distributed to many Indian families.

Spawning Summary

Sockeye - District 3 streams in Areas 14, 16, and 20 support small runs of "creek" Sockeye. Granite Creek in the San Juan area and Sakinaw Lake near Pender Harbour recorded lighter than average returns. Four streams in Area 14 and the Tzoonie River in Narrows Inlet had minimal returns.

Coho - a general decline was recorded in many rivers and creeks throughout District 3. Noticeably the Nanaimo and Big Qualicum Rivers were very lightly seeded as were Coho producers in other parts of Areas 14, 15, 16, and 17. The Cowichan and Koksilah Rivers showed returns similar to brood years. Only the Oyster River showed above brood year spawners.

Pinks - an "off year" in Area 20. Extremely light returns to the Oyster, Tsolum and Puntledge systems in Area 14. Area 15 and 16 streams produced just slightly below brood year escapements. None reported in Areas 17 and 18.

Spawning Summary (cont'd) District 3

Chinook - overall returns to the District considered light to poor. Sooke and Big Qualicum Rivers appeared good compared to brood year. The Gordon, Goldstream, Little Qualicum, Cowichan and Koksilah Rivers maintained average returns, while the San Juan, Puntledge, and Nanaimo Rivers were considered poor and below average. The Toba River in Area 15 with 8,100 spawners was considered by the reporting officer, to be lightly seeded.

Chum - generally good to excellent numbers of this species to most systems in District 3. Only the Oyster River appeared down from brood year. The Koksilah was equal to brood year. The others, and noticeably the Cowichan, Nanaimo, Big and Little Qualicums, Puntledge and mainland rivers, showed good returns and well above brood years.

Weather Conditions and Water Levels - water levels were generally ideal during fall escapements and spawning periods. Salmon seedings were enhanced by moderate winter temperatures and an absence of abnormal flow conditions. The only exceptions to the balmy District 3 weather during the winter were in several mainland inlet systems where more severe freezing conditions took the usual toll of egg depositions on exposed gravel bars. Stream fry output indications appear good at time of this report.

Fry Salvage - salvage operations from many streams in District 3 is an annual necessity due to low or no-flow conditions where Cohos are present. Sub-district totals of fry relocated amounted to 222,300 Coho and 1,600 Chums.

Herring - herring spawnings in certain exposed locations in Area 15 and 17 suffered substantial mortality due to heavy wind and surf action. Dogfish predation is severe on herring as they move inshore to spawn.

Environmental, Multiple Water Use

Pollution - This past year saw fisheries agancies devote an even greater amount of time and effort towards prevention of unfavourable effluents and appraisal of existing polluted areas. The continuing buildup of population and industry around the Strait of Georgia is making fisheries environments most critical in District 3. The general public and organized groups are becoming increasingly aware of industrial disregard for environmental standards.

Effluents from the three pulp mills and one chemical plant situated on tidewater in this District are always a source of potential disaster to adjacent fisheries habitats. Oil spills from mills, deep-sea shipping, and even local marine craft traffic continue to occur on a much too frequent regularity.

Sewage outfalls from organized districts and even individual septic tank outlets adjacent to salmon streams are causing some concern to officers. The usual minor problems associated with land clearing, garbage in salmon creeks and industrial debris in waters frequented by fish were again prevalent.

Environmental, Multiple Water Use (cont'd) District 3

Roadside herbicide spraying by highways and commercial firms required the usual appraisals and recommendations. A mosquito insecticide spray programme in the Crofton area caused much concern to municipal authorities who were charged with the problem of alleviating a serious mosquito infestation while not involving livestock and other animal populations in the locality.

Logging debris and lumber mill wastes, mainly in the form of bark and chips, required close appraisal and numerous interviews with management personnel associated with these problems.

In general, leaders of industry and commercial ventures wherein the source of pollution most often originates are becoming increasingly aware of their public image and responsibilities to the environment.

Industrial Developments - continued urban expansion along the easterly shores of Vancouver Island, mainly in the form of sub-divisions, is extracting a toll of unsuitable water levels in small salmon creeks. Officers are regularly being faced with the problem of assessing applications for streams and adjacent water tables wherein the amounts applied for in total far exceed the supply during low flow periods.

The B.C. Hydro power site on the Jordan River in Area 20 is presenting a problem with respect to the runs of salmon to that river. Some concern is being expressed by residents in the Cowichan Bay area where land fills for lumber storage are taking in more and more of the river estuary.

Obstructions and River Diversions - obstructions were attended to in sixteen streams of District 3 by Conservation and Protection personnel during 1969. In addition, Resource and Development personnel arranged for obstruction removal in two instances in Area 18, and private firms associated with logging accepted responsibility for clearance work in four more. A log jam improvement job in the Cowichan River was undertaken by members of the Cowichan Indian Band. The usual fish ladder clearance programme at Skutz Falls on the Cowichan River was minimal this past year due in part to no abnormal flood stages. Beaver dams which are numerous on some Coho systems were removed or breached only to allow upstream adult salmon migrations in the fall.

Dyke improvements were again made in Haslam Creek and the lower Cowichan River for land protection by private industry.

Logging Operations - almost the entire district is subject to one form or another of logging activity. All the forest giants are represented either directly or indirectly, by subsidiary interests. Continual surveillance by fisheries personnel is necessary to keep abreast of their operations. Previously untouched watersheds in Toba and Jervis Inlets are now being opened up. Despite many and varied logging problems affecting the fisheries in this District, there are areas where second growth, sustained yield cutting permits, and much improved logging schedules and logging practices are steadily improving the compatibility of fisheries and logging. A fairly recent concept of Departmental officers meeting with logging managers on a regular basis has precluded some difficulties.

Environmental, Multiple Water Use (cont'd) District 3

Gravel Removal - incidence of gravel removal activity in District 3 streams remains high with those operators involved in systems covered by Gravel Removal Orders adhering to permit requirements rather well. Frequent appraisals by field staff on gravel withdrawals are absolutely necessary to preclude abuses and spawning bed disruptions.

It is expected the Butler-Lafarge Cement Co. plant situated on the lower Nanaimo River will go to a dry-pit operation in the near future. Dislocation of gravel from removal sites during winter freshets results in unstable spawning areas downstream.

Water Licence Applications - one hundred and twenty-three licence applications were processed in District 3 during 1969. The reduction from 1968 would indicate the amalgamation of water withdrawal permit holders into municipal or cooperative groups.

A close liaison with officers of the Provincial Fish and Wildlife Branch is maintained in regard to water withdrawals.

Considerable time is required by Departmental personnel during low flow periods to check withdrawal intakes for screening requirements. The large intake of British Columbia Forest Products of the upper Cowichan River was again a problem as downstream Coho fry migrants were induced into the intake.

The new programme of cataloguing all water withdrawal sites is underway and should materially assist in future flow evaluations.

Placer Mining Applications - officers report no new applications for 1969.

Trends in the Fishing Industry

Inshore and Strait of Georgia fishing trends remain fairly constant. Sport fishing gear and procedures continue to invade the commercial field with the eventual aim, it appears, of making the "gulf" a sport fishing only area.

Fish buying stations in District 3 remain similar in number in the "gulf". The Victoria area had ten fish buying stations involved in salmon and shellfish.

The combination gillnetter-troller type boats continued to show an increase in numbers. More difficulties are being experienced in collecting catch figures from this group as they often pack ice and do not make regular or routine landings of their catches.

On the fishing grounds some of the more noticeable trends are the lessening numbers of commercial "putters" due in part to the recent changes in licencing procedures. Another is the continuation of seine net operators to change from table seines to drum type operation.

A sharp increase was recorded in foreign fishing vessel involvement by Victoria officers. Some thirteen Soviet and Japanese vessels entered Victoria for various reasons. Three of these vessels were involved in infractions of Canadian fishing zones.

Trends in the Fishing Industry (cont'd) District 3

The development of a process to successfully offer canned Grayfish to the public was inconclusive at the year's end. St. Jean's Cannery at Nanaimo has the formula to undertake this process but at present date, no general acceptance is obvious.

Enforcement

There were a total of 145 prosecutions in 1969, divided as follows: sport 112, Indian 6, commercial 26, and logging 1.

The majority of prosecutions were of a minor nature in the sport fishery again with grilse sizes, shellfish and crab limits being foremost. There was an increase in Indian violations but a decrease in logging infractions compared to 1968. Commercial prosecutions increased with a heavy proportion of these being in the intense San Juan fishery. Prosecutions of foreign fishing vessels involved two U.S. salmon gillnetters and two salmon sport fishermen.

Preventive patrols in the commercial, sport, and Indian food fisheries remain high on the list of field staff duties. The apprehension and prosecution of U.S. sport fishery violators is of considerable concern to Area 18 officers. Numerous demands to industry regarding pollution abatement procedures were made with most requests being given affirmative lip service.

Considerable educational effort in the form of Departmental films, talks, and tours of salmon streams was instituted by Fishery Officers.

Predators

Sea Lions - a few appearances in Juan de Fuca and mainland inlets. Numbers observed constituted no menace to the fisheries.

Hair Seals - there is apparently an overall general incidence of these animals, especially in the inlets of Areas 15 and 16. They are still not considered to be a serious problem to fisheries.

Bears (Grizzly and Black) - Black bears appeared in normal abundance during fall salmon stream migrations. Grizzly bears were very numerous in Toba Inlet where the local patrolman was forced to destroy one in order to continue his duties.

Grayfish - the very numerous "Dogfish" abounds all areas of the District. Complaints from all directions of the commercial and sports fisheries as well as marinas and bait pond operators are loud and long. Any popular salmon and herring habitat is infested with these predators.

Killer Whales - these are seen frequently in individual and pod concentrations moving along the shoreline in the summer months. Although considered a nuisance by sport fishermen, they receive scant attention from most commercial fishermen. The capturing of these mammals by fishermen for sale to aquariums continues to be attractive from a money standpoint with values ranging as high as $25,000.00 for a good specimen.

Other Predators - Mergansers and Blue Herons are most numerous along salmon streams taking a substantial toll of fry from low flow systems.

Administration District 3

Staff - District 3 manpower during 1969 was utilized to the maximum limits of their capabilities. The more rigid adherence to contractual working conditions by Fishery Officers and patrol vessel crews necessitated some restraints in working habits. Some increases in man hours as allocated to the ever-expanding Strait of Georgia sport fishery is obviously necessary if the required control is to be maintained.

Fourteen seasonal patrolmen were employed in the District again in 1969. In addition, a patrolman was utilized on the Victoria waterfront for three months specifically assigned to recording Area C catch sales slips and advising fishermen in the completion of log books. In almost all cases, these seasonal employees were experienced regulars providing an efficient service in the field.

Information, Educational and Other Programmes

(a) Fishery Officers throughout District 3 were involved in educational programmes of one kind or another. Departmental press releases were distributed to sports groups, agencies, and the news media. Press and radio station outlets were utilized where practical to acquaint the public with regulation changes and to properly announce shellfish conditions.

Talks and the showing of conservation type films to clubs and school classes were undertaken. Field trips were taken with school children to view salmon in local streams. Numerous meetings were attended with pulp mill and logging personnel wherein updatings on logging operations and mill modifications were discussed.

(b) A very substantial liaison and cooperative work programme was done in conjunction with the Resource Development Branch in District 3. De Maniel Creek improvements, Millstream River Coho transplants, Cowichan River flood control surveys and salmon tagging recoveries were some areas of combined effort. Some liaison with members of the Fisheries Research Board staff on Area 14 projects was recorded. Substantial sport fish data and sales slip collections were made on behalf of the Economics Branch.

(c) Fisheries personnel in District 3 were associated with numerous other agencies in the course of pursuing fisheries interests. Provincial Fish and Wildlife officers were regularly contacted in regard to violations, water licences and pollution situations. R.C.M.P. and Department of Highways were two other agencies where frequent contact was useful. Less numerous contacts were made with Customs, Naval Intelligence, B.C. Forest Service, Provincial Health Officers and Municipal representatives.

Indian Affairs Officers and Indian band representatives were conferred with in regard to food fishing and related activities.

DISTRICT 4

Fisheries

Commercial Fisheries

(a) Salmon - the commercial salmon trolling fleet during the year 1969 continued its domination of all the Fisheries conducted within District 4. Of the 1,952,220 pieces of salmon landed during the past year, at least 90% came from the troll fishery. Area 23, Barkley-Nitinat sub-District, is always within the top seven coast-wise area producers of salmon indicating the strength and effort of this operation.

Effort during 1969 was on the same level as 1968; however, weather during April and again in August hampered offshore operations to a considerable degree.

Modernization of the troll fleet continues each year, with use of all electronic aids to navigation. Mobility and increasing range of the fleet are the outstanding features with many "ice packers" operating between Area 23 and Area 26 far offshore.

1969 Coho salmon landings of 988,342 pieces was well below 1968 (1,336,553) and the brood year of 1966 (1,331,451), compared to the ten-year average of 1,058,713 pieces. It is the opinion of this office that some of the decline is due to the hot, dry summer of 1967 when most streams had a combination of both low water levels and high temperatures greatly affecting survival of Coho salmon fry produced from the 1966 brood year.

On the other hand, Chinook salmon landings of 435,492 pieces increased over 1968 (389,190) and the ten-year average of 344,747.

In spite of the decline in Coho landings during 1969, Chinooks and Coho continued to be highly stable year after year and it is often noted that a decline in one species is felt by an increase yield from the other.

One highlight in 1969 was the almost complete lack of the shaker problem with Coho salmon. All areas report very minor incidents of the taking of immatures and trollers were singularly quiet on this matter. It was indeed paradoxical, as during 1969 the Resource Development Branch conducted a very extensive survey and monitoring programme on the problem with participation by many fishermen and the lack of "shakers" will, no doubt, hamper investigative results.

For the fifth consecutive year since 1964, Sockeye salmon landings by trollers showed an annual increase. 195,220 pieces of this species were landed compared to 50,156 in 1964. There is no doubt the troll fleet is becoming highly skilled and adept in taking these salmon by troll.

The catch of 336,218 pieces of Pinks in 1969 is highly significant in spite of being 40% of the 1967 brood year catch of 835,490 pieces. The coastwise decline in 1969 Pinks is reflected in the above catch.

High quality of product landed by the troll fleet continued in 1969. Speed of handling is increasing by use of trucks over improved roads from Ucluelet, Tofino, Port Albion and Port Alberni to Vancouver processors and distributors.

Fisheries (cont'd) District 4

The highlight of the salmon net fishery was the record catch in Area 23 of 55,800 Sockeye from the Somass and Henderson escapements. Up to 32 gillnet units (average 18) fished a four-day week for a total of 700 boat-days. The Sockeye catch is almost double the previous high in 1966 of 29,000 and three times the 15-year average of 18,000 from 1954 to 1968.

Seines fished Area 23 in 1969. These were restricted to Barkley Sound proper. A total of twenty boat-days produced only 1,700 Sockeye and 480 Chinooks.

Sixteen seines operated in Tofino Inlet, Area 24, on the Kennedy Lake Sockeye salmon. Due to a very poor year, severe restrictions were imposed both on area of catch by moving boundaries, and on the fishing week. Catch was 20,000 pieces of Sockeye from a total return of 32,000 from the brood year of 1965.

Four gillnet units in Area 25 operated in the latter part of June taking 52 Springs off Nootka. In the week ending August 16th, one seine landed 489 Springs from Hoiss Point, entrance to Nootka Sound.

One seine landed 3,256 Chums from Nootka Sound in a two-week period prior to closure on September 20th. There were no net fishing operations in Area 26, Kyuquot, in 1969.

The Kennedy Lake Sockeye salmon net fishery is the cause of some concern and continues to be subjected to heavy pressure at the local level by all organizations and persons connected with industry. It has to be regulated on a daily basis depending on many factors -- it is difficult to predict and manage this fishery.

A Chum salmon monitoring programme conducted throughout Conservation District 4 during September and October indicated the District should continue the closure imposed in 1965; therefore, no exploitation of Chum salmon took place in 1969.

(b) Herring - the marked decline in herring stocks since 1964 continued in 1969. Extremely light recordings of herring by sounder were noted in all sub-districts. It was therefore decided to again impose a total closure on the West Coast for all commercial operations.

No herring ponds were operated in the District during the year.

(c) Halibut - the trend of the few longline halibut vessels operating off the West Coast continued in 1969. Although the quota from Area 2, as set by the International Pacific Halibut Commission, was obtained for the first time in some years rather than the alternate closure on October 15th, the former highly productive West Coast contributed only a fraction of the catch. It was an excellent year for halibut with record pieces and quota obtained.

A high percentage of the catch is landed now by the troll fleet, such as 234,200 pounds at Kyuquot and 345,700 pounds at Ucluelet and Bamfield.

Officer assisting sport fishing enthusiast

Fisheries (cont'd) District 4

(d) Groundfish - regardless of Foreign Fishing Vessels off our western shores, there is considerable stability in yearly totals of groundfish landings. In addition, there is no significant change in market demand to warrant increased exploitation, or better prices. 1,630,300 pounds of Ling Cod came from West Coast production which is 21% of total British Columbia coast landings. Twenty-nine percent of the British Columbia Black Cod catch came from this area also.

(e) Shellfish - there was a decline in clam production in District 4 during 1969. Only 420 cwt. compared to 1,134 cwt. in 1968. Of this total, 113 cwt. came from Area 23 and the balance from Area 24. A new venture this year was the use of a hydraulic clam digger in Area 24 by Tofino Marine Limited with fair results.

Shrimp production in Area 23, Barkley Sound, reached an all time high at 1,021,300 pounds. A cooperative marketing system seems to have overcome price and transportation problems and a good shrimp fishery is expected to continue. Shrimp in Area 23 are taken by trawl.

Nootka Sub-District also produced some 22,000 pounds of prawns taken by trap in Tlupana Inlet.

(f) Tuna - during late summer vast quantities of tuna appeared offshore through the whole of District 4 and due partly to declining Coho salmon catches, a considerable effort was mounted on this fishery by the troll fleet. Tuna were in tremendous abundance and landings of 20,621 cwt. of this species were spread evenly from Area 23 to Area 26. This catch had a landed value of $408,000 and was a considerable boost to West Coast fisheries economy.

Sport Fisheries

With an annual commercial salmon catch of nearly 2,000,000 pieces of salmon from District 4, one is apt to "down-grade" the related tidal water sport fishery. This concept of the sport fishery is, of course, entirely wrong. The catch and effort within the bounds of sport fishing is now highly significant. There is, however, no relationship between catch and value in the sport fishery. There are thousands of dollars expended on this recreation -- for pleasure boats, motors, storage, fuel, gear, equipment, provisions, repairs, maintenance and parts. In addition, how do you place a money value on fun, excitement, relaxation, or when a father says, "The kids sure had a hell of a good time fishing."

Rapidly improving access roads to Gold River, Tofino, Ucluelet and Alberni Inlet are playing an important role in the increased effort of 35% over 1968.

Half the sport catch comes from Area 23 with an almost equal split of the balance between Areas 24 and 25. Chinooks totalling 96 and 130 Coho were caught in Area 26. The Kyuquot Fishery Officer notes in his report, "Few tourists ever come this far."

In the Gold River Permit Area, the sharp decline in the number of large Springs landed in the last three years is very noticeable. The ten-year average is 45% of total catch over 30 pounds. In 1969, of 593 Chinooks landed by sport fishermen in Area 25, 321 came from the permit area. This is due, in part, to fleet mobility enabling greater effort in Hannah Channel, Tlupana Inlet and Zuciarte Channel.

Indian Food Fishery — District 4

This particular area of our operations must be handled with tact, discretion and watchfulness, at all times. We have maintained excellent relationships with the Department of Indian Affairs, with headquarters at Port Alberni, to resolve mutual problems. Nearly 55% of the Native population is involved in the fishery, either in the direct catching of salmon, or receiving a portion of the production.

In 1969, a total of 91 permits were issued, plus two Band permits. 259 families with 1,398 individuals were involved in the Indian Fishery.

Eighty-five percent of the Fishery is conducted in Areas 23 and 24 where the majority of the Native population reside.

The Sockeye catch reflects the excellent escapement to the Somass River system where 3,340 pieces were taken. The good escapement to the Hobiton River produced 3,490 pieces for the Nitinat Band.

As was the case last year, greater reliance is now being placed on trolling particularly for Chinook salmon in the inlets and west of the Surf Line in December and January. However, the bulk of the catch still comes from the traditional drag seine, gillnet and small seine. The "nil" Pink salmon catch reflects the off year for this species.

No non-tidal waters Indian Food Fishery took place in District 4 in 1969.

Spawning Summary

Sockeye - the Somass River system in Area 23 accounted for the increase of Sockeye escapement over the brood year. Escapement to this river in 1969 was 127,000 pieces compared to 38,000 in 1965. By the same token, Henderson River was light with only 12,000 compared to brood year of 20,000 pieces. Escapement to Hobiton River in Area 22 was only 3,000 or 50% of brood year. Kennedy River in Area 24 had only 12,000 spawners compared to 16,500 brood year escapement. In Area 25, escapement to Muchalat River was 8 - 10,000 pieces compared to 10,000 in 1964 and 1,000 in 1965. Area 26 escapement at 2,000 pieces doubled the brood year.

Coho - landings in 1969 from offshore trolling operations do not indicate the sharp decline in stocks of this species over the brood year of 1966. All areas in District 4 report drastic reductions in Coho escapements. In Area 23, escapement of 45,000 is only one-half of the 1966 brood year. A decline of 20% in Area 24 was experienced. Only 7,000 spawners were reported in Area 25 compared to 12,000 in brood year. Area 26 reported a drop of 75% over brood year.

A total escapement for District 4 of only 69,000 spawners presents a serious problem particularly when they came from a 1966 escapement of 122,000.

Pink - an "off year" for this species, only a few fish showed in Area 23.

Chinook - this species appears to remain at a static level over the past years. In Area 23, an escapement of 14,500 is comparable to brood years 1964-65. Area 24 with an escapement of 1,000 remained the same.

Area 25 showed a decline from 14,500 to 5,000 considered to be due to severe flooding in 1965.

Area 26 reports a 25% increase to 1,500 spawners from the brood year.

Spawning Summary (cont'd) District 4

Chum - although a modern record for the West Coast was set in 1969 with a Chum escapement of 362,700 pieces from a brood year of 269,000, the one disappointment was Nitinat River with only 20,000 pieces compared to more than 100,000 in 1965. All areas report Chums in strength.

Area 26 up 62% with an escapement of 47,700;
Area 25 up 20% with an escapement of 85,000;
Area 24 up 35% with an escapement of 32,000.

The greatest increase and the strongest returns came from Area 23 with an escapement of 175,000 from a brood year of 70,000. Sarita River with 65,000 and Nahmint River with 40,000 took the bulk of these fish.

This was a highly successful Chum year for the whole District.

General - there is no doubt that Coho salmon escapement in 1969 is the cause of concern and it is felt that the very dry, hot summer of 1967 has some bearing on this partial failure of the species. However, as is so often the case, other species improved to a marked degree. We had a very satisfactory Sockeye escapement and Chum salmon exceeded all expectations except in the Nitinat River, Area 22. This species has now reached the recovery stage from the poor returns over the past 15 years. Spring salmon escapements are low in all areas, except Barkley-Nitinat.

Weather Conditions and Water Levels -

March	Unsettled. Considerable rainfall. Water levels seasonally normal.
April	Overcast, heavy rain and south-east gales. Levels high.
May	Clear and warm. Rain at month end. Levels normal.
June	Clear and warm. Snow melting. Levels rising.
July	Overcast, sunny periods and showers. Levels normal.
August	Unsettled. Showers. Levels normal.
September	Overcast. Heavy rain. Levels normal.
October	Cloudy. Dry to start. Levels low. Heavy rain. Levels rising.
November	Overcast. Storms with extended dry periods. Levels fluctuating.
December	Stormy. South-east gales. Levels high.
January	Some light snow. Unsettled. Warm with rain. Levels normal.
February	Clear and cool to warm. Levels normal to low

Very limited to nil amount of snow on higher levels for 1970 spring and summer run-off.

Fry Salvage - adequate stream levels were maintained during 1969 due to a generally wet, cool summer and run-off from exceptionally heavy snow pack at higher levels. As an example, we had 20 feet of snow in Port Alberni and 25 feet at Taylor River Valley. Therefore, only in Area 23, were fry salvage operations carried out as follows: 68,390 Coho fry were salvaged from tributaries to the Somass River system.

Excellent fry abundance was observed in all major producing streams.

Herring - with the exception of heavy damage by south-east gales at Hot Springs Cove, Area 24, no other adverse conditions affected spawned areas within District 4 in 1969. A very high abundance of juvenile herring were noted in all areas during late spring and summer months.

Environment, Multiple Water Use — District 4

Pollution - The utilization of the extensive forests on the West Coast of the Island is the prime industry within the confines of Conservation District 4. Consequently, over 90% of all our pollution problems are associated with logging, sawmills, plywood mills and manufacture of pulp and associated by-products.

Pollution of Alberni Inlet and Barkley Sound by the huge MacMillan Bloedel operations at Port Alberni is at the Regional level and day-to-day problems are referred to the technical staff at the Regional Branch. The 3.5 million dollar effluent control programme at Port Alberni has been started and should be operational during 1970. The use of settling lagoons, clarifiers and aerator should eliminate 90% of the solids now entering tidal waters.

The Gold River 750 ton capacity pulp mill in Area 25 will require additional study on both the effluent discharge into Muchalat Inlet and the hydraulic barker in connection with the woodroom. The mill was fully operational during 1969. There did not appear to be any effect on Sockeye and Coho salmon reaching Gold River; however, there appeared to be some delay in arrival of Chinook salmon. Problems connected with this mill are also at Regional level; however, liaison at the local level is constantly maintained with the Company.

Preventive measures were taken during 1969 to contain possible adverse effects from an oil spill at China Creek, Area 23, indiscriminate dumping of hog fuel requiring permits from Pollution Control Board, alder control spraying programmes in Areas 23 and 24 by logging industry and British Columbia Hydro, oil spills at Tahsis and Gold River in Area 25 and oil leakage from a grounded freighter at Ferrer Point.

Industrial Development - in Area 25, a new cedar mill is under construction at Tahsis which will greatly increase the lumbering capacity at that point.

A 20 acre "townsite", also at Tahsis, is being developed. Vast yardage of gravel was requested from Tahsis River. This was refused and an alternate site obtained. A permit was granted for sewage disposal and to date, all conditions have been met.

With the exception of water supply from Sproat Lake for MacMillan Bloedel Limited at Port Alberni and water from Gold River for the pulp mill at that point, no problems exist in District 4 with water versus salmon. There is only one small hydro operation, on the Ash River.

Obstructions and River Diversions - Major stream clearance work throughout the District was completed by the Department of Highways, MacMillan Bloedel, the Gran Bay Logging (Tahsis Co.) and by Department personnel on Sutton Creek, Twin Rivers, Kootowis River, Sucwoa River and Elaine Creek.

In Area 23, minor obstructions were removed by Departmental personnel and logging companies in 16 small tributary streams.

It should be noted that the logging industry is now working closely with personnel of this Department in District 4. Frequent meetings are held and guidelines established for all logging near streams.

Environment, Multiple Water Use (cont'd) District 4

Gravel Removal - no applications for gravel removal in Area 23.

In Area 24, 9,000 yards removed from the upper Kennedy River by Department of Highways from a site above high water and an area not frequented by salmon.

In Area 25, applications for gravel from Tahsis, Mooya, Ohtwanch and Sucowa Rivers were submitted. In all cases alternate sites or locations above the high wetted perimeter were found. Thus there were no ill effects on the salmon resource.

A commendable liaison has been established with all logging operators in District 4 and requests for gravel removal from streams are limited to areas where all other sources are unavailable.

No gravel removal orders under Section 64A of the Regulations exist in District 4.

Logging Operations - logging is a vast industry within the confines of this District and is the mainstay of the economy. Consequently, there is an effect on the salmon resource as timber is removed in volume. Although cutting is now carried on above 2,000 feet some 39 of our salmon streams are involved either directly or indirectly. Direct damage is now kept to a minimum by annual meetings with top level staff of the major companies which are MacMillan Bloedel Limited, B.C. Forest Products, Canadian Forest Products, and the Tahsis Company. Meetings on yearly logging plans are held with each Division of the companies involved. During the year, close liaison is maintained with operating staff by our Field Officers to ensure correct practices in the woods operations.

In 1969, two prosecutions were successful under Section 33(3) for debris in Sucowa River and Twin Rivers. This had a very desired effect on the industry.

Water Licence Applications - During 1969, fourteen (same as 1968) water licence applications were received, all in Area 23. Of these, eight involved salmon streams; however, all applications are investigated, entailing considerable man-hours. In addition, all screening is checked particularly during low water periods of existing water licences.

Placer Mining Applications - One placer mining application in Area 23 was processed in 1969. It was approved with the proviso that it be limited to a hand operation.

Trends in the Fishing Industry

No significant change within the fishing industry took place in 1969 compared to 1968. Twenty-five fish buying camps operated within the District this past year. The trend here is up-grading and modernizing all facilities. These are checked carefully by Conservation Branch personnel and Fish Inspection Branch. Ice plants are operated at Port Alberni, Ucluelet and Tofino. All salmon landings from Areas 23 and 24 are now moved by truck to Vancouver. This is a very efficient service with a constant flow of large trucks.

Trends in the Fishing Industry (cont'd) District 4

The most important trend is the improving technique employed by trollers in taking Sockeye and Pink salmon. Catches of these species by trolling have reached a very high level.

Availability of vast numbers of Albacore Tuna off the West Coast from Cape Cook to Barkley Sound and the declining Coho catches encouraged many trollers to rig for tuna. Several vessels followed the fish southwards as far as central California.

Enforcement

A tightening of regulations respecting logging was instituted in 1969 with the result both the Tahsis Company and MacMillan Bloedel were prosecuted under Section 30 and Section 33 of the Fisheries Act. This action had a desirable deterrent effect.

Two violations involving licencing, three sport fishing violations and possession of undersized salmon and halibut were successfully prosecuted during the year. One Surf Line violation at Kyuquot was successfully prosecuted at Tahsis. Increased patrols were laid on prior to April 15th Chinook salmon opening, June 16th Coho opening and halibut opening.

With a very limited salmon net fishery within District 4, major abuses are at a minimum. The net fishery is confined to small areas and is under constant surveillance during fishing periods.

Predators

Sea Lions - a very few complaints from fishermen in 1969 although large herds exist at Kyuquot, Long Beach and at the entrance to Barkley Sound. None of these animals were destroyed by departmental personnel.

Hair Seals - two areas of concern still exist here. Area 22, Nitinat Lake, hair seals presented a conservation problem on Sockeye, Coho and Chinook salmon. A control programme was carried out and 138 hair seals were destroyed by departmental personnel. In Area 24 a lesser problem exists and two were destroyed. There was no problem in other areas.

Bears - encountered bears in varying numbers on all streams and they molest salmon. This is a natural hazard.

Grayfish - encountered by salmon trollers to an extensive degree in Nootka and Esperanza in Area 25. Area 23 reports continuing complaints of heavy concentrations by trawlers, trollers and sport fishermen.

Killer Whales - large pod reported in Nootka area during late August. Two large pods reported in Barkley Sound during May. Effects on the fishery are considered light.

Others (Mergansers, Basking Sharks) - all areas report an increase in the mergansers population and a serious control programme must be instituted. Fifty-four were destroyed in 1969 and of these, 17 were recovered and crops examined. Coho fry and Chinook fry comprised 65% of all fish found in crops.

No control programme was carried out on the basking shark population. Six reports were received of nets being damaged and two nets were completely destroyed. One shark was strangled in a gillnet. The shark knife was installed on the FPC "Comox Post" with "nil" results.

Administration District 4

Staff - the operational and administrative highlight in 1969 was the installation of a very efficient radio-telephone at Port Alberni Headquarters. Efficience and knowledgeability within Conservation District 4 greatly increased by contacts with local patrol vessels, Headquarters vessels, Regional Headquarters and other District Headquarters.

Both the town of Tofino and Conservation District 4 were shocked and saddened on October 7th by the death from drowning while on duty of Patrolman Ray Sloman, Clayoquot Sub-District, Area 24. By this tragic death, we all lost not only a friend, but a very efficient, active, and conscientious Patrolman. His services, over the past eight years, had been exemplary. Ray Sloman will be very greatly missed in the Tofino community and as a seasonal member of our Conservation and Protection Branch. Such men are hard to replace.

Information, Educational and Other Programmes

(a) A good Public Relations Programme was maintained in all areas during 1969. Departmental films, with accompanying discussions, were presented in Port Alberni and at two schools in Tahsis. These were very well received and appreciated.

Continued and extensive use is made of Information Service Fact Sheets and publications on all facets of the industry and fishing. These receive wide distribution.

Meetings were held with all logging divisions in District 4 during 1969 on logging plans and guidelines for minimal damage to the salmon resource.

Public relations is a continuing programme of daily contacts with many persons connected with the diverse fisheries resource.

(b) Assistance is rendered to all other Branches of the Pacific Division such as Economics Service in connection with sales slips, licencing and catch statistics. A great deal of assistance was given to a member of this service in Areas 23 and 24 working on log books connected with a survey and monitoring programme on the "shaker" problem. A member of the International Pacific Salmon Fisheries Commission was assisted at Tofino with Pink and Sockeye salmon statistics. We are also charged with gathering statistics for that agency.

Engineers, Biologists and Technicians of the Resource Development Branch are assisted on pollution, stream clearance, escapement assessments, fishways, log and brush spraying projects. In many instances field staff of our Branch supervise the foregoing projects for the Resource Development Branch.

Members of the Research Board are assisted in their many investigations such as Sockeye populations and environment at Great Central Lake, Coho escapements in the Somass system and lobster investigation at Fatty Basin, and also pollution in Alberni Inlet, Area 23.

Continuous assistance is given to Fishermen's Indemnity Plan on all insurance matters and personnel transportation.

Continuing contact was maintained in all areas of Conservation District 4 during 1969 with many other agencies at the provincial level indirectly associated with salmon resource problems such as B.C. Forest Service in

connection with logging near salmon streams, Game Branch regarding salmon stream problems and Department of Highways of road, bridge, and culvert construction and possible effect on salmon streams.

At the Federal level, numerous contacts are made regarding the Native Food Fishery, Indian Fishermen's Assistance Programme and general welfare of the native population. Contacts are made frequently with Department of Transport and Royal Canadian Mounted Police on pollution matters and use of R.C.M.P.

DISTRICT 5

Fisheries

Commercial Fisheries

Salmon - 1969 was a disasterously poor year as far as the majority of the salmon fishermen who operated in Conservation District 5 waters were concerned, for only 151,254 cwts. of salmon were landed in the area in 1969, a far cry from 275,162 cwts. landed in 1968 or the 346,720 cwts. landed in 1967.

Coho and Pink salmon in particular, failed to return in strength to local rivers and catches of these two species were the lightest in a decade.

Sockeye and Chums and Spring salmon were taken in more normal numbers, with the catch of all Chum salmon, 497,000, being particularly heartening. Possible indication that future Chum salmon runs will return in something approaching the abundance of the runs of the 1950's.

The excellent catch of 600,000 plus Sockeye salmon made this season in District 5 waters chiefly reflects the strength of the early Stuart stocks returning to their natal river by way of Johnstone Strait and inside waters. The Nimpkish River made a sizeable contribution of possibly 60,000 pieces to the catch, while other local salmon producers, Nahwitti, Glendale, Kleena-Klini, McKenzie, Fulmore, Heydon and Phillips made minor contributions.

The bulk of the District Sockeye catch was made in Area 12 waters where 444,436 Sockeye were harvested in Goletas Channel, Blackfish Sound, Broughton and Johnstone Straits. Gillnetters, seiners and trollers harvested 54%, 44%, and 2% respectively of the Area 12 catch.

An expected gillnet fishery for Sockeye in the approaches to Quatsino Sound, Area 27, did not materialize in 1969 and the gillnet catch in these waters was only 3,829 pieces as compared to a troll catch of 33,172 pieces. In a similar fishery in the outside waters of Area 11 gillnetters accounted for 29,646 fish, 96% of the total Sockeye catch while trollers took 3% of the catch - 1,257 Sockeye.

A total of 292,746 Coho were taken in the four statistical areas of District 5 during 1969, a drastic decline from the record catch of 1,234,729 Coho, made in the brood year of 1966.

All areas of District 5 showed a marked decline in Coho production in 1969 and the reduced Coho catches applied in similar proportions to all types of gear.

Fisheries (cont'd) District 5

In the portion of Area 13 (Campbell River area) south of the Seymour and Yuculta rapids, Coho were in such short supply that in an unprecedented conservation measure designed to provide for a more equitable division of catch between commercial and sport fishermen, commercial salmon trollers were restricted to a five day fishing week during the period July 11th to August 31st, 1969.

The odd years run of Pink salmon to District 5 rivers is normally light, and the mainstay of the Johnstone Strait Pink salmon fishery in this cycle is the Fraser River run.

In 1969, both local and Fraser River runs of Pink salmon were extremely light, well below expectations. Permitted fishing time in Areas 12 and 13 was adjusted accordingly and as a result, the seasons catch of 614,619 Pinks was only a fraction of the brood year catch of 3,709,133.

The District's 1969 Pink salmon fishery was chiefly prosecuted in Area 12 where a fleet of 285 gillnetters and 177 seiners operating in the western and central portions of Johnstone Strait and in the waters adjacent to Malcolm Island, made peak Pink salmon catches during the week ending August 23rd.

The 1969 District 5 catch of Chum salmon, 497,968 pieces, was the second largest catch since 1959, a heartening indication that the conservation measures practiced during the past ten years are producing results, and that Chum salmon may, in the future, be as abundant as during the late fifties.

Of the 497,968 Chum salmon taken in the District, the vast majority, 433,144, were taken in the Johnstone Strait and Discovery Passage portions of Areas 12 and 13 from Fraser River, Big Qualicum River and other Gulf of Georgia river stocks, during four two-day fishing periods in the weeks ending October 4th and 25th and November 1st and 8th.

Peak catches of fall Chum salmon were made during the week ending November 1,1969 when a fleet of 573 gillnetters and 142 seines landed 124,545 Chum salmon during a 48 hour fishing period.

In spite of the large Chum catch this season, local runs of Chum salmon were, in many instances, light and disappointing. Summer runs of Chum salmon to the Annuhati River, Read Creek and Orford River did not come up to expectations, while the fall run of Chum salmon to the Nimpkish River was one of the lightest on record.

The 1969 Spring salmon catch in all sub-Districts remained at a relatively high level for the fourth consecutive year, despite weak returns to local rivers.

In the Alert Bay sub-District, an expanded seine fishery on mature Spring salmon in Parsons Bay increased the seiners share of the areas Spring salmon catch of 71,693 pieces from 27% in 1968 to 35.3% in 1969. Trollers working mainly offshore took 52.1% of the Springs and gillnets the remaining 12.6%.

A troll fishery on "tiny" Spring salmon in the mainland inlets of Area 12 and to a lesser degree in Loughborough Inlet of Area 13, during the months of April - May and September was a matter for some concern, for the Spring salmon taken in these waters averaged less than 5 lbs. in weight - a waste of a valuable resource.

Fisheries (cont'd) District 5

Herring - for the second consecutive year in the interests of the conservation of herring stocks, the waters of District 5 remained closed to the taking of herring for reduction purposes. As a result, only 128 tons of herring were taken by commercial means in Areas 12 and 13 during the spring and summer of 1969.

Of this tonnage, 118 tons were retained in a bait pound located in Canoe Pass, Area 12, for sale to halibut fishermen at 7½¢ per pound, 5 tons were retained in live boxes in waters adjacent to Stuart Island, for sale to sports fishermen at $1.50 per dozen and 5 tons were taken and retained for live bait by ling cod fishermen operating in Area 13.

During the fall and early winter of 1969, an extensive sounding programme carried out by the patrol vessels, "Beaver Rock" and "Stuart Post" in conjunction with the chartered seiner "Nafco" revealed that sizeable stocks of herring were present in the approaches to Knight Inlet in Discovery Passage and in Bute Inlet. Small bodies of generally small herring were located in bays, channels and inlets throughout the District.

Halibut - record prices of 28¢, 46¢ and 46.6¢ per lb. for chix, medium and large halibut respectively, paid to fishermen for landings of halibut at Bull Harbour camps during the 1969 season encouraged production and as a result, the comparatively large catch of 1,164,200 lbs. of halibut was made in District 5 in 1969. The total green landed value of the catch, $496,000 was almost double the value of the 1968 catch of 1,012,500 lbs., which had a landed value of $255,000.

Groundfish - catches of groundfish in District 5 waters during 1969 amounted to 1,987,500 lbs., with a green landed value of $144,000, a decline from the previous years catch of 2,326,400 lbs. and well below the Districts 5 year average groundfish catch of 2,715,200 lbs.

As in 1968, Soles, Red and Rock Cod and Gray Cod were the most important species taken in 1969 with the majority of the trawling being conducted in offshore waters of Areas 11 and 27.

A longline fishery for Black Cod, which in 1968 produced 1,194 cwts. with a value of $27,000 declined this season to 681 cwts., with a value of $17,000.

Similarly the ocean perch fishery, due to depressed market conditions declined from a catch of 2,273 cwts. in 1968 to 6 cwts. in 1969.

1,522,900 lbs. of ling cod valued at $183,000 were taken in District 5 in 1969, a sharp drop from the 2,210,900 lbs. valued at $220,000 in 1968.

Light trawl activity in Areas 11 and 27 during the 1969 season was the chief reason for this seasons decreased ling cod catches. Catches of this species in Areas 12 and 13 mainly from handline, jig, troll and long line operations, remained stable, on a par, or slightly above 1968 landings.

Shellfish - clam production in the District dropped to a new low in 1969 of 428,800 lbs. of mainly butter clams, with a value to the diggers of $31,000.

Diggers, during the season, were paid 7¢ per lb. for butter clams and 10¢ per lb. for little necks. The butter clams for the most part were processed at the Seafood Products cannery at Port Hardy while the little necks were shipped to Vancouver for sale on the fresh fish market.

Fisheries (cont'd) District 5

In 1969, 169,600 lbs. of shrimps and prawns with a value of $73,000 and 43,200 lbs. of crab with a value of $9,000 were taken in Conservation District 5 waters. The greater part of the catch was made in Kingcome, Wakeman and Knight Inlets of the Alert Bay sub-district.

The prawn fishery especially, intensified in local waters, during the fall and winter of 1969, resulted in the favoured fishing grounds for prawns, Kingcome-Wakeman Inlets, being overcrowded with six prawn fishing vessels operating 4,300 pots in the area.

Sport Fisheries

A total of 22,952 salmon were taken by sportsmen fishing the tidal waters of District 5 during the 1969 season, a catch only 57% as large as the previous years catch of 39,574 salmon and hardly more than 50% as large as the 1967 sport catch of 43,100 salmon.

Sports effort throughout the District and in particular in the Campbell River area remained at a high level with 37,914 boat days being recorded in 1969. Overall catch success was .6 salmon per boat day, an extremely poor catch to effort ratio.

A dearth of Coho throughout the District was the chief reason for the poor sport catches of 1969 and although Spring salmon catches were relatively good throughout the season, many sportsmen, not skillful enough to take Spring salmon, and Coho, the normal mainstay of the sport fishery being almost non-existent, turned their efforts to fishing for ling and rock cod, or to the digging of clams and the gathering of oysters.

Some of the problems connected with the administration of the salt water sport fishery, which prevailed during the previous season, did not materialize in 1969.

The "buzz bombing" of Chinooks in the Campbell River Tyee Pool, which, in 1968, threatened to deplete spawning Spring salmon stocks, was not practised to the same extent in 1969 and no special conservation measures were required in this area, for the protection of Spring salmon runs.

In the special regulatory sport fishing area of Phillips Arm, a total of 493 angling permits were issued in 1969. Sport catches were the lowest on record. During the regulatory period, June 15th to August 31st, a total of 13 Coho and 15 Springs were recorded as taken in the permit area, a tremendous decline from the catch of 118 Spring salmon, 795 Coho, 78 Jack Springs, 63 Pink and 68 Coho grilse taken in the area during the 1965 season.

Special conservation measures affecting the sport fishery, put into effect in 1969 in District 5 were as follows: -

Area 12 - the lower portion of the Nimpkish River between the highway bridge and Flagstaff Island was closed to salmon fishing during the period August 12 to August 29 for the conservation of Sockeye. During the above-mentioned period, Sockeye, tightly schooled in salt water at the mouth of the Nimpkish River were vulnerable to "sport fishermen" taking Sockeye with the aid of spin cast lures.

Area 13 - the Phillips River downstream of the lake to salt water was closed to the angling for, or the taking of, salmon by sport means from August 17th to the end of the season for the conservation of Spring salmon.

Fisheries (cont'd) District 5

The portion of the Salmon River lying between the Sacht Store Bridge and the Alert Bay Air Services Dock was closed to all salmon fishing for the conservation of Spring salmon from August 17 to the end of the season.

The Campbell River from Elk Falls to the Tyee Spit was closed by regulation to the taking of salmon during the period August 15th to November 15th, for the conservation of local spawning runs of Springs.

Indian Food Fishery

Area 11 - one permit issued, no catch made.

Area 12 - forty-six permits issued and a total of 10,616 salmon taken for food, an average take for the 1,450 Indians local to the Alert Bay area. Of the 10,616 salmon of all species taken, 6,293 were Sockeye taken by the Nimpkish Band from their traditional fishing grounds at the mouth of the Nimpkish River, 143 were Coho taken incidental to Chum salmon in Broughton Strait, 767 were Pink salmon taken from Johnstone Strait, 3,367 Chum salmon taken from Johnstone Strait, Broughton Strait and Kingcome Inlet, 39 Spring salmon and 7 steelhead taken from the mouth of the Nimpkish River.

In addition to salmon, 80 tons of eulachons were taken in the spring eulachon fishery on the Kleena-Kleeni River in all Indian operations; most of these fish were rendered into oil for home consumption although a portion of the eulachon catch was smoked and a small percentage consumed in the fresh state.

Area 13 - thirty-five Indian food permits were issued in 1969 to members of the Cape Mudge, Campbell River and Homolco Bands. Of the 1,451 Sockeye, 106 Coho, 578 Pink, 3,346 Chum and 104 Spring salmon taken under these permist, the great majority were taken by salmon purse seine from the waters of Discovery Passage, Deepwater Bay and Johnstone Strait. A small number of Chum salmon, however, possibly 100, were taken by gaff and spear by residents of Churchhouse, from Village Bay and Open Bay Creeks.

Area 27 - no permits issued - no interest shown in permit fishing for food by members of the Quatsino band.

Spawning Summary

Sockeye - seedings of Sockeye in systems throughout the District were generally satisfactory in 1969 with most stocks holding their own and a few showing an increase over the seedings of the brood year.

In the Alert Bay sub-district, the Nimpkish River, the major Sockeye producer of the District received an excellent seeding of 100,000 spawners, an increase over the brood years seeding of 50 - 100,000. Likewise, the Nahwitti River, with a relatively unfished stock of Sockeye, received a seeding of Sockeye in the range of 2 - 5,000, an increase over the brood years seeding of 1,000. Other minor Sockeye producing systems in this sub-district, the Kleena-Klini, Fulmore, MacKenzie, Quatse and Kakweiken Rivers received light to medium seedings of Sockeye.

In Area 13 where only minor producing systems of Sockeye are located, the Phillips River received a seeding 1 - 7,000 Sockeye as compared to 2 - 5,000 in the brood year and the Heydon system 2 - 5,000 spawners as compared to 3 - 5,000 in the brood year.

Spawning Summary (cont'd) District 5

Sockeye producing rivers of the Quatsino sub-District, the Mahatta, Marble and Canoe, all had seedings lighted than the seedings of the brood year, the total spawning stock being approximately 1,500 pieces as compared to a spawning stock of 2,500 in 1965.

Coho - returns of Coho during the 1969 season to practically all rivers and streams in the District were extremely light, well below expectations and seedings of this species were possibly less than 50% as heavy as the seedings of the brood year.

Of Conservation District 5 rivers, in 1969 only the Kakweiken, Kingcome, Mussel and Bughouse Rivers of Area 12, and the Marble River of Area 27 received Coho seedings that were on a par with the seedings of the brood year.

Pink -a poor return of this specie to local rivers was expected in 1969 for the odd year cycle is the weak cycle for the Pink salmon as far as District 5 is concerned, but the return of Pinks to all Vancouver Island rivers and to the majority of the mainland rivers was disasterously light this season.

A closure to all net fishing of the mainland inlets of Area 12 from July 27th on and a closure of similar waters in Area 13 on the same date helped to conserve some Pink salmon spawning stocks but in Knight Inlet, only two rivers, the Kakweiken and Glendale, received adequate seedings of Pink salmon, seeding in the order of 50,000 pieces, the remaining rivers in Area 12 realizing a seeding only 50% of that of the brood year. In Area 13 a worse situation prevailed with no strong spawning Pink salmon stocks being found in any river and the overall Pink seeding being assessed at only 30% of the brood year escapements.

Chums - in spite of the relatively large catch of 497,968 Chums made in District 5 during the 1969 season, spawning stocks of this specie were weak in many of the major Chum producing systems of the Alert Bay and Quathiaski sub-Districts.

In Area 11 Chum seedings were satisfactory with all major Chum salmon producers receiving seedings heavier than the seedings of the brood year. The Seymour, Salmon Arm and Village Bay Rivers in particular showed increased Chum seedings this season.

The total population of spawning Chum salmon in Area 11 rivers in 1969 was estimated to number 34,000, a good increase over the 13,000 Chums that returned to this Area in 1965.

Of all the Chum producing rivers in Area 12, only the Viner and Waterfall Rivers received heavy seedings of Chums with seedings of 50,000 and 20,000 respectively. The Nimpkish River with 5 - 10,000 Chum on the grounds experienced one of the poorest seedings on record. All other systems in this area received light returns of this species.

The smaller rivers of Area 13 in 1969 generally received satisfactory seedings of Chum salmon, in many cases 50% heavier than the seedings of the brood year. Spawning runs to the larger rivers of the area, however, were disappointingly light; the Homathko River received a negligible Chum run this season, the Stafford, Phillips and Salmon, light runs.

Spawning Summary (cont'd) District 5

Chum salmon returns to Area 27 streams were satisfactory this season, almost all reported streams hosted Chum runs of some consequence. Seedings generally were heavier than the seedings of the brood year with total stocks of spawning Chums being estimated at 21,000 fish as compared to 18,500 in 1965.

Springs - Conservation District 5 rivers, with only a few exceptions, received weak returns of Spring salmon in 1969. The Wakeman River of Area 12 and the Campbell River of Area 13 are thought to be the only two rivers in the District which received seedings equal to the seedings of the brood year. The Nimpkish River in particular, received an extremely light seeding of Spring salmon in 1969, 3 - 500 as compared to a brood years seeding of 2 - 5,000.

Weather Conditions and Water Levels - the winter of 1968 - 69 was unusually harsh, with heavy snow cover and below normal temperatures prevailing until the end of February 1969. This harsh weather apparently had no adverse effect on salmon eggs, for fry production in local rivers appeared to be average or above average, large schools of Pink salmon fry being observed adjacent to river mouth during the months of April and May of 1969. Favourable weather conditions prevailed from March to December, rainfall was about average throughout the year, temperatures moderate, and water levels mormal except for a brief period in late November and December when freshet conditions occurred for a brief period in some northern Vancouver Island rivers.

Fry Salvage - water levels in the Districts streams did not drop to critically low levels during the summer of 1969 and consequently the need for carrying out large scale fry salvage operations did not occur. Minor fry salvage operations were carried on in the Quatsino sub-District, however, where 500 stranded Coho fry were salvaged from the Benson River and 150 Coho fry released from isolated pools in the Quatse River.

Herring - after a period of low abundance, herring stocks of District 5 are apparently in the upswing and in 1969, a total of 76,450 lineal yards of medium density herring spawn were located and inspected in the area, a 100% increase over the herring spawn deposition of the previous year.

Area 13 herring stocks in particular returned to near normal strength in 1969, depositions of 15,920 lineal yards of herring spawn being located in Bute Inlet, Loughborough Inlet and east shore Quadra Island. During the 1968 season, total depositions of herring spawn in the Quathiaski sub-District amounted to 700 lineal yards.

Weather conditions during the herring spawning and egg incubation period were excellent and little mortality is thought to have occurred other than normal loss due to hydration and bird predation.

Environment, Multiple Water Use

Pollution - the Port Alice pulpmill owned by Rayonier Canada (B.C.) Ltd. located at the head of Neroutsos Inlet in the Quatsino sub-District continues to be one of the chief sources of air and water pollution in this District.

The Port Alice mill, one of the few sulphite mills on the B.C. coast, produces 500 tons of dissolving grade alpha-cellulose per day using, in the process, 58,000,000 U.S. g.p.d. of fresh water. Calcium bi-sulphite is used to break down the wood chips. Chemicals used in the bleaching process are chlorine, chlorine dioxide, hypochlorite and sodium chlorate.

There is no treatment or recovery of spent liquors or wastes; all effluent is discharged directly into Neroutsos Inlet. This mill has been depositing untreated effluent and wastes into the inlet for over half a century with the result that Neroutsos Inlet can now be described as a biological desert, intertidal organisms being practically non-existent within one mile of the mill.

The dissolved oxygen concentration in the waters of Neroutsos Inlet, which averaged 6.0 p.p.m. adjacent to the pulpmill to 8.3 p.p.m. at the entrance to the inlet in August of 1957, deteriorated to 2.9 p.p.m. near the mill site and 6.0 ppm at the Neroutsos Inlet entrance on October 8th, 1969.

Rayonier Canada (B.C.) Ltd. plan to convert the Port Alice mill from a sulphite to a recoverable ammonia base, at a cost of 2 to 2.5 million dollars sometime in the future, but their present plans do not call for the installation of recovery equipment, cost for such equipment being a further 3 to 4 million dollars.

The large Elk Falls pulp and paper mill of Crown Zellerbach of Canada Ltd., located at Duncan Bay, is a major source of air and water pollution in the Campbell River area. This mill burns its black liquor to recover chemicals, but has no retention facilities for sewered effluent, discharging all spent liquors directly into Discovery Passage.

The degree of harm that these spent liquors do to fish life is debateable, but in recent years the large kelp beds which formerly flourished in the waters adjacent to the sewer outfall have died off. Numerous complaints have been received in recent years from commercial troll fishermen of large quantities of fine wood fibres fouling their lines and hooks while fishing within one to three miles of the Elk Falls mill.

Mining operations which presently are polluting Conservation District 5 waters frequented by fish to a greater or lesser degree are as follows: -

Coast Copper Mine - a Cominco copper-iron operation which dumps its tailings into Benson Lake of the Marble River system. The addition of flocculants to the tailings has not succeeded in settling the fines in a satisfactory manner and "milky" water is presently carrying through Benson Lake into Kathleen Lake and on occasion into Alice Lake. The settling of fines on the gravel and vegetation of this system can do nothing but harm the rearing and spawning potential of the affected area.

Western Mines - a lead, zinc, copper and gold mine located on Myra Creek at the head of Buttle Lake headwaters of the Campbell River system. This mine deposits its tailings into Buttle Lake, the source of the town of Campbell River's domestic water supply. Flocculants added to the tailings appear to successfully settle the fines, but on occasion the lead content in the water adjacent to the tailings outfall has risen to unacceptably high levels. To date, there has been no apparent deleterious effect on acquatic life in the Buttle - Campbell Lake system.

Environment, Multiple Water Use (cont'd) District 5

Logging continues to be the cause of much pollution in District 5 at the present time. Siltation of spawning beds through run-off from logging roads and through the breakdown of stream banks by logging machinery, is a major problem, as is the deposition of logging debris into water courses either advertently or inadvertently.

A continuing programme of field inspections, liaison with camp management personnel and educational programmes, mitigates the pollution problem and all top logging management personnel are well aware of the necessity of environmental protection for the conservation of the fisheries resource.

Pollution from domestic sewage is a continuing and growing problem on northern Vancouver Island. Sizeable and rapidly growing communities such as Campbell River, Port McNeil, Port Hardy and Port Alice have no sewage treatment facilities and all deposit their sewage into the ocean. The situation at Port Hardy is particularly serious, for here a rapidly growing community of 2,000 to 2,500 people which will probably double in size in the next two years, deposits chlorinated sewage directly into an enclosed bay, adjacent to clam beds, from which clams are dug for processing at the Port Hardy Seafood Products cannery.

Industrial Developments - industrial developments in the various sub-Districts of Conservation District 5 during 1969 are as follows: -

Utah Mining Company continues to make fast progress in developing its open pit copper-molybdenum mine on the shores of Rupert Inlet. The size and location of the ore body has been exactly determined by extensive diamond drilling operations; the mill site has been cleared and a barge landing site is under construction. Housing for management personnel is under construction at Port Hardy.

Coast Copper Mine - Cominco operation at Benson Lake has announced tentative plans to double ore production within the next two years.

MacMilland and Bloedel Co. Ltd. started a new logging operation in Phillips Arm adjacent to Shirley Creek (a non salmon producer). This logging show has a tentative life of 10 years.

Road construction paralleling the Seymour River is under way preparatory to the conducting of logging operations in the Seymour River watershed by McDonald Cedar Ltd. in 1970 or 1971.

15 miles of forest access road has been constructed on the west bank of the Homathko River, Cumsack Slough to Brew Creek in preparation for logging operations which will be conducted in 1970 by Bay Forest Products Ltd.

Two new sizeable motels are under construction in Campbell River.

The "Prawn Shop", a retail establishment specializing in the retail of fresh fish, the custom smoking of salmon and the cannery of sport caught fish, closed its doors in the fall of 1969.

Obstructions and River Diversions - stream clearance and improvement work carried out in Conservation District 5 during 1969 was as follows: -

Mussel Creek - logging debris cleared by Kyoquot Logging Co. under threat of prosecution.

Hyde Creek - log jam and beaver dam cleared by Rayonier Logging Co.

Clearwater Creek - logging debris cleared by Sparmac Logging Co.

MacKenzie Creek - a log jam and a bridge against which the jam was lodged, cut and burned by Departmental patrol personnel.

Eva (Teaquahan) River - in an attempt to stabilize the lower portion of the Teaquahan River, an important spawning ground for Spring salmon, the Resource Development Branch constructed 1,500 feet of dykes to confine the river to one channel. Also cleared was an overflow channel to care for flood discharges. Cost of the project was about $1,000.

White Rock Pass Creek - under contract to the Resource Development Branch, a local logging operator removed a collapsed logging bridge that was blocking the ascent of Chum salmon to spawning grounds in the upper portion of the creek.

Hansen Creek - at the request of the Department of Fisheries, the Department of Highways installed an additional culvert, one to take care of peak discharges and to eliminate a point of difficult passage for Chum salmon.

Elk Creek - MacMillan and Bloedel Co. Kelsey Bay division cleared logging debris from this creek at the request of the Department of Fisheries.

Side Channel, Campbell River - Raven Lumber Co., upon request, removed a gravel fill that was preventing access of Chum salmon to spawning grounds in the upper reaches of the side channel.

During 1969, Departmental personnel attached to Area 13 by hand labour, power saw and powder removed log jams or beaver dams from the Bear River, Hemming Bay Creek, Hyacinthe Creek, Orford River and various unnamed creeks.

Tributary Macjack River - departmental personnel with the aid of powder removed an obstruction approximately 10 feet high created by a log jam backed up by gravel. This jam was preventing access of Coho to a small lake on this system.

Colony Creek - 20 beaver dams were opened up in the fall of 1969 by departmental personnel using one case of powder.

Quatse River - four beaver dams opened by hand labour.

Kwakwesta Creek - departmental personnel with the aid of a power saw removed obstructions which were preventing Chum salmon from utilizing one mile of excellent spawning gravel.

Benson River - Cominco employees of Benson Lake Mine under instruction from local departmental personnel, with the use of Caterpillar tractor, cleared a channel of the Benson River of windfalls and debris.

Gravel Removal - the larger logging companies operating in District 5, realizing the use of river gravel for road construction was frowned upon both by the Department of Fisheries and by the general public, now go to considerable lengths to fill their gravel requirements from sources other than river bars.

Several companies, however, did make application during 1969 to the Department for permission to remove various amounts of gravel from the following listed rivers, and these applications were closely examined and approved with reservations: -

Wakeman River - Wakeman Sound
Wahpeeta Creek - tributary of Wakeman River
Washilas River - Knight Inlet
Macjack River - N. Coast Vancouver Island, Area 27
Eve River - tributary Adam River - flowing into Johnstone Strait.

Logging Operations - extremely heavy snow depositions during the severe winter of 1968-69 compelled logging camps along the B.C. coast to remain closed for an extended period of time. As a result, a shortage of logs developed in the spring of 1969 and logging camps throughout the area expanded their operations to meet the increased demand.

New or expanded logging operations affecting the fisheries resource in District 5 in 1969 were as follows: -

A forest access road is being constructed adjacent to the Seymour River to top virgin timber in the upper reaches of the Seymour Valley where McDonald Cedar Products hold an annual cutting permit for 20 million F.B.M.

Logging operations adjacent to Rainbow Creek, Seymour Inlet commenced in 1969 will be completed in 1970.

A portion of Lake McBryer shore, watershed of Warner Bay Creeks was logged in 1969.

New logging operations opened up in 1969 on the Wakeman River, Atway Creek, Clearwater Creek, Washilas River, Mussel Creek, Boughey Creek, Shoal Harbour Creek and Eve River.

Close liaison was maintained with the supervisors of all the above-mentioned operations and problems were resolved through discussions, recommendations and/or instructions.

New or expanded logging operations in the Quathiaski sub-District were as follows: -

Southgate River - a large operation conducted by Cattermole-Thretheway Contractors Ltd. is now logging timber on Bishop Creek, a major tributary of the Southgate River, close to the divide between the Chilco and Southgate watershed.

Homathgate River - logging operations being conducted adjacent to the Jewakwa River, the west bank of the Homathko, 14 miles from the mouth to be logged in the summer of 1970.

Salmon River - Logging continuing in the upper reaches of the Salmon River including its tributary the Memekay.

Environment, Multiple Water Use (cont'd) District 5

White River - extensive logging being carried out from the mouth to a point 15 miles from the junction of the Salmon and White Rivers; road is being pushed adjacent to the White River at a rate of five miles annually.

Logging operations were conducted during the year on 15 watersheds in the Quatsino area - the Macjack, Denad, Goodspeed, San Josef, Kwatleo, Hathaway, Gatleo, Stephens, Benson, Marbel, Nahatta, Waakwaas, Kwaquodie, Cayeghle and Cleagh. Rayonier Canada Ltd. continue to increase their operations on northern Vancouver Island and now have a large base at Holberg.

Water Licence Applications - a total of 22 water licence applications were received and processed in District 5 during the 1969 season. The majority of these were approved with the proviso that all intakes to be screened to prevent destruction of salmon and trout fry.

Water licence applications involving large quantities of water were as follows: -

The greater Campbell River Water District applied for 15 CFS of water from Lower Quinsam Lake and 5 feet of storage in Upper Quinsam Lake to augment present water supplies received from the Buttle-Campbell Lake system. This application was protested by the Department on the grounds that salmon and trout runs to the Quinsam River would be harmed by resultant low water flows ponding etc. if the licence was granted. Licence not granted to date.

Quadra Bell Mines made application for 1,000,000 g.a.d. of water from an unnamed creek which flows into Gowland Harbour, for the purpose of processing copper ore. No or very few salmon are believed to utilize this creek.

A licence for 14 acre feet of water per year for irrigation and 1,500 g.a.d. for domestic purposes from Stowe Creek, a tributary of the Salmon, was granted in 1969; this is a revised application after the original application for 42 acre feet per year was protested as unwarranted and harmful to the fisheries resource.

An application for a licence for sufficient water from Cold Creek, a tributary of the Quinsam River, to generate 500 K.W. of power was approved, but the project not proceeded with due to excessive cost.

Utah Mining and Construction Co. has made application for 33.5 c.f.s. of water from the Marble River system for use in their mine-mill operation presently under construction on the shores of Rupert Inlet, Area 27. This company has also made application for 50,000 g.p.d. of water from Stephens Creek. This water to supply a construction camp housing 450 men, both applications are pending.

Placer Mining Applications - there were no placer mining applications received in District 5 during 1969. No known placer mining operations are presently being conducted in the area.

Trends in the Fishing Industry

Impact of the salmon licence limitation programme on the fishing industry became more pronounced in 1969 when, for the first time in years, few new vessels were added to the local fleet. To date there has been no

noticeable reduction in the size of the fleet. If anything, the number of effective operating vessels has been increased, for the new vessels replaced Class "A" vessels that were almost inoperable.

For the second successive year, a kelp harvesting machine operated in the District. This harvestor, in conjunction with a dryer barge, based at Port McNeill, harvested kelp beds adjacent to Malcolm Island.

A new type of floating, hydraulic clam dredge operated intermittently on beaches adjacent to Cortes and Quadra Islands during the late summer, fall and winter of 1969. This dredge, representing an investment of possibly $18,000 and operated by three men, could not be classed as successful, for at no time did it produce more clams than one active man could dig with a clam fork in the same period of time.

In the Alert Bay sub-District during the 1969 season, distribution of the salmon catch changed somewhat from that of 1968, with trollers taking 29.1% of this species up from 12.5% in 1968. Seiners managed to increase their share of Spring salmon by intensifying their efforts in Parsons Bay, from 27% in 1968 to 35.3% this year.

Enforcement

In 1969 a total of 37 prosecutions were initiated and brought to successful conclusion by Fishery Officers and marine personnel attached to Conservation District 5.

Of the 37 violations for which prosecutions were initiated, 29 were connected with the commercial fishery, one the Indian food fishery, and six the salt and fresh water sport fishery.

A large proportion of the boundary infractions were the result of carelessness on the part of the fishermen concerned and are not considered to be of a serious nature. The most serious violation was that of a fisherman found to be in possession of a long net, his second conviction for this offence in a matter of weeks. A heavy fine was imposed and the illegal net declared forfeit.

The various infractions of the Fisheries Act and B.C. Fishery Regulations for which prosecutions were initiated were as follows: -

Fishing without being in possession of a personal fishing licence...13
Fishing behind river boundaries..... 8
Fishing without valid licence tabs..... 2
Open seine net..... 1
Deposition of a deleterious substance in a river..... 1
Illegal possession of an overlength gillnet..... 1
Fishing in a closed area..... 1
Illegal possession of salmon in a closed area..... 2
Selling salmon taken under a food permit..... 1

Sports Fishery Violations

Illegal possession of undersized salmon..... 3
Use of illegal sports gear..... 3
Molesting salmon on the spawning grounds..... 1

Enforcement (cont'd) District 5

Generally speaking, closed season and closed areas were well respected by commercial fishermen operating in the District during the 1969 season. The short two day fishing weeks (3) and a ten day closure enforced during the height of the fall Johnstone Strait Chum salmon run created dissatisfaction among local fishermen, some of whom at one point, advocated fishing regardless of weekly closed periods or special closed seasons. Common sense prevailed, however, and the Johnstone Strait closures for the conservation of Gulf and Fraser Chum stocks were not violated.

It is suspected that the high prices paid for halibut during the 1969 season for halibut encouraged unscrupulous trawl fishermen to contravene the section of the halibut regulations which forbids the retention of halibut caught by means of a trawl. Rumours persisted throughout the 1969 season that halibut taken by means of trawl in Area 27 were being transferred to trollers and longliners for sale. Repeated checks on suspected violators failed to produce any evidence of illegal activities.

One case of retention of Coho before the opening date of June 15th leads one to suspect that ice-packing trollers operating in remote waters may be contravening the B.C. Fishery Regulations upon occasion by following the U.S. fishermen's example of taking Coho before the opening date. Pre Coho season checks of camps and boats in the Winter Harbour - Bull Harbour, however, uncovered only one violation of this nature.

In 1969, as in previous years, the term charter aircraft proved its worth as an aid to law enforcement in District 5. Early morning and late evening patrols at various times throughout the season deterred would-be violators of the "Surf Line", river and closed area boundaries. The aircraft was also used to advantage to check for long nets and set nets and to carry out gear counts. Pollution of spawning grounds by logging debris was also detected on several occasions through the use of the term or charter aircraft.

Special patrols for the enforcement of the Acts and Regulations carried out in 1969 were as follows: -

A pre-season halibut patrol in Area 11, 12, and 27 for the prevention of or detection of illegal halibut fishing.

A pre-season Coho patrol in Area 12 and 27 to prevent or detect the taking of illegal Coho.

A net measuring "campaign" during the Johnstone Strait fall Chum fishery to detect the use of illegal "west coast" gillnets (one violator prosecuted).

It is recommended that to abate the incidence of "Surf Line" violations by gillnet fishermen operating in Area 27, that more frequent patrols be made by headquarters vessels in the Brooks Bay, Quatsino Sound entrance during the months of July and August. Also that the use of "San Juan" gillnet and seine nets in Johnstone Strait during the fall Chum fishery, after the close of San Juan to fishing, be detected by holding a "crash" net measuring programme, employing outside personnel and vessels as well as local personnel and vessels. Normally the local enforcement staff is too fully occupied in administering the fishery and collecting statistics during the hectic Chum fishery to effectively police the area for long or illegal nets.

Predators District 5

Sea Lions - the sea lion population of District 5 remains relatively static with no increase or decrease noted during the past year. Chief pupping grounds are located on Triangle, Sartine, and Beresford Islands and the total population of these islands is estimated at approximately 3,000 - 3,500 animals. No sea lions were shot by departmental personnel but undoubtedly numbers of the animals were destroyed by troll, gillnet, halibut and eulachon fishermen who shoot sea lions on general principal whenever the occasion presents itself.

Hair Seals - Hair seals are abundant throughout all the waters of the District and are particularly numerous adjacent to the mouths of the large mainland inlets where they are a serious predator to migrating Spring salmon. Thirty hair seals were killed by seasonal departmental personnel - 12 in Seymour and Belize Inlets, 5 in the lower reaches of the Nimpkish River, 2 in Klaskina Inlet, one in Klaskish Inlet and 10 at the head of Bute Inlet.

Bears - due possibly to light salmon runs throughout the area or possibly to encroaching logging operations, comparatively few grizzly bears were sighted on mainland rivers during the season and no grizzlies were shot by departmental personnel. Black bears appeared to be numerous in the Quatsino sub-District and in Area 11 but not particularly numerous in Areas 12 or 13. Heavy predation of Chum salmon on some of the smaller streams of the area necessitated the destruction of nine black bears by seasonal departmental employees. These bears were destroyed on the Quashela River and Jap Creek in Area 11, Nimmo and Mackenzie Creeks in Area 12, and Jims Creek (3), Denad Creek and Quashten Creek of Area 27.

Grayfish (Dogfish) -grayfish were numerous in all sub-Districts of this District at various times in 1969. They were particularly numerous in upper Johnstone Strait during the salmon season where on occasion they hampered seine and gillnet operations. In the fall very large schools of grayfish were to be found in Discovery Passage, particularly Deepwater Bay where they appeared to be following and feeding on herring schools. Sport fishermen operating in the Campbell River area were plagued with grayfish throughout the summer months. In the Gulf of Georgia adjacent to Quadra Island, on occasion, it was impossible to troll for salmon with herring or herring strip for inevitably grayfish would take the bait in short order.

Killer Whales - killer whales were present in their usual abundance in all waters of the District and with less, but with normal abundance, during the winter. For the first time in some years, no killer whales were captured in this area although one determined fisherman, a resident of Sointula, obtained a special permit which allowed him to capture killer whales with a large meshed gillnet and made repeated attempts to capture one or more of the specie.

Other (Mergansers etc.) - Mergansers, gulls, scoters, and eagles are all plentiful in the area and all are predators of fish life to a varying degree. With the exception of mergansers which are sometimes shot in early summer by seasonal employees when found to be feeding heavily on salmon fry, there has been no attempt made to reduce their numbers.

Information, Educational and Other Programmes

Fishery officers attached to the District carried out a continuing educational and public relations programme during 1969. Most of the

public relations programmes were carried on through meetings with the logging industry, although on occasion, cub-packs were addressed, talks given to local Rod and Gun Clubs and fishermen's meetings were attended to explain departmental policies and programmes. Films were also shown on occasion to various organizations.

Assistance was given throughout the year to personnel of the Resource Development Branch in the form of transportation, information, upkeep and care of water recorders, thermographs etc. F.I.P. personnel and Fish Inspection people were also assisted on numerous occasions by the supply of transportation, accommodation and inspection of vessels when the occasion demanded this service. In every circumstance, assistance was rendered willingly by personnel of the District to personnel of other branches of the Department, and it is felt that co-operation between the Conservation and Protection Branch and other branches, is at a high level in this District.

Communications at a working level are maintained with the B.C. Forest Service, Department of Recreation and Conservation, Department of Health and Welfare, Department of Indian Affairs, the R.C.M.P. and the Department of Highways.

DISTRICT 6

Fisheries

Commercial Fisheries

(a) Salmon - the 1969 commercial salmon fisheries were considerably below average in production of Sockeye, both the Rivers and Smith Inlets areas being below par and of other species comparatively light, although an encouraging improvement occurred in the current Chum salmon cycle. Coho landings were surprisingly depressed in the light of brood year achievement.

The 250 gillnet boats present in the Smith Inlet area was about normal but fishing activities were conducted generally closer in-shore than has been the practice in recent years. The Rivers Inlet gillnet fleet was a mere 900 boats at the peak, but proved themselves to be all too efficient, particularly with 60 of them operating trolling gear during daytime when they out-fished the nets by a ten to one margin. Purse seine fishing again was permitted in the Addenbroke Point vicinity during the Sockeye migration period but the depressed volume of that species (and possibly the migration route pattern) rendered operations by no more than 27 seiners quite ineffectual.

Only thirteen days fishing could be permitted during the Sockeye fishery and even that restriction could not achieve an optimum catch: escapement ratio in Area 9, but the result in Area 10 favoured the escapement to some degree. Seventeen days fall fishing produced only mediocre catches and an additional two days special late opening in Rivers Inlet resulted in landings which were hardly worth the effort.

Of special concern was the impact of day-trolling efficiency among the Rivers Inlet gillnets whereby substantial quantities of potential spawners were removed from depths where heretofore escapement had occurred unimpeded. It appears to be imperative that these catches, if allowed to continue, be more accurately segregated, recorded and assessed.

Fisheries (cont'd) District 6

(b) Herring - there were no herring pond, food or bait operations within the District this year. Continued lack of abundance precluded any fishery for the second successive year and there remains no indication of any appreciable local stock rehabilitation.

(c) Halibut - trollers took 442 cwts. of halibut, mostly in Area 10; the long line fishery, chiefly in Area 9, produced another 488 cwts. Aggregate landings of 930 cwts., valued at some $39,000, was double the 1968 catch.

(d) Groundfish - Ocean Perch landings declined sharply from 983 cwts. in 1968 to only 284 cwts. currently. Other landings included 121 cwts. red and rock cod, 349 cwts. ling cod, 204 cwts. black cod, 70 cwts. non-food fish and 100 lbs. sturgeon. Total landed value of these species was slightly in excess of $11,000, about 50% of last year's highest recent figure.

(e) Shellfish - for the first time in recent years, local stocks of butter clams were exploited, yeilding 711 cwts., worth about $5,000.

Smith Inlet waters, principally those of Ahclackerho Channel, produced 124 cwts. of prawns, slightly less than in the previous year, assessed at $6,000 value. There were no unusual developments in this small fishery but probably it is incapable of much expansion unless catch locales can be considerably extended.

Sport Fisheries (Tidal Waters)

Sport fishing, except by very occasional forays by the odd local enthusiast, was confined to 690 boat days in July, August, and September. In Rivers Inlet, more than 600 special angling permits were issued but catches were unimpressive. Fish were not readily available to the sportsmen; weather and repeated blackfish occurrances were restrictive. The trend to intercept migrant Springs at Hakai Pass, before they are exploited commercially locally, is becoming more pronounced annually - for good reason. There was no record of any catch from Smith Inlet although it is known that a sporadic effort was conducted in the vicinity of Wyeclese Lagoon, mainly by passing tourists.

Indian Food Fishery

All fish were taken from the Whannock River, Rivers Inlet, as food for the 150 people resident in the adjacent village; there are no resident Natives in Smith Inlet. Seven permits were issued, all for the use of short gillnets.

Spawning Summary

Sockeye - the escapement of some 300,000 Sockeye to the Owikeno system, although about equal to the brood years' mean, was disappointingly light but the Long Lake tributaries' seeding of about 125,000 fish was heavy, improving this cycle there.

Coho - spawning was light throughout the District and, with the exception of some Owikeno streams reflected a decline from the fairly good brood year.

Pink - a typical "off" year escapement, very light seedings occurring in only a few streams.

Spawning Summary (cont'd) District 6

Chum - there was some improvement over the brood year in most streams but rehabilitation to full potential is still very distant.

Springs - a low level return to both areas resulted in one of the lightest escapements on record.

Weather Conditions and Water Levels -

March -	Variable, generally cold; flows below normal.
April -	Considerable rainfall; levels gradually rising.
May -	Clear and warm; flows above normal.
June -	Unsettled, cool; flows normal.
July -	Cloudy, cool rain; levels high at mid-month.
August -	Very similar; flows abnormally high.
September -	Cloudy, rain, high snow; flows low-normal.
October -	Overcast, progressively colder; flows unusually low.
November -	Overcast, gales, heavy rain, mild; levels high at month-end.
December -	Overcast, gales, mixed rain and snow; flows seasonably low.
January -	Unsettled, unusually mild; levels normally low.
February -	Mostly clear, mild; flows very low.

Fry Salvage - five thousand Sockeye and one thousand Coho were salvaged in Whannock River. This was our first opportunity for appreciable salvage; it is hoped that these efforts can be expanded as occasions may demand and better equipment arranged for.

Herring - absence of frost conditions enhanced survival probability; bird predation was considered normal. Deposition was apprehensively light in view of the total absence of fishing effort.

Environment, Multiple Water Use

Pollution - discharge of domestic sewage into these isolated waters continues to be a problem. Control of logging debris is comparatively good and is improving. There are no other pollution sources at the moment.

Industrial Developments - Only the logging operators are gradually expanding their raw products harvesting on a comparatively small scale, but there are apprehensive indications that this expansion will escalate to the accellerated detriment of the fisheries resource in the immediate future. One small portable sawmill, constructed locally by the operator, a resident, and producing only minor quantities of rough lumber, commenced operation in Rivers Inlet this year.

Obstructions and River Diversions - attempts to remove log jams, which constitute no blockage to fish but can be otherwise somewhat detrimental to environment and access in Cheo and Shumahalt Rivers were in vain. Partial clearance or circumvention will be required as occasions demand. The threatening situation of a serious Markwell River break through into the upper Genessee River was in no way alleviated this year and remains a grave probability until preventive measures are taken.

Gravel Removal - demands for gravel from streams for use in construction of logging access roads continue to increase. Through local liaison and cooperation, it has been possible to fulfil requirements from Chuckwalla and Nekite Rivers without affecting fisheries, to date.

Logging Operations - the same operators, two companies and a hand logger in Owikeno Lake and companies at Chuckwalla and Nekite Rivers and on Ahclackerho Channel, as functioned in 1968, continued their activities currently. Annual harvesting by all concerned is gradually increasing as areas of operation are expanded and allowable yields are increased. For the present, fisheries interests are being well protected and salmon spawning watersheds involved are very limited; continued expansion, however, indubitably will aggravate the situation and apprehension for the fisheries in this regard is unavoidable in the light of past experience. Control of lake debris deposits is improving and, although three log tows were necessitated down the Whannock River currently, logs have since begun to move over the road and it is hoped that river towing there is now entirely history.

Water Licence Applications - again, no notices of application for water rights were received during the year.

Placer Mining Applications - there is still no indication of interest in any mining within the District.

Trends in the Fishing Industry

With one exception, at Wadhams, the remaining old cannery and fishing camp structures continue to deteriorate gradually to point of abandonment. Good Hope and Margaret Bay camps did not function as such currently and it appears that Goose Bay, Beaver and Boswell may be phased out. Seasonal mobile floating camps and cooperative fish collecting and packing arrangements, together with the use of brine boats, form the accepted modern concept.

There is no local fishing vessel construction; the few Native boats that remain are gradually disappearing for want of adequate maintenance and attention.

The general fleet condition improves annually as the gillnet boats continue to become better equipped and vastly more efficient. Trolling techniques had a markedly improved Sockeye catching success currently. Seine boats are gaining increasing opportunity for local operation every year but have not proven to be overly effective except in making seriously apprehensive inroads into a dwindling inadequate Spring salmon stock, or where Sockeye or Pink salmon abundance is well above average.

Foreign trawlers operate at intervals in the off-shore areas of Queen Charlotte Sound but as yet there have been no local incidents.

Industry was unaffected by disputes in 1969.

Enforcement

No infractions were detected in the Sport or Indian Food Fisheries. Commercial fishing violations were fewer than in any recent years, all six being of a comparatively minor nature, principally careless boundary violations. Fines totalled $575.00, the one fish forfeiture realized $36.48.

All closed seasons were well observed in every fishery.

Officer checking the licence of a commercial fisherman.

Enforcement (cont'd) District 6

Well organized programming of vigilant and determined patrols by both departmental and seasonally employed personnel with their vessels, combined with surprise patrols by speedboat, aircraft and Protection Cruisers, have been effective in minimizing regulatory abuses. Fishermen generally are becoming increasingly management conscious and cooperative.

Predators

Sea Lions - departmental personnel destroyed eight sea lions during the season while local residents and fishermen killed several more. These mammals still are plaguing fall season salmon fishermen but a fully effective control programme is difficult to visualize.

Hair Seals - hair seals were shot as necessary while harassing salmon on the spawning grounds, particularly in shallow waters of Shumahalt flats and the Second Narrows areas of Owikeno Lake where the fish were extraordinarily vulnerable.

Bears - grizzlies were plentiful but generally harmless and shy; only one endangered personnel and had to be destroyed in self defence; most were dieting on fish carcasses rather than killing spawners.

Grayfish - dogfish were not sufficiently abundant to create any apparent local problem.

Killer Whales - blackfish harassed the personal-use salmon fishermen and no doubt earned their share of the resource.

Other - wolves were very prevalent and preyed on salmon in their characteristic way but were typically elusive. Merganser ducks were numerous as usual.

Information and Other Educational Programmes

(a) Isolation and a scattered population precludes formal public relations programming but personal contacts with all concerned are regularly maintained.

(b) Assistance in the form of advice, local knowledge, accommodations, transportation, administration, handling and storage of equipment and participation in their programmes is regularly afforded the Resource Development, Fish Inspection, Fisherman's Indemnity, Indian Assistance, Information and Emergency Measures Organization Branches.

(c) Contacts with other Government Branches are maintained with the Royal Canadian Mounted Police, Indian Affairs, B.C. Forestry and B.C. Recreation and Conservation Departments.

DISTRICT 7

Fisheries

Commercial Fisheries

(a) Salmon - the drought and flood conditions of 1965 resulted in an unusually light return of Pink salmon in 1967. In addition, the light escapements suffered severe flood damage in January of 1968. For these reasons, so few Pink salmon returned to the waters of the District, that in spite of major reductions in the size of the open fishing areas and long periods of total closures, the spawning grounds were greatly underseeded. The Pink run to the Kainet River had seeded that river sufficiently in 1967 to indicate that a short fishery could be supported in the waters of Mathieson Channel. In retrospect, it now appears obvious that these spawning grounds had suffered from the January, 1968 flood to a very serious degree and this was reflected in the 1969 catch and escapement figures. The returns from Sockeye, Chum and Spring seedings of 1965 followed the pattern of the 1967 Pink production. The good returns of five year old Spring salmon to Area 8 and three year old Chum salmon to Area 7 reflect the strength of the 1964 and 1966 escapements, respectively

In summary, it is noted that the total catch of 198,000 salmon of all species reported taken in the Butedale sub-District in 1969 is the lowest catch ever recorded. In the Bella Bella sub-District the overall salmon returns were the lowest on record for any recent year except 1967, and were prevented from being the all time low only by the very strong return of three year old Chum salmon at the latter end of the season. Catches in the Bella Coola sub-District were the lowest on record. Conservation measures applied there were adequate for the stocks available. The Atnarko River Sockeye escapement was better than average. Weak runs of Coho were afforded maximum protection. Practically all the Atnarko Pink salmon that entered the area reached the spawning grounds. The greatly reduced fishing times permitted a reasonably good escapement of Spring salmon. It is, however, very evident that rehabilitation of the Pink salmon stocks of the central areas will require, in the odd year cycles, restrictions equally as stringent as those applied in 1969.

(b) Herring - in 1969, for the second consecutive year, the herring fishery in the central herring sub-District was restricted to a bait fishery and the total catch of only 198 tons reflects the weakness of the stocks. A herring monitoring programme designed to assess the size of the stocks failed to locate any major herring stocks in the Butedale or Bella Coola sub-Districts and located less than 2,000 tons in the Bella Bella sub-District. The very low level of abundance as determined through the monitoring programme was born out by the small spawn deposition of only 13,670 yards, well below the ten year average from 1959 to 1968 of 21,188 in Area 7.

(c) Halibut, Groundfish, Shellfish - halibut landings in Areas 6 and 8 are not important. Most fish are taken by gillnet fishermen who longline prior to the opening of the gillnet fishery. The Area 7 landings of over 450,000 lbs. valued at $192,000 were well above the previous years catch of 346,800 lbs. valued at only $87,000. The increased catch is due to increased effort rather than an improvement in the stocks.

The main incentive was an increase from an average 1968 price of 22.2 cents to 42.6 cents per lb. in 1969. The bulk of the catch was taken by gillnet type boats who rigged for longline fishing because of the restrictions applied to the gillnet fishery.

The Butedale and Bella Bella sub-Districts are very minor producers of groundfish. Trawl operations in the waters off Calvert Island account for fair landings of sole and ocean perch, while longline activities in the area produce minor black cod catches.

The only shellfish reported taken commercially in the District in 1969 were 31,100 lbs. of shrimp and prawn valued at $14,000. The bulk of this catch was made up of prawns taken mostly from Roscoe Inlet by one boat using traps. A minor proportion of the total catch consisted of shrimp taken in an unsuccessful test operation co-sponsored by the Department of Fisheries and the Indian Affairs Branch, using trawls.

Sport Fisheries

Tidal Waters - each year increasing numbers of persons travelling together in yachting clubs stop over in the various inlets of the Inside Passage. Although not many salmon are taken by these persons as compared to a resident population, enough are caught to make it very attractive to these people and as word spreads south of this excellent sport fishing, more people arrive each year. It is very difficult to estimate the numbers of salmon and crabs taken (every boat carries several crab traps), but it is felt that with the rapidly increasing numbers of pleasure boats, pressure on these stocks will continue to increase.

One charter service operating from a base on Hawkesbury Island from May to September reported taking 355 Chinooks (none less than 7 lbs.), and 150 halibut by 150 guests. The operator reported that only 8 Coho were taken this year. However, several halibut over 75 lbs. in weight were landed.

Non-Tidal Angling - the fishing pressure on the salmon stocks present in rivers and streams has once again shown an annual increase as more people move into this part of British Columbia, more public and logging roads provide access and more pleasure boats are purchased. Anglers fishing the Dean River caught and retained 1,148 steelhead, 45 Coho, 48 Chinooks, and 86 Jacks. The abusive practice of hooking and releasing was again prevalent. Bella Coola - Atnarko anglers took 210 Coho and 550 Chinooks. The largest Chinook reported taken from the Kitimat River this year was a 67 pounder landed by a visitor from Alberta. Because of the long hours of daylight, the pattern of shift work in the Aluminum Company of Canada smelter, and the rapidly increasing populations of Kitimat and Terrace areas, the pressures on the salmon stocks in streams tributary to Douglas Channel - Gardner Canal continue to increase.

Indian Food Fishery

Kitamaat Village - individual permits are issued on an annual basis allowing these fishermen to fish four days each week with a maximum of 50 fathoms of gillnet, in Kitimat Arm and Douglas Channel south to Kitsaway. Additional short term permits are issued as required or requested for gillnet or seine operations or for setnet operations in some of the larger rivers.

Fisheries (cont'd) District 7

Hartley Bay - individual permits are issued on an annual basis and are for four days each week. In addition to Douglas Channel, permission is granted when requested to take fish from the Quaal and Kitkiata Rivers.

Klemtu - the Klemtu Indian Food Fishery was administered for the first time this year by the Bella Bella sub-District officer. Permits were issued for four days each week on an annual basis. Additional permits to take food fish by salmon gillnet during the weekly closed time were granted as required.

Bella Bella - this fishery is conducted in salt water and no fish are taken from the spawning grounds. Two major fisheries were carried out. The first, principally for Sockeye, took place from late May until just prior to the opening of the commercial Sockeye fishery in late June. The second, mainly for Chum salmon, followed the closure of the commercial fishery in September.

Bella Coola - this fishery is restricted to the lower four miles of the Bella Coola River and is limited to four days each week.

Atnarko River - four to six "Stick" Indians from Anahim are given permission to fish in the Atnarko River each summer. This fishery serves as a measure of the timing and strength of the Atnarko River runs.

Namu - a very small fishery takes place in Fitzhugh Sound by Natives employed in the B.C. Packers Plant there.

In addition to the salmon landings, the following catches of Eulachons were made:

Kemano River	- 68,000 lbs.
Kildala River	- 96,000 lbs.
Kitimat River	- 110,000 lbs.
Bella Coola River	- 14,000 lbs.

Spawning Summary

Sockeye - Sockeye escapements to the Kitlope, Kitkiata, plus the smaller systems in Area 6 totalled only 11,000 spawners, which is but one-tenth of the 1965 and 1964 brood year escapement. Area 7 runs to the dozen Sockeye streams there totalled only 6,000 fish, of which twenty-five percent were Jacks. Average escapements over the last ten years exceeded 10,600 Sockeye. The early and lengthy closures in Fitzhugh Sound enabled the majority of the Atnarko Sockeye to reach the spawning grounds. Water conditions for these fish were fairly good, particularly as the West Creek diversion was functioning well. The total of forty thousand spawners was the largest to the Atnarko in many years. The Kimsquit escapement was light and to the Koeye and Namu Rivers very light.

Coho - the Coho escapement returning from a fairly good brood year seeding was very disappointing, particularly so for the early runs. In Area 6, the overall escapement was only 24,000 spawners from a brood year of over 100,000 and the catch was only 42,500 fish. The total Coho escapement to Area 7 was only 11,000 spawners compared to the brood year return of 19,000 fish and a ten year average escapement of 15,400 Coho. Spawning conditions in 1969 were reasonably good.

Spawning Summary (cont'd) District 7

Pink - a total escapement of only 102,000 Pinks to the 108 streams in the Butedale sub-District is the second lowest ever recorded and although it is up from the brood year escapement of 94,000, it must be remembered that this total escapement would not adequately seed any one of a dozen or more streams in the area. The Pink escapement to the Butedale sub-District has reached such a low level for the odd year cycle that total protection will have to be provided in 1971 to save this cycle from total extinction. In Area 7, the 150,000 Pink spawners on the grounds is recorded as light-medium as compared to the ten-year average escapement of 250,000. Several Area 8 streams which normally host "odd year" Pinks had none in 1969. The Atnarko return of only 15,000 spawners is a disaster, probably caused by the floods of January, 1968. The only bright spots in the Pink salmon story are the runs of 10,000 to Indian River and 40,000 to Koeye River, about one-third of optimum.

Chum - the Butedale sub-District Chum salmon escapement was only 71,000 spawners, which is far below the 1966 escapement of 300,000 and the 1965 escapement of 110,000. Most of these spawners entered with the Pinks and very few late run fish were observed. Early runs to Area 7 were generally light but the late runs of three year old fish showed surprising strength and the total escapement of 200,000 spawners was well above the ten-year average and far better than the 65,000 reported in the 1965 brood year.

This strength reflects the excellent 1966 seedings and indicates an excellent return for 1970. The improved runs to the Bella Coola sub-District followed the pattern of the Bella Bella runs with the strength in the three year old fish. Chum salmon entered some of the streams as late as November 5, which is about three weeks later than normal. The excellent showing of beach spawners at Kimsquit was composed of 5,000 early and 5,000 late spawners. These fish were larger, fifteen to twenty pounds.

Chinooks - the Chinook escapements to the seventeen rivers which support this species were equal to or better than those of the brood year. The greatly restricted commercial fishery aided escapement. An estimated total of 20,000 Chinooks escaped to the Area 6 streams and another 15,000 to the Area 8 streams. No Chinooks are produced in Area 7. Eighty-five percent of the Area 8 spawners migrated to the Atnarko system. Very few Jacks were observed.

Weather Conditions and Water Levels - Area 6 spawning conditions for 1969 can be classified as better than average throughout the actual spawning season with less than the normal amount of precipitation recorded. There was, however, sufficient water to allow the adults to enter and forced spawners to deposit their eggs in areas that would be covered with water throughout the incubation period. 23.43 inches of rain fell in November, making it the wettest November recorded in the past eighteen years, and the resulting flood in the Kitimat system no doubt caused some losses.

In Area 7, no extremes of weather were noted during the year and spawning conditions were generally very good.

Area 8 water levels throughout the summer and fall were lower than average and continued low throughout the winter months. There were no floods nor prolonged cold spells, and, although spawning and incubation conditions were not ideal, they were not harmful to the runs.

Spawning Summary (cont'd) District 7

Fry Salvage - fry salvage operations are not carried out as frequently as they should be in this District, mainly due to pressure of other activities that demand priority at the time of fry migration. The Kitimat River Guardian, however, found time to salvage 6,500 Coho, 500 Chinook and 3,000 Chum fry.

Herring - the spawning period in Area 7 from March 24 to April 15 was the shortest period noted in many years. Losses from weather and predation were about normal. The 13,670 yards of spawn depositied was about the 1965-1969 five-year average, but well down below the 1955-1964 average of 31,886 yards.

By the end of the normal herring spawning period in 1969, only 7,050 yards had been deposited in Area 6. However, on May 25, an additional 8,200 lineal yards were located on the southern tip and westerly shore of Hawkesbury Island. This was the first time such a spawning has occurred in many years. Hartley Bay Indians gathered an estimated 1,000 pounds of this spawn. Bella Bella Indians harvested another 1,500 - 2,000 pounds for food from Area 7.

Environment, Multiple Water Use

Pollution - Major sources of pollution in this District occur as a result of industrial development. The direct discharge of effluent from the Crown-Zellerbach Pulp and Paper Mill at Ocean Falls into the Cousins Inlet, should be examined by the pollution experts in the Resource Development Branch, with a view to proposing controls. The Aluminum Company of Canada smelter at Kitimat should be monitored more frequently, because of the changes which occur from time to time in the toxicity of the effluent discharged from the smelter site. Oil pollutions of our waters are becoming more common with the increasing numbers of deep sea ships taking on cargo in our ports. The practice of pumping bilges at each change in shift on board these vessels should be restricted while they are in port or passing through minor waters.

Ocean Cement in Kitimat washes large quantities of sand and gravel, and the silt laden discharge waters while not toxic, would be very detrimental to fish life if permitted to cover the spawning grounds. Their normal discharge is into a minor watercourse and no damage has been caused to date. One failure of their system occurred this year, but was corrected.

Eurocan Pulp and Paper Company Limited has a licence to divert 70 cfs from the Kitimat River. However, their permit from the Provincial Pollution Control Board is for a discharge of 15 million gallons per day into the Kitimat River. This discharge will be through a twenty acre lagoon and aeration system with a five day retention. This plant is expected to be producing by late summer of 1970.

The discharge of raw sewage into the Kitimat and Kemano Rivers continued to be a problem in 1969. However, a sewage lagoon should be completed at Kitimat by the summer of 1970. The Kemano discharge from a settlement of 400 people will be supplemented by discharge from a camp being constructed by the Eurocan Pulp and Paper Company Woods Division at Kemano.

A general increase in the number of logs being dumped and boomed in the small bays and inlets of the District has resulted in deep layers of bark and debris being deposited on the ocean floor at these locations.

Officer examining pollution of a salmon stream.

Environment, Multiple Water Use (cont'd) District 7

Industrial Developments - the Eurocan Pulp and Paper Company mill will not come on stream until late 1970. However, the mill itself has now been all enclosed, hydraulic barkers installed, and digesters completed. The infiltration galleries are functioning and the effluent disposal lagoons are ready for surfacing. The bulk loading and unloading facilities at the head of Kitimat Arm are nearing completion. Approximately one and one-half million cubic yards of fill were pumped from the sea bed in the construction of these facilities. The dock will be used to off-load Ootsa pulp logs floated in from Kemano, and for outgoing lumber and pulp and paper products.

Crown-Zellerbach and Portal Industries continued their feasibility surveys for pulp mills at Bella Coola, but to date no firm commitments have been made. The impact of the 1,000-1,200 construction workers employed in building the Eurocan Mill has been considerable on the economy, the sport fishing and the effluent disposal systems at Kitimat and if a similar development takes place at Bella Coola, the impact will be much greater. Homes in Bella Coola are on septic tanks and if an increase in population occurs, proper modern facilities will have to be constructed.

The Provincial Government Department of Highways planned a highway from Williams Lake to Bella Coola to be constructed in anticipation of the pulp mill. Construction has been located down the right hand side of the Atnarko River from the Hotnarko Valley. A tote road now makes it possible to drive from Bella Coola to the Hotnarko Canyon. The construction of this new highway will be controlled as much as possible, but it will result in harm to the spawning grounds by (a) relocation of sections of the river, (b) removal of forest cover, and (c) permitting access to the river for Indian fishermen, anglers, and tourists.

Obstructions and River Diversions - only one major diversion occurred in this District in 1969. The facilities for the Eurocan Pulp and Paper Company infiltration gallery were installed in the Kitimat River without harm to the salmon resources.

An extensive stream clearance programme was conducted this year by Crown-Zellerbach in areas where in the past, poor logging practices had obstructed several small but important Coho producers. Eight streams were cleared by mobile machinery and hand labour under direct supervision of departmental personnel. This programme resulted from a major change in company policy following a court conviction. Runs of adult Coho were observed in all streams in the fall of 1969.

A few minor log jams and beaver dams were opened as required, and as time permitted during the season. The beaver population is continuing to increase and a major control programme will have to be initiated in the near future.

Gravel Removal - the increasing industrialization of the Kitimat Valley and the pattern of logging in the major watersheds of the District means more frequent demands for gravel from the rivers. It is recommended that the protection of gravel removal orders be granted to the Kitimat River tributaries, the Dala River, the Kildala River and the Kemano River, since several companies will be operating on each of these watersheds.

Environment, Multiple Water Use (cont'd) District 7

Logging Operations - Eurocan Pulp and Paper Company built approximately ten miles of raod in the Kitimat Valley and this included a very important road link from their deep sea port facilities to the millsite and a major logging road bridge across the Little Wedeene River. In addition, they completed thirty miles of road from Tahtsa Lake to the mouth of the Kemano River. A strike by the Independent Woodworkers of America completely tied up their forest production in the Kitimat Valley.

Crown- Zellerbach constructed over thirty-four miles of road and continued an all out effort to log out their holdings as quickly as possible. The mild winter permitted a very large volume to be felled and resulted in some problems of over supply of felled and bucked timber on the ground.

MacMillan Bloedel Ltd. logging old holdings in the Kitimat Valley caused many problems for field staff. Logging was done by several small contractors. Two pole cutting contractors moved ahead of the logging contractors to "high grade" the holdings for cedar poles and pilings. Because of the mobility of these operations, much damage could be done to streams by the cat loggers in their search for poles.

These three companies can log nearly 10,000 acres a year from the Kitimat Valley.

Mayo Lumber Company logged in the Dean River watershed between mile seven and mile ten. This operation caused harm to the fishery resource by removal of forest cover and by the booming of the logs over the beach spawning grounds of Chum salmon at Kimsquit Bay. Some co-operation is being obtained from the company in holding their booming grounds away from the beach. Greater control is anticipated for the coming year.

Smaller logging operations were conducted on Yeo Island, Ellerslie Lake, Neetlesconnay Creek, Kwatlena River, Nusgulch Creek, Princess Royal Island, Weewanie Creek and at Hotsprings Cove on Gardner Canal.

Water Licence Applications - water licences granted in the District in 1969 had no adverse effects on the salmon resources.

Placer Mining Operations - no placer mining operations were conducted in 1969.

Trends in the Fishing Industry

The J.H. Todd & Sons Cannery did not operate this year and in all likelihood will never operate again as a cannery. With the trend towards centralizing the fish processing business, more brine packers are noted each season. More seine boats are now packing ice, remaining out on the fishing grounds and delivering directly to the canneries at the end of the fishing week.

Trends in the Fishing Industry (cont'd) District 7

The Canadian Fishing Company installation at Butedale operated only as a net loft, fuel station and supply centre for food and ice. Their ice making facilities operated throughout the season.

More combination gillnetters-trollers are appearing each year, especially among the newly constructed vessels. These vessels cause problems in determining whether or not their salmon landings are for net or troll caught fish as well as requiring extra policing time.

Enforcement

Prosecutions - the number of prosecutions were as follows:

Commercial Fishery	10
Sport Fishery	5
Indian Food Fishery	Nil
Logging	4

Predators

Sea Lions - fewer than usual complaints were received from fishermen this year, probably because of the extended closures, particularly of the waters outside Milbanke Sound where these animals are more prevalent.

Hair Seals - ninety-eight hair seals were reported killed by employees of the Department this year and an additional large number were killed by fishermen. The very large populations in upper Dean Channel and in North Bentinck Arm caused serious losses of valuable Chinooks to salmon gillnet fishermen.

Bears - black bears and/or grizzly bears frequent most streams during the periods of salmon migrations but I do not feel that they create a serious threat. One Kamodae (white bear) was observed attempting to catch Pink salmon in the Arnoup River.

Grayfish - these fish were not a problem in 1969.

Killer Whales - pods of killer whales made their rounds as usual with schools of from ten to fifty being observed at various places from time to time. It is not known how harmful they are to salmon stocks.

Other - the large wolf populations of the more remote islands and peninsulas of Areas 6 and 7 continue to do considerable damage to spawning stocks, particularly during low flow periods.

Administration

The total role of the Conservation and Protection Branch in District 7 is changing and has changed very rapidly in the past year. Greater demands on personnel brought about by the rapidly expanding industrial development and new logging operations have taxed fishery officers to the limit. Additional trained staff must be provided if the environment is to be properly policed.

Information, Educational and Other Programmes

(a) Resume of Programmes Conducted - a constant public relations programme was maintained in the District. Many meetings were held with

Information, Educational and Other Programmes (cont'd) District 7

Native Indian organizations, Municipal employees, rod and gun clubs, etc., and as in past years, good relations with both the Indian and white communities resulted from these contacts.

(b) Assistance to Other Branches of the Department - considerable time and effort were put into assisting the Resource Development Branch in carrying out a trail cutting programme initiated by the Government to provide employment for Native fishermen affected by extensive closures in the salmon fishery. The resulting trails will be useful in providing access to important spawning grounds in the Bella Bella and Bella Coola sub-Districts.

Additional assistance was provided by Conservation and Protection personnel to Resource Development personnel in collecting samples of effluent, field surveys in connection with pulp mill developments at Kitimat and Bella Coola, the stream inventory programme and monitoring of logging operations and their effect on the spawning grounds.

(c) Contacts with Other Agencies - problems of mutual concern were discussed at meetings with Indian Affairs Personnel, B.C. Forest Service Officers, Department of Highways engineers, United Fishermen & Allied Worker's Union officers, Recreation and Conservation officers, B.C. Hydro & Power Authority engineers, and the officers of the R.C.M.P. Our relationship with other Government Agencies at the present time is considered very satisfactory.

Summary

1969 was a very busy and demanding year for District 7 personnel. This year of unusually poor salmon returns posed many problems in justifying extended closures. However, these closures were accepted by industry, because of their confidence in the officers of the Conservation and Protection Branch. The fact that the public now recognizes how vulnerable our environment is and is looking to the Department of Fisheries to protect the general environment results in ever increasing demands on Fishery Officers.

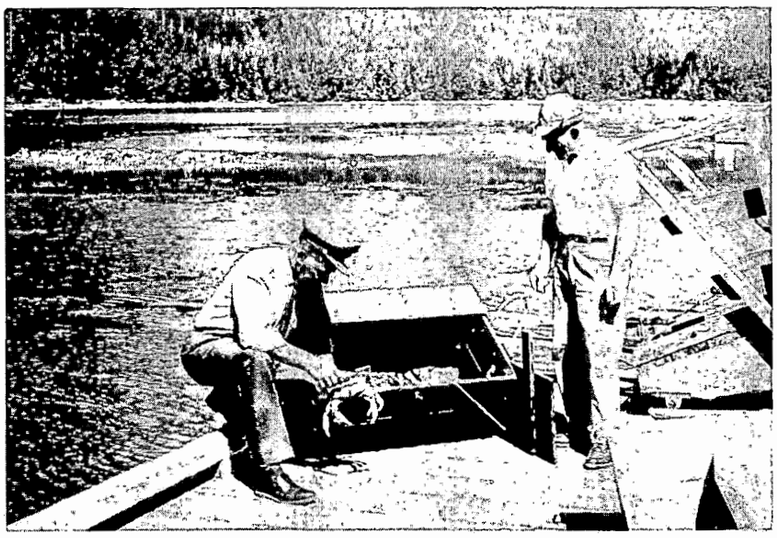
DISTRICT 8

Fisheries

Commercial Fisheries

(a) Salmon - the commercial salmon fishery commenced on February 1st by Regulation, with trolling permitted in inside waters between the usual fishing boundaries and the "Surf Line", which generally follows the outer coastline from headland to headland or islands. Salmon net fishing is prohibited outside this line, while trolling permitted there from April 15th to October 31st. A mesh size restriction in effect as usual, prohibited the use of nets less than 8½ inches extension measure until June 22nd.

The number of days fishing permitted to gillnets from February 1st until June 21st was three days per week in Areas 3 and 4, and four days per week in Area 5.



Officer checking a crab catch for legal size.

Fisheries (cont'd) District 8

The number of fishing days for salmon nets permitted in each area and sub-area from June 22nd until the closure of September 14th were 272.

Catches of all species of salmon were below the ten-year average, with the exception of Chinooks, which was 13% greater. The maximum number of boats, particularly in the fishery was 245 gillnetters and 51 seiners in Area 3, 663 gillnetters in Area 4 and 100 gillnetters and 30 seiners in Area 5, where the effort was lighter than any of the past four years.

The Arrandale-Kincolith boundary was in effect on the Nass River from 6 P.M. Sunday, June 22, 1969 until the end of the season, and Work Channel and Khutzamateen Inlet were closed to salmon net fishing. Observatory Inlet was closed to net fishing on Sunday, July 13th for conservation of salmon, mostly Chums. The season closure for salmon nets was effective at 6 P.M. Sunday, September 14th, in the whole of District 8. In the Grenville-Principe sub-District, salmon seines were permitted to fish in Principe Channel commencing on July 13th, for the first time in many years in this traditionally exclusive salmon gillnet area. Also, on July 13th the lower portion of Grenville Channel opened to salmon nets between Ormiston Point and Davenport Point, to allow further exploitation of Lowe Inlet stocks, primarily. Kitkatla Inlet closed to salmon nets on August 24th for the conservation of local Pink stocks.

Seines in Principe Channel made only light catches, due to breaking of schools by gillnets. No salmon drag seines were permitted in Area 5 during the year. Sockeye fishing by trollers increased over past years, especially in Chatham Sound, where 3,000 were taken compared to only 250 in 1968.

(b) Herring - the northern Herring sub-District remained closed to herring fishing for reduction purposes for the second consecutive year, to conserve depleted stocks. The tonnage taken was for bait purposes only. One herring pond operated in the District, in Prince Rupert Harbour.

(c) Halibut, Groundfish, and Shellfish - the 1969 halibut season in Halibut Area 2 opened at 4 P.M. May 7th. Prices paid this year were the highest on record, reaching 46.8¢ per pound in Prince Rupert. This factor brought a larger than usual number of boats into the fishery, especially during May and June prior to the main salmon season. A few of the larger salmon vessels remained in halibut, while many salmon trollers fished unusually hard for halibut, and some gilnetters utilized their weekly closed periods in this fishery. U.F.A.W.U. lay-up rules were again in effect and the season in Halibut Area 2 terminated on September 21st at 6 P.M. Season quota for Area 2 was 21,000,000 lbs.

In the groundfish fishery, trawling effort was lighter in 1969 than in 1968, and the catch in the District was one and a half million pounds lighter than the 10½ million pounds in 1968. The decrease was mainly in grey cod, with sole showing an increase over the previous year.

Butter and Littleneck clams were again under closure due to a toxicity condition in northern waters. The shrimp catch was good, slightly higher than last year, while the crab catch, while in excess of the 1968 catch, was much below the average of the past five years, due to decreased effort.

Area 4 is the major shellfish producer in the District, while Area 5 has a light production, and Area 3 minimal, this year having no catch.

Fisheries (cont'd) District 8

Sport Fishery

(a) Tidal Waters - the effort throughout the District involves chiefly local residents with the exception of Lowe and Kumealon Inlets in the Grenville-Principe sub-District where a small number of United States fishermen are active.

The overall decline in effort each year since 1966 appears to have followed an annual decline in abundance of salmon available to the fishery. In Grenville-Principe, the effort and catch showed a sharp increase with a total of 31 boat days for 57 salmon.

(b) Non-tidal Waters (see Table 6) - a District Sport Fishery Officer was employed during the year to monitor and report on the various sport fisheries in the District, with particular emphasis on the non-tidal fisheries where the effort is increasing annually, by residents and tourists alike. New roads are being built through the vast logging areas, thus enabling fishermen to reach headwaters and spawning areas of previously inaccessible streams. The sport fishery officer, who works in co-operation with sub-District officers and under the direction of the District Conservation Officer, is able to concentrate on each major fishery.

Primary fishing location in the several sub-Districts are shown below:

Nass Sub-District	- Ishkeenickh River, Tseax River, Cranberry River, Meziadin River.
Skeena Sub-District	- Kloiyah Creek, Johnston Creek.
Terrace-Lakelse	- Skeena River at mouth of Kitsumkalum River, Kitsumkalum River, Upper Skeena River, Lakelse River, Copper River, Exchamsiks River, Kasiks River, Gitnadoix River, Kitwanga River and Kispiox River. Most of these streams produced both Chinooks and Coho, while Coho only were taken from the Exchamsiks, Kasiks, and Gitnadoix Rivers.

Chinooks are caught from as early as May in the Kalum River, until mid-August, with the heaviest catches taken in July. The major fisheries were in the Kalum and in the Skeena at the mouth of the Kalum, and at Moricetown Falls, also the Ishkeenickh River tributary to the Nass. Other areas of heavy pressure are reduced somewhat by partial closures for conservation purposes, such as the Tseax, the Morice, and Kloiyah.

A number of tourists, particularly from the U.S.A., spend a large part of the summer in one location, such as Terrace, and fish constantly, freezing their catch.

Indian Food Fishery

Natives of the Nass sub-District take their salmon by gillnet in the Nass River, with exception of the Kincolith and Port Simpson Indians, who fish in the sea adjacent to their villages, on band permits. Residents of Greenville, Canyon City, and Aiyansh fish on individual permits on a three-day week, Wednesday at 6 P.M. to Saturday at 6 P.M. Natives of the Skeena sub-District fish in Chatham Sound or at the mouth of the Skeena River.

Fisheries (cont'd) District 8

In the Grenville-Principe Area the natives from Kitkatla fish mostly by gillnets, for Sockeye during June and Coho in the fall, mostly in Principe Channel and Ogden Channel. No drag seines were permitted during the year.

The Terrace-Lakelse natives fish the Skeena in the Terrace vicinity, and at Kitseguecla, Kitwanga, Hazelton, Glen Vowell, and Kispiox, and occasionally in locations between, on a four-day per week basis, Sunday at 6 P.M. to Thursday at 6 P.M.

Babine Lake natives fish a run which is discolouring with maturity. Fishing is on a four-day week, by means of gillnet in the upper Babine River and in Babine Lake.

Natives at Moricetown Falls fish a four-day week, commencing 6 P.M. Sunday to 6 P.M. Tuesday, and from 6 P.M. Wednesday to 6 P.M. Friday. Fishing is mostly by gaff, with a few gillnets operating below the canyon.

Spawning Summary

Sockeye

Nass Area 3: a good return of Sockeye produced an overall escapement of 177,000 compared with 146,000 in 1965, and 123,000 in 1964, the two brood years, and with the ten-year average of 123,000. Meziadin Lake and tributaries were heavily seeded with 136,000 spawners: Damdochax and Kwinigeese received 15,000 and 10,000 respectively, and Bowser was estimated at 15,000. Of the ten Sockeye streams in the sub-District, three showed an increased escapement, and three showed decreases. The area escapement is classed moderately heavy.

Skeena Area 4: an escapement of 6,000 Sockeye equals the brood year, although Shawatlan's escapement was only about 50% of brood escapement.

Grenville-Principe Area 5: the escapement of 25,000 spawners was less than 50% of the brood year supplies, 55,000 in each of the two years 1964 and 1965. Fourteen streams in the area showed a decrease, while none showed an increase.

Terrace-Lakelse Sub-District: estimated escapements were less than 50% of the brood years escapement of 38,000 spawners.

Babine-Morice Sub-District: the count of 634,400 large Sockeye through Babine Fence is only a slight decrease from the two brood escapements, 650,000 in 1964, and 644,000 in 1965. About 287,000 of the total spawned this year in the Babine River, while Fulton River and Channel received 149,000, and Pinkut Creek and Channel received 37,000. The upper Skeena escapement of 7,2000 spawners compares with 7,5000 in 1964 and 2,900 in 1965. The Bulkley-Morice escapement of 4,000 is a decrease from 5,500 in 1964 and 10,500 in 1965.

Coho

Nass Area 3: the escapement of 29,500 spawners compares with 77,500 in the brood year and the ten-year average of 38,500. Only four streams showed an increase, and fourteen a decline.

Skeena Area 4: the escapement of 12,400 compares with 31,000 in the brood year.

Spawning Summary (cont'd) District 8

Grenville-Principe Area 5: escapements were low, 16,000 spawners compared with 74,000 in the brood year 1966.

Terrace-Lakelse Sub-District: the escapement of 45,000 compares with 70,000 in 1966.

Babine-Morice Sub-District: Coho spawning stocks of 16,500 were comparable to the brood escapement of 17,000.

Pinks
Nass Area 3: an estimated 33,800 spawners compares with 67,500 in 1967, and only 17% of the ten-year average of 199,000.

Skeena Area 4: an escapement of 36,000 exceeds brood year stocks.

Terrace-Lakelse Sub-District: the escapement of 768,000 exceeds the brood escapement of 235,000. The main stem Skeena and the Scotia were the only streams showing a lighter return than the brood year. Main stem Skeena had 25,000, compared with 90,000 in 1967, while Scotia had 10,000, compared with nearly 20,000 in 1967.

Babine-Morice Sub-District: total escapement was approximately 78,000 with escapement through Babine Fence being 75,000 compared with 43,500 in 1967. Main spawning took place just upstream of the fence. The Bulkley system had 3,300 compared with 1,100 in 1967.

Chums
Nass Area 3: the estimated total of 28,500 spawners is a moderate decline from the cycle escapement of 36,000, and a large drop from the ten-year average of 54,900. Increases in some major producers as the Toon, Ensheeshee and Bear Rivers helped to offset decreases in other major producers, Quinimass, Illiance, and Stagoo. Of the twenty-four Chum streams, eight showed an increase and six a decrease from the brood year. The overall density was light.

Skeena Area 4: Chum escapement was light, with 6,750 spawners compared with 13,000 in the brood year. The Ecstall River received the majority.

Grenville-Principe Area 5: escapement was poor, with an estimated 4,000 spawners compared with brood returns of 15,750. Of the 37 streams, there were no increases, and 22 decreases.

Terrace-Lakelse Sub-District: spawning return was light, with 3,000 on the grounds, or approximately half the brood year.

Babine-Morice Sub-District: none reported, as usual.

Chinooks
Nass Area 3: a favourable return of Springs produced an escapement of 27,300 compared with 16,400 in the brood year, and the ten-year average of 18,500, and is the third highest of the last twelve years. Above average returns to the Cranberry, Kwinigeese and Damdochax helped to offset decreases in other major producers such as the Seaskinnish and Khutzamateen. The overall seeding is classed as medium-heavy.

Skeena Area 4: the total of 2,600 spawners is only a slight decrease from the 2,700 in the brood year. The major portion of the stocks utilized the Ecstall system.

Grenville-Principe Area 5: not a Chinook spawning area.

Terrace-Lakelse Sub-District: returns were well above the brood year, with 10 - 11,000 spawners being well above the main brood year of 4 - 5,000. The increase is mainly attributable to the return of 8 - 9,000 to the Kitsumkalum system.

Babine-Morice Sub-District: an estimated 9,800 spawners is a decline from the brood year stocks of 16,450 in 1964, and 10,700 in 1965.

Weather Conditions and Water Levels - no unusual weather conditions were experienced, except lighter than normal snowfall during the fall and winter of 1969. Temperatures in January and February 1969 were quite low, especially in the Terrace area.

Fry Salvage - in the Nass River area, fry were salvaged from the Ishkeenickh River, totalling 3,100 Coho, 500 Chinooks. Rainfall in coastal areas generally obviated the need for any fry salvage operations.

Herring - conditions were generally normal during incubation of the lightest spawn in years. Some of the spawnings were heavily depredated by birds, with the heaviest loss reported from the Nass sub-District which received the smallest spawning. Storms were not severe during the period, while Indians collected a considerable quantity for food.

Environment, Multiple Water Use

Pollution - the B.C. Molybdenum mine at Kitsault has increased its daily production to approximately 9,000 tons per day. The tailings from this operation are discharged into Lime Creek which deposits them into the head of Alice Arm near two salmon streams, the Illiance, and Kitsault Rivers.

The Columbia Cellulose pulp mill at Watson Island discharges the red liquor into Chatham Sound by means of a composition submarine pipeline across Porpoise Harbour, and thence over Ridley Island to the discharge point in approximately ten fathoms of water. A number of minor breaks in the pipe have occurred on Ridley Island, and these are readily repaired. Late in the year there was a major break in the underwater section in Porpoise Harbour. Such breaks take longer to repair, while the effluent discharges into the harbour. If further such breaks occur, a more satisfactory pipe should be obtained, or an alternate disposal method sought.

Possible future problem areas:

Mining development in the Kitsault, Illiance, Bell-Irving, and lower Nass River valleys.

Disposal of mine tailings in the upper Fulton River and in Babine Lake

Bulkley Valley Forest Industries Ltd. pulp mill and saw mill complex at Houston, on which construction was commenced during the latter part of the year. Treated effluent will be discharged into the Morice River, thence to the Bulkley and Skeena Rivers.

Public awareness of pollution and environmental hazards became extremely pronounced during the year, which saw the formation of anti-pollution organizations on a provincial basis, with groups formed in the urban centres of the District. Foremost of these was the Society for Pollution

and Environmental Control. Many queries concerning the subject were directed to departmental officers, and particularly to the District Office. Hopefully the public awareness will result in improvements, particularly in the field of municipal sewage disposal, and pressure for industrial improvements.

Industrial Development - Dome Petroleum Ltd. established drilling equipment in the Bell-Irving valley north of Bowser River junction. Traces of natural gas were obtained at approximately the 5,000 foot level. Settling ponds to contain the waste drill mud were created at the drill site.

The proposed development of a salmon cannery at Port Simpson, to create employment for Native Indians, was quashed at the Ministerial level, Department of Indian Affairs and Northern Development, following a feasibility study. It is understood that a new study is proposed.

Development in Prince Rupert included the building of a number of new dwellings and an apartment complex. A large-scale road rebuilding project was underway in the mountain section between Galloway Rapids and Tyee.

Highway 16 between Terrace and Hazelton was nearing completion of the major rebuilding programme which had been in progress for several years. A number of bridges were built during the year, over the two Oliver Creeks and Kitsequecla River. Only fifteen unpaved miles remained at the year end.

Mining exploration was active in the Babine-Morice Area. Operating mines included the New Cronin-Babine Mines Ltd., lead-zinc, copper and silver. Granisle Copper Ltd. produced an average of 2,200 tons of concentrates per day, copper with some gold and silver. Forestburg Collieries Ltd. produced coat at Telkwa.

A new road was under construction from Granisle Village on Babine Lake to Topley, for faster transport of the Granisle Copper. Bulkley Valley Forest Products Ltd. constructed the major portion of their road from Houston to Topley Landing, for log-hauling to the under-construction sawmill-pulpmill at Houston.

Large areas of coal leases were staked in the Telkwa River area, and the Kluatantan River.

The Highways Department constructed a new concrete bridge at Smithers, upstream of the old one damaged by an ice jam in about 1965. Further channel construction was completed on the departmental developments at Fulton River and Pinkut Creek. Clearing of Fulton Lake debris continued through the year.

Obstructions and River Diversions - beaver dams and minor log jams were removed from many streams of the District, particularly in the Babine-Morice area, in the Kispiox River Valley, and in streams tributary to Meziadin Lake.

Beaver are still very numerous, and some co-operation was received from the Provincial Conservation Branch and Indian Affairs Department in accelerating trapping efforts on problem streams as the price is not inducive to trappers.

Recommendation has been made for a survey of the falls on the Cranberry, Kiteen, Tseax, and Shegunia Rivers, including remedial action if feasible.

The B.C. Forest Service this year removed two culverts from Ironsides and Clifford Creeks on their Kispiox forest access road, and replaced them with bridges, thus alleviating the serious obstruction to upstream migration at these two locations.

Gravel Removal - only minor gravel removal operations were performed in the District, and the following on the Nass River were conducted by permit under the Gravel Removal Order:

From an island in the Ishkeenickh River for road construction.
At Kinley to deepen the dump site.
At Balsam to deepen the dump site. On the Buck River, the Village of Houston used gravel from the stream to dyke the banks, with the work performed at an approved time.

Twinriver Timber Ltd. was required to grade the location at Kinskuch from where they had removed gravel the previous year.

Logging Operations - the major logging company in the District was Twinriver Timber Ltd., a subsidiary of Columbia Cellulose Ltd., controlling the major portion of the Nass River Valley, and many tributaries of the lower Skeena River, under the Tree Farm Licences. Logs are towed to Prince Rupert, or trucked to Terrace and sent by train to the pulp mill at Watson Island.

The company uses the Nass River as transportation water to drive logs to the estuary. Passage to salmon is not considered to be impeded by this log drive, although it creates passage problems to Native Indians resident on the river, and one large break-through in the boom system in early June created temporary havoc for the gillnet fleet in the estuary.

All new operations of developments of the company on the Nass River and tributaries were covered by permit as required by the Logging Order of the B.C. Fishery Regulations.

Logging operations in Area 4 were confined to Porcher Island, and a small operation at Aberdeen Creek which is not a salmon stream. Area 5 had no operations, while operations in the Terrace-Lakelse Area are largely conducted by Twinriver Timber on the Kitsumkalum, Lakelse and Copper River, with smaller operations on other tributaries of the Skeena. In the Babine-Morice area, approximately 10,000 acres were logged, with the two companies, Bulkley Valley Forest Products Ltd., and Northern Interior Forest Products Ltd. supplying mills at Smithers, Houston, Telkwa, and the Burns Lake area, also at Pendleton Bay where operations were small during a phase-out period. The new sawmill of the Bulkley Valley Forest Products Ltd. at Houston will commence operations early in 1970, and will terminate the production at Pendleton Bay and the present mill at Houston.

Water Licence Applications - twenty-nine water licence applications were processed during the year, while approximately forty screening intakes were checked.

Placer Mining Operations - Babine-Morice Area received the only application, for renewal of two leases which had expired, by Inlet Explorations Ltd. on Mudflat Creek, Bulkley River. Two inspections were made of these leases, with no activity noted.

Trends in the Fishing Industry

Increased halibut landings reflected the high prices paid. Some salmon boats remained on halibut due to the generally poor salmon year. Shrimp and crab landings were low, reflecting the low prices paid for these two species. Groundfish catches were low due primarily to low abundance of grey cod. Prices were higher for all species with the exception of shrimp and crab.

There was no change in the number of fresh and frozen processing plants in Prince Rupert, each of which made minor alterations to improve operating efficiency, ice-making capabilities, or frozen storage area.

Six canneries operated in the area, a reduction of one from 1968. North Pacific Cannery ceased to operate, and is now used for vessel moorage and net loft. Nelson Bros. and the Prince Rupert Fishermen's Co-op continued production of crab. Nelson Bros. renovated their crab cannery to raise it to standards of Schedule "D" of the Fish Inspection Regulations. At the Co-op a 1/2 pound line was installed.

Fresh and frozen fish processing plants numbered five, namely: Prince Rupert Fishermen's Co-op Association, Babcock Fisheries Ltd., Atlin Fisheries Ltd., Royal Fisheries Ltd., and Nelson Bros. Fisheries.

Six operating canneries were: Cassiar, Sunnyside, Nelson Bros., Prince Rupert Fishermen's Co-op, Oceanside, Babcock. Crab processors were Prince Rupert Fishermen's Co-op, and Nelson Bros.

Fish buying camps numbered fourteen, including eleven in Area 3, two in Area 4 at Quadzeet, and one in Area 5 at Kitkatla.

Trends in fishing techniques included:

Trollers concentrating on Sockeye in Chatham Sound during closed periods to gillnets.

Increased numbers of gillnetters using trolling gear during closed periods to salmon nets, particularly from Port Simpson.

No foreign fishing took place in the District, although a Japanese longliner apprehended by the F.P.C. "Tanu" off Hippa Island was brought to Prince Rupert for prosecution. One request was received from the Russian fleet for permission to enter Hecate Straits to tranship fish from a fishing vessel to a mothership, in shelter of Ramsay Island. Permission was refused as per existing instruction from Region.

Nelson Bros. Fisheries Ltd. was purchased by B.C. Packers Ltd.

Twelve new vessels were completed or under construction during the year. Seven were gillnetters of combination, two were trollers, and three seiners.

Enforcement District 8

There were 35 prosecutions for commercial fishery violations, including the Japanese longliner, "Kotoshiro Maru", which violated the Coastal Fisheries Protection Act by fishing within Canada's twelve mile limit, and was fined $2,500 in Prince Rupert. Other violations were mostly for fishing outside the "Surf Line", or minor boundary violations. One gillnetter apprehended fishing outside the "Surf Line" attempted to outrun the patrol vessel, and would not stop on signal. An aircraft and a helicopter were eventually used to effect the arrest. Fine in this case was $825.

Only one sport fishery violation was prosecuted, in the non-tidal waters of the Terrace-Lakelse sub-District.

There were fourteen violations of the Indian Food Fishery Regulations which were prosecuted; two in the Nass sub-District, and six each in the Terrace-Lakelse and the Babine-Morice sub-Districts.

In Moricetown Falls, there were three violations for jigging rather than the permitted gaffing. Two pleaded guilty and were convicted, while a third obtained counsel and the case was dismissed as the Judge could detect no definition difference between jigging and gaffing.

One prosecution was for destruction of salmon eggs on the spawning grounds. The case was dismissed due to a break in the continuity of evidence.

The manner in which closed seasons were observed was generally favourable in the commercial and sport fisheries, while in the Indian Fishery there was generally an improvement over the previous year.

Patrols by departmental vessels, chartered aircraft, and the services of the best obtainable seasonal personnel kept abuses to a minimum. Every effort was made by all personnel to keep fishermen informed, in a continuing public relations programme. Co-operation between sub-District officers was good, promoting co-ordination of enforcement patrols. The services of two Native guardians is considered to have improved relations with Native Indians in the areas where these persons were employed.

Predators

Sea Lions - were not numerous in the District, with the main concentration off the West Coast of Banks Island. None were destroyed by departmental personnel.

Hair Seals - main populations are in the estuaries of the Nass and Skeena Rivers during the pupping season, and estimates of these two groups are estimated at three to four hundred each. Small numbers occasionally travel many miles up the Skeena, entering the Babine and Bulkley Rivers on rare occasions. Ten seals were destroyed in Area 5 where they were concentrated in Wilson Inlet, taking a large toll of Chum salmon.

Bears - bears were numerous in remote areas, although it is obvious that sportsmen are decreasing their numbers in accessible locations. The only area where predation on salmon was reported to be high was Stewart Creek in Area 5. One Grizzly destroyed by Patrolman Casey in Georgia River was the only instance of bear destruction by Department personnel. Bears are not destroyed unless they present an immediate threat to an employee when in the performance of his duties.

Predation (cont'd) District 8

Grayfish - the only reported abundance of grayfish was in Browning Entrance and upper Principe Channel, where they curtailed the gillnet fishery in hours of darkness.

Killer Whales - were not numerous, with sightings of small herds only in Portland Inlet and Canal, and once in Odgen Channel, by Department personnel.

Others - predatory birds were not reported to be in overabundance, except for Eagles and Mergansers in Area 5, and Mergansers in the Babine-Morice area.

The wolf population on Banks Island is large, and on one occasion a Fishery Officer and a Vessel Master, while on stream inspection at Salmon River, were confronted with a pack of fifteen which had to be driven off by rifle-fire, and the destruction of two of the animals.

Administration

Staff - reclassification to the General Technical Group in July gave fishery officers a reasonably satisfactory salary increase, more commensurate with their importance and responsibilities. Recruitment of new officers from a technological institute is viewed as a forward step, as they have acquired a good basic knowledge of conservation principles.

The Master of the "Cutter Rock", Captain O.N. Wingham, passed away in June, and his services were sorely missed during the salmon season in the Nass Area.

Seasonal wages have been raised from $2.40 per hour in the coastal portion of the District to $3.11, and from $2.25 to $3.05 in the interior. This may aid recruitment. An extra Guardian was hired in Area 4 for the waterfront, with services used mostly for collection of statistics and other duties required by Economics Branch.

Consideration is being given to utilize the services of a fast charter boat with one patrolman, to replace two or more Guardians in Area 5.

Information, Educational and Other Programmes

(a) Resume of Programmes Conducted - departmental films were shown in schools on fifteen occasions by Officers in the District.

Various meetings were attended, and lectures given or films shown to fishermen and other organizations. Officers attended such meetings as the Nishga Tribal Council Meeting, Skeena River Salmon Management Committee meeting.

District Officer lectured on two occasions to participants of a Fishermen's Improvement Course at the Terrace Vocational School, and a U.B.C. Extension short course in Prince Rupert. The Prince Rupert pollution situation was discussed with local committee members, U.F.A.W.U. meetings attended on request during salmon season, Prince Rupert Fishermen's Co-op members met with on request, frequent meetings held with small groups of fishermen or Natives during the season to discuss pertinent problems.

Information, Educational and Other Programmes (cont'd) District 8

Close contact was maintained with managers of the Industry, information disseminated to local news media, and liaison was maintained with managers of the forest industry.

(b) Assistance Rendered to Other Department Branches - transportation by vessel and aircraft was arranged for members of Fish Inspection Branch, Fishermen's Indemnity Plan, Resource Development Branch. Officers in interior sub-Districts particularly rendered frequent services to Resource Development Branch and Fisheries Research Board.

(c) Contact with Other Related Agencies (all Government levels) -

Indian Affairs Branch concerning food fishery, logging, etc.

R.C.M.P. regarding violations, assistance in road blocks, apprehensions.

Canada Manpower regarding staffing.

B.C. Forest Service regarding logging and stream protection.

Provincial Department of Conservation and Recreation regarding logging, stream protection, Fishery Regulations, Water Licences, beaver control programme.

Municipalities regarding pollution, stream protection.

Department of Highways regarding road and culvert construction, herbicides.

Skeena River Salmon Management Committee regarding salmon management.

Provincial Department of Lands regarding applications for land use adjacent to salmon streams.

International Pacific Halibut Commission regarding regulation of halibut fishery.

Department of Transport regarding transportation of important persons; also for contact with foreign fishing fleets via D.O.T. radio.

National Film Board - some assistance to photographer and film director regarding filming of documentary of Skeena River.

DISTRICT 9

Fisheries

Commercial Fisheries

(a) Salmon - Sockeye catch of 47,380 pieces was down slightly from 1968 but well above the ten-year average. This catch was taken, for the most part, from passing fish in Area 1.

Fisheries (cont'd) District 9

Coho catch of 321,912 pieces, mostly taken by troll fishermen from Area 1, was well below the 1968 catch of 530,281 pieces and below the ten-year average of 394,665.

1969 was an off-year for Pinks and there were only 78,420 pieces taken. About 25,000 were taken by seines from Copper Bay area where a good off-year escapement was obtained. The rest of the catch came, for the most part, from the troll fishery.

Chum catch of 141,065 pieces was light and only about one-half of the ten-year average.

With a late return of Chums to Naden Harbour and Massett Inlet in Area 1, there was an increase in this species in that area.

The small return to Area 2B was the contributing factor to the light overall Chum catch.

As was the case in 1968, the gillnet fishery took most of the Chum catch.

Chinook catch of 98,740 pieces was well above the 1968 catch and nearly double the ten-year average. The bulk of this catch was taken in the troll fishery in Area 1.

The landed value of all salmon of $2,208,000 was only slightly below the last five-year average although 1969 was an off-year for Pinks in District 9.

Area 1 operated on a 4 day week from June 15, the opening of the small mesh gillnet fishery, until September 21st when fishing time was reduced to 3 days for the fall Chum fishery. This fishery continued until October 19th.

The gillnet fishery in Area 2A was closed August 3rd to September 7th for conservation of Pink salmon.

Areas 2A West and 2B West were closed September 13th to net fishing after a three day fishing period for conservation of Chum salmon.

A further 2 day week was allowed for net fishing in Areas 2A East and 2B East with severe seaward boundary movements in Area 2B East. The Chum run showed no signs of increase during this period and all of Areas 2A and 2B were closed to net fishing September 21st.

(b) Herring - the herring fishery was limited to one halibut bait fishery in Skidegate Inlet, Area 2A East.

(c) Halibut, Groundfish, Shellfish - halibut landings of 7,445,100 pounds were well ahead of the 1968 catch of 5,104,800 and well above the five-year average.

Groundfish landings were above the five-year average.

Shellfish landings were slightly below the five-year average.

The landed value of all fish in 1969 was $6,227,000, the second highest in the last five years. The increase in halibut landings and the good price received for halibut were the prime factors in producing this total value in an off Pink year.

Fisheries (cont'd) District 9

Sport Fisheries

(a) Tidal Waters - sport fishing in tidal waters in District 9 is light and the catch recorded and effort was less than one-half of what it was in 1968. Fishing, for the most part, is done by trolling and spin casting from small boats with most of the grilse coming from casting from the shore near Sandspit.

A small troll sport fishery was developed in Tasu Sound where residents of this mining community are involved.

The use of the buzz-bomb was reported in Tasu this year and a few Chum salmon were taken by this equipment.

Small quantities of Octopus were taken by local residents from the beaches near Miller Creek during the spring big tides. A few Abalone, Clams and Razor Clams are also taken by local residents. Residents at Tasu are taking large Prawns in the bay near the town and during one trip about 30 individual pots were observed.

(b) Non-Tidal Waters - there were very good catches of Steelhead reported from the Yakoun, Tlell and Copper Rivers this year. A few were also taken from Sangan, Mamin and Kiellen Rivers.

Coho catches from the Tlell River were reported as lighter than normal due perhaps to fairly high water conditions during the migration. Good catches were reported from Copper and Yakoun Rivers.

Trout fishing was reported good throughout the area in non-tidal waters but effort was light.

Indian Food Fishery

Fifty-seven permits were issued to Indians for food in 1969.

The Indian Food Fishery is confined to Masset Inlet in Area 1 and in Copper Bay and Skidegate Inlet in Area 2A.

There is no food fishing area 2B but the Fishery Officer in the 2B sub-District administers the Copper Bay fishery.

Spawning Summary

Sockeye - there was an estimated escapement of about 94,000 pieces in 1969 compared to about 51,000 in 1965.

Yakoun and Naden Rivers in Area 1 and Copper River in Area 2A are the main producers while there are small runs to the Jalun River, Athlow Bay, Fiarfax Creek and Mathers Creek.

Coho - the Coho escapement of about 105,000 pieces to District 9 was light compared to the 179,000 pieces in 1966, the brood year.

The greatest decline was in Area 1 where escapement was reported as only 5,000 pieces compared to 35,000 in 1966.

Usually high water prevails during the Coho migration and figures shown are only a crude estimate at best and are used to show a trend.

Spawning Summary (cont'd) District 9

Pinks - the Pink escapement of 122,000 fish was three times heavier than the cycle year of 1966 when there were a total of 37,000 Pinks reported.

Of this escapement, about 80,000 went to Copper River and about 25,000 to Pallant Creek. This escapement is very heavy for an off year.

Chums - the Chum escapement of 303,000 pieces for the District was light. In the brood year of 1965, escapement was about 432,000 pieces and in 1966 brood year escapement was 623,000.

Decline was the most pronounced in Area 2B East although there was a substantial drop in Area 1.

Chinooks - the Yakoun River in Area 1 is the only stream that produces Chinooks. Escapement was light with about 1,000 fish reported.

An escapement of 7,500 pieces was reported in 1964 and an escapement of about 10,000 pieces reported in 1965.

Steelhead - catches of Steelhead by sport fishermen in the fall would indicate a good run to most rivers.

Weather Conditions and Water Levels - during the months of January and February, very cold, dry weather brought stream levels to a very low stage and some of the smaller streams iced up considerably. Spring run-off was gradual with no high water periods. During July and August, weather was cool with adequate rainfall. During the last week in August and the first two weeks of September, weather was dry and small streams were low. During the latter part of September and early October, heavy rains brought water levels up to nearly flood stage and there was a good water supply for Chum spawning.

Very heavy rainfall in late November and early December brought streams to flood stage. Stream checks after these high water stages did not show any excessive stream damage. This high water in the late fall is usual in this District.

Fry Salvage - no fry salvage carried out in this District this year.

Herring - herring spawn deposition was heavier than 1967 both in area spawned and density in Areas 2A and 2B. No spawning was reported in Area 1.

The take of herring spawn by Natives in Skidegate Inlet was heavy but as deposition was fairly heavy in this locale, the percentage lost by this cause was not high.

Environment, Multiple Water Use

Pollution - two small oil spillages occurred in Tasu Sound from Wesfrob Mines' operation. One of these was caused by a faulty valve and the other by an overflow system at the oil dock. Both these problems were quickly corrected when brought to the attention of the Company by Fishery Officer Freeman.

A study was made by the Department of Health in the village of Masset vicinity in regards to dumping of raw sewage into Masset Inlet.

Environment, Multiple Water Use (cont'd) District 9

The settlement of Port Clements is presently dumping raw sewage into Masset Inlet but there are reports that a primary treatment of some type is planned.

Industrial Developments - a seaweed processing plant near Masset has been completed by Canada Kelp Limited and should be in operation by June, 1970.

The harvesting of kelp along the north end of the island will cause some loss of cover for small fishes. Trollers and gillnetters work the edges of these kelp beds for salmon during certain periods.

Bering Industries' peat moss plant in Area 1 has closed because of the high cost of shipping to outside markets.

Work is progressing on the National Defence Project near Masset. Houses are being built for personnel who are required to operate these facilities.

The increase in population in Masset, due to this operation, has brought in new shopping facilities, a bank and a federal building for a post office and Fisheries office is out to tender.

Some exploratory work is presently being carried out on mining claims in the vicinity of Anna Inlet. If a mine is brought into production, steps will have to be taken to safeguard the Chum run to Salmon River which is one of the best producers in Area 2B East.

Obstructions and River Diversions - there is one large log jam on the Mamin River near its mouth. This jam does not stop the passage of fish but could be the cause of the stream breaking up into several small channels below the jam which could be the cause of the delay in Pink salmon migration during low water conditions. This jam was inspected by Resource Development personnel in the spring of 1969 but no action recommended until a survey is made during the Pink migration in 1970.

A log jam caused by blown-down timber of Steel Creek was removed by the Fishery Officer and crew of the F.P.C. "Sooke Post". This was a natural obstruction as there is no logging in the vicinity. Sixty-four man hours were required to clean this out.

High water conditions this fall flooded some flat logged off areas in the vicinity of Brent Creek and Honna River. When the water receded, it drew some slash and debris into these streams. Arrangements have been made with the companies concerned to clear this debris during low water levels this summer.

One natural obstruction found on Stanley Creek will be removed by departmental personnel during low water this summer.

There was some difficulty experienced this year in the operation of the Fairfax Creek fishway at Tasu prior to the date of hiring a patrolman in the area. There is such a wide variation in the flow in this small stream that it needs daily attention. The Tasu patrolman will be started two weeks earlier next year and this should take care of the situation.

Gravel Removal - there was no gravel removal from salmon streams in the District in 1969.

Environment, Multiple Water Use (cont'd) District 9

Logging Operations -there were 309,600,000 board feet of timber taken from the forests of District 9 in 1969. The area logged comprised 5,650 acres. Six hundred and forty men were employed in the logging industry. This cut of 309,600,000 board feet includes saw logs, pulp logs and cedar poles.

There are three large companies, MacMillan Bloedel, Crown Zellerbach and Rayonier involved in logging as well as two smaller companies, Queen Charlotte Timber and Harbour Timber Limited, formerly Naden Frontier Ltd. In addition, there are several small contracting companies who work for the big companies or work small timber sales and deliver to them.

One small company, Post Logging, took some timber off privately owned lands near the Sangan River.

Rayonier have moved their camp from Cumshewa Inlet to the head of Sewell Inlet and are now working across the divide on Newcombe Creek flowing into Tasu Harbour as well as on their holdings on the East Coast.

With the exception of the odd instance, logging operators co-operated very well with the Department. Meetings were held with the larger companies in the spring to discuss their logging and road building plans for the season and points of mutual concern were discussed.

Water Licence Applications - fourteen water licence applications were processed in the District in 1969. These were all for rights on small streams or springs and for domestic purposes.

Placer Mining Applications - in 1968, several placer claims were staked on the North Beach, Area 1. To date these claims have not been developed.

Trends in the Fishing Industry

With the exception of Area 2A West where bad weather prevents small gillnet boats from travelling, the gillnet fleet took most of the net caught fish. The trend of gillnets outfishing the seines continues.

No salmon has been canned by Queen Charlotte Canners at Masset since the takeover by Nelson Bros. Fisheries.

Crab and a few Razor Clams were processed in the cannery. The Razor Clam fishery has practically ceased due to lack of hand diggers. An agreement between Nelson Bros. Fisheries and the Federal Industrial Development Service for construction of a mechanical digger could bring this fishery back to prominence.

Eight fish buying camps operated in the District during the height of the salmon season.

Enforcement

There were seven prosecutions during the year. Four of these were "Surf Line" violations, one for an overlength net and the other two were for infractions of Section 33, Fisheries Act, by small contractors

logging on salmon streams. One of these operators, Post Logging Ltd., was fined $700. for putting slash and debris in the Sangan River. The other, Colibri Logging Ltd., was assessed $800. in Magistrate's Court but this sentence is presently being appealed.

Three "Surf Line" cases, carried over from the fall of 1968, were completed.

One Japanese longline vessel was apprehended by F.P.C. "Tanu" with the assistance of charter aircraft. The Captain was fined in Prince Rupert Court. Legal work on this case was handled by the Prince Rupert Office.

There were no reports of fishermen operating in closed areas but some reports of small mosquito boats operating behind boundaries at night in the Skidegate Inlet area. The acquisition of a fast, small inboard-outboard vessel for next season should help in controlling this type of operation.

The District was well patrolled by aircraft, charter boats and departmental vessels during the fishing season.

Several patrols were made by chartered aircraft over offshore waters for surveillance of foreign fleets who operate from time to time on the West Coast of the islands.

Predators

Sea Lions - gillnet fishermen reported some loss from sea lions in the Langara Island vicinity in Area 1 and in the Reef Island vicinity in Area 2B East. Fairly large herds were observed off St. Joseph Rock, Marble Island, Reef Island and Cape St. James but in all, damage to fish and gear did not appear to be excessive.

Hair Seals - very little hunting of hair seals has been carried out in the last few years as prices for seal pelts are low and there appears to be some increase in numbers. The population is nowhere near as large as it was in the early sixties. There is one buyer on the islands who reported that he bought no seal pelts in 1969.

Bears - with the exception of the Sockeye run in the Yakoun Lake watershed predation by bears on salmon runs was light. Sockeye in the small streams flowing into Yakoun Lake are especially vulnerable because of the smallness of these streams and lack of cover.

Grayfish - dogfish were unusually numerous in Skidegate Inlet in Area 2A East and in Cumshewa and Selwyn Inlets in Area 2B East.

Several nets were lost in these areas when fishermen did not haul them well before dark. Several fishermen were observed at the dock in Queen Charlotte City with their nets completely loaded with dogfish and with the remains of a few salmon still caught in the web. These nets, although not lost altogether, were practically useless as they were ripped so badly by these fish.

Killer Whales - a few killer whales were sighted in Area 1 but none reported from Areas 2A and 2B, either East or West.

Other - mergansers, ducks, gulls, eagles and ravens are all numerous around spawning streams when salmon are spawning and around herring spawning areas. It is doubtful that they cause much mortality to salmon runs but could have some effect on herring egg survival in years of light spawning.

Administration

Staff - Fishery Officer J.D. McCulloch replaced Officer A.W. Domes in Area 1, who transferred to Vancouver Waterfront.

Fishery Officer L.S. Freeman replaced Fishery Officer G.U. Smith in Area 2A, who had resigned.

Fishery Officer F.B. Wheeler was in Area 2B throughout the year.

One clerk worked full time in the District Office.

Three patrol vessels, F.P.L. "Pillar Rock", replacing "Egret Plume", F.P.C. "Sooke Post" and F.P.C. "Arrow Post" served in the District throughout the year while assistance was given by F.P.C. "Kitimat" and by Headquarters' vessels during the fall fishery and for offshore patrols.

Six guardians and nine patrolmen with charter boats were employed during the season. Skedans guardian and Kaisun guardian positions were not filled as it was an off Pink year.

Equipment - radio antenna poles were set up at Queen Charlotte and at Masset and reception was greatly improved. A single side band set was installed at the District Office Queen Charlotte. There seems to be still a blind spot in communications with departmental vessels from West Skidegate Channel as far north as Tian Head and unless reception is unusually good, contact cannot be established with vessels in this area.

Three small portable radio-telephones were utilized; these operated very well in some locations. The one supplied to Naden River guardian was especially efficient.

The Naden Harbour guardian cabin was replaced.

Information, Educational and Other Programmes

Films were presented to the schools at Queen Charlotte and Masset and to Rod & Gun clubs on the islands, with accompanying talks by Fishery Officers.

A general public relations programme was carried out with information being supplied to fishing companies, fishermen and industry.

Assistance was given to F.I.P., Inspection Branch and Resource Development Branch personnel by District 9 Fishery Officers and transportation provided in some instances.

Contacts were maintained and meetings held with logging companies and B.C. Forest Service throughout the year.

Information, Educational and Other Programmes (cont'd) District 9

Some assistance was given to Provincial Fish and Wildlife Officers during visits to the area and accommodations provided in Tlell and Yakoun guardian cabins.

Small boat transportation was provided for Department of Public Health personnel for a survey in Masset and assistance was given them in sample collecting.

Some assistance was given to officers of the Indian Fishermen's Development Board.

Close liaison was maintained with R.C.M.P. and Department of Indian Affairs.

DISTRICT 10

General Description

Conservation District No. 10, the northernmost section of the Pacific Region is unique in two major aspects; in it's geographical location and administrative requirements. It is not divided into sub-districts and all duties are carried out from the District office in Whitehorse, the capital city of the Yukon Territory.

Administrative and field duties differ considerably from those in the south and include all freshwater fisheries; sportfishing, commercial fishing and the Indian Food Fishery, together with salmon spawning surveys and assessments, pollution problems, multiple water use, basic research on existing stocks of the indigenous and anadromous species, trout planting programmes and the enforcement of the Yukon and British Columbia Fishery Regulations.

It is a vast area, comprising 207,000 square miles of the Yukon Territory and a large section of northern British Columbia for a total of some 300,000 square miles. Innumerable lakes and streams make up its watersheds, each contributing to the freshwater fisheries, and many supporting annual runs of salmon ranging in volume from less than 50 fish to 5,000 to 10,000 salmon in the more productive streams and lakes.

The District is sparsely settled, having a population of about 17,000 people, including some 3,000 Native Indians. Adding a few hundred whites and Indians in the B.C. Section, less than 20,000 residents are spread over this area. The white residents are settled mainly in small communities and mining towns or camps adjacent to the main highways, with the Indian populations confined to scattered villages or single family units adjacent to the white communities or located in extremely remote areas.

Climatic conditions are a major factor in fisheries management in the Yukon Territory, affecting, as they do, all travel, inspections, catch effort and production in the sport, commercial and domestic use fisheries of both the indigenous and anadromous species whose stocks are exploited in northern waters. Temperatures range from +80°F. in summer to -70°F.

General Description (cont'd) District 10

in winter in the Arctic and Sub-Arctic regions. Annual precipitation in the form of snow and rain varies from section to section, and generally affects programmes to a greater degree than in areas of more moderate climates.

Impassable snow-clogged or washed-out dirt roads restrict travel for long periods, and unpredictable heavy rainfall following sub-zero temperatures slow or completely halt vehicular travel at frequent intervals during the breakup season.

With only 120 miles of coastline, which borders the Beaufort Sea about 150 miles north of the Arctic Circle, District 10 has no saltwater commercial fisheries. The R.C.M.P. detachment moved from Herschel Island in 1964 leaving no settlements in Yukon Territory north of Old Crow Village, located about 130 miles south of that point. It is reported that a few Eskimos from the Northwest Territories and Alaska take small numbers of seals and Arctic Char in the Herschel Island section annually.

Fisheries

Commercial Fisheries (Table 9)

Salmon - in addition to the tabled production, 1,000 lbs. of Chum salmon roe was shipped to Arctic Seafoods, Vancouver, B.C.@ $1.00 per lb., all taken from fishwheel-caught salmon at Dawson City, Y.T.

The bulk of the salmon catches were taken by the operators of five fishwheels with less than 10% caught by ten gillnet fishermen on the Yukon and Pelly Rivers.

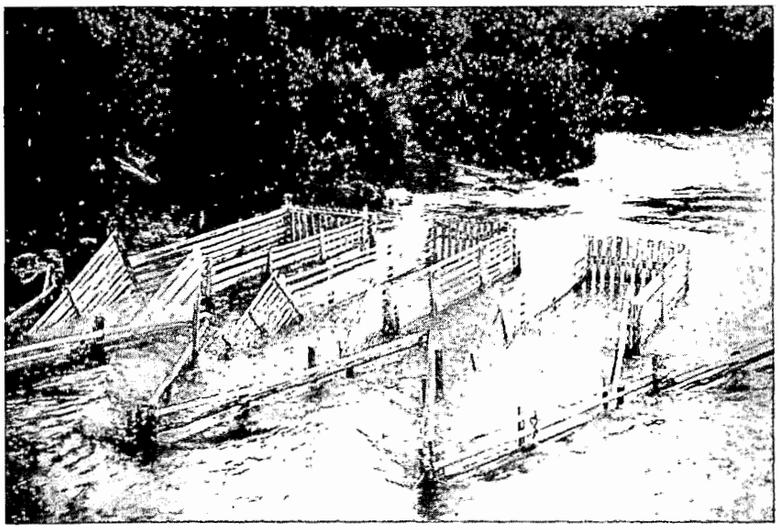
The first Chinooks were taken in a fishwheel during late June, slightly earlier than the previous year but following the annual pattern, a preponderance of small males, followed late in July by the larger females.

Early in the season the Alaska Dept. of Fish and Game, Commercial Division advised that the Chinook run up the Yukon River appeared to be of moderate volume with the salmon strung out along the river and no heavy schooling in any section. This deviation from the usual upstream migration pattern appears to have been one contributing factor adversely affecting the Canadian commercial catches which showed the lowest total in many years. No figures on Alaskan commercial catches have been received to date.

Small numbers of Chum salmon showed up at Dawson City in late July, intermingled with the Chinooks, with the numbers increasing through August and tapering off in early September. Catches of this species also fell well below the five-year average, although the 1969 run appeared to be heavier than the medium escapement estimates over the past five years.

Approximately 90% of the Chum salmon catch was sold commercially and shipped to Edmonton, Alberta, by a local wholesale firm, and the balance sold locally to individuals, lodges, restaurants, etc.

Incidentally, the 1,000 lbs. of roe was shipped to Vancouver in plastic containers after brine treatment to separate the eggs was carried out by the fishermen. All the equipment and containers were supplied by the consignee.



Salmon Traps, Klukshu River, District No. 10.

Sockeye salmon drying at Klukshu, District No. 10.

Fisheries (cont'd) District 10

Lake Trout and Whitefish - of the 22 lakes in the Yukon Territory open to commercial fishing for the indigenous species, only 6 were exploited during 1969, and although 37 commercial licences were sold, an increase of 4 over the 1968 total, landings were below the five-year average for both species.

Only 7 licencees fished solely as a commercial enterprise, while the majority sold a few to local residents and retained the balance for their own consumption. One shipment comprising 800 lbs. of Lake Trout and 200 lbs. of Whitefish taken from Atlin Lake was shipped to an Edmonton firm in April 1969. Samples of the Whitefish tested at this office proved to be entirely free of cystic infestations.

Sport Fishery

Adverse weather and travel conditions were responsible for a sharp decline in sportfish catches during the 1969 season. The expected record-breaking influx of tourists did not materialize when an estimated 10% of those headed north turned back at the end of the surfaced road near Fort St. John, B.C.

Grayling catches were heavy in all sections of the Yukon during May and June, but dropped off sharply as the weather deteriorated from July onward. The mild winter did permit an expanded ice-fishery and some fair catches of Lake Trout were reported from some of the local lakes.

Dezadeash Lake is still a source of concern following the oil spill in 1968. Catches of Lake Trout and Grayling were negligible and the lodge owners and regular visitors to that site attribute the poor fishing to that incident. We were questioned on this point by the U.S. Army petroleum agency, and assured that if it appeared that the stocks had been depleted due to the effects of the oil, they would consider restocking the lake if we so requested.

In spite of the poor fishing season, sales of resident and non-resident angling licences showed an increase, but not as marked as those for the past five years.

Indian Food Fishery (Table 9)

Indian Food fishing operations extend from Old Crow south to the 60th parallel, and include four species of salmon and all the indigenous species of fish which frequent the inland waters. The salmon catches in the Yukon are fairly accurately recorded at each fishing site, but the individual and total catches of the freshwater species are mainly esimates, based particularly on some personal contacts at the more accessible fishing sites, but largely on local knowledge of the number of Indians involved, their annual requirements and the effort they expend.

Salmon catches of all species showed a sharp decline in 1969, due in part to the light Chinook run to the Yukon River system, but basically to the fact that fewer Indians participated in the fishing operation.

Expanding industrial operations and the opportunities for academic and vocational training attract and absorb increasing numbers of the Native population each year, and except for the older Indians in the more

remote areas who prefer their own way of life, trapping, hunting and fishing, the trend appears to be a steady movement to the more urban centres where opportunities for employment and education exist.

Spawning Summary

Information concerning salmon spawning escapements to the majority of the streams in District 10 is acknowledged to be extremely meager for the 1969 season due to adverse weather and water conditions. Reasonably accurate estimates of spawning excapement to the streams accessible by road and foot travel were made and reported, but on the majority, which can only be surveyed by aircraft, salmon sightings and observations of spawning activities were negligible.

The 1964 Chinook salmon count through the fishladder at Whitehorse Rapids dam was not accurate as to numbers as only a portion of the salmon were counted and the balance estimated. The total given was approximately 600 salmon.

The 1969 count of Chinooks through the fishway fell woefully short of that number with only 344 passed through the counting gate. A number of these were reported lingering about eight miles upstream from the fishway about seven days after the final count and release of the fishway. Three flights to the Mitchie Creek spawning areas at later dates showed no salmon or carcasses and only three unattended reds were sighted.

Sockeye - the 1969 Sockeye spawning escapements to the Alsek-Tatshenshini system were heavy, and followed the same general upstream migration pattern as in previous years, i.e., a small run to the Klukshu and Village Lake in late June, followed by the main run commencing in mid-August and extending into late September. The Blanchard River run was not fully assessed due to the high turbid water at the time of inspection, but fair numbers were sighted on one section below the lake.

Coho - the Coho escapements to the two streams on the Alsek-Tatshenshini system, the Klukshu River and Village Creek were comparable to the 1968 runs, and a very satisfactory spawning was noted in both streams. The Klukshu River is becoming increasingly popular as an anglers paradise for both local and visiting sport fishermen despite the hazardous access to the fishing sites.

Chum - Chums appeared in good numbers in the streams frequented by this species throughout the Yukon River watershed. The Kluane River was heavily seeded and the side streams and mainstream bars in the lower sections of the Yukon River showed a better than average escapement.

Chinook - the overall Chinook spawning escapements to the streams on the Yukon River watershed were estimated as light, using the commercial and Indian catches and the few streams where reasonable estimates of numbers were possible as a basis for this conclusion. From this scant information, the escapement was considered to be well below the brood year figure and the average over the previous five years.

The Chinook escapement and seeding in the Tatshenshini - Klukshu River system was satisfactory with an estimated 10% increase over the 1968 figure and comparable to the brood year figure.

Fry Salvage - no fry salvage operations were carried out in District 10 during the 1969-70 season.

Pollution - up to very recent times, the terms "Ecology", "Environmental Protection" and "Pollution Control" were used only by professional people, but they are now used and apparently understood by the vast majority of the residents of this northern territory. As one old timer quoted, "the anguished cries of an aroused public are echoing through the land".

There appears to be an entire awareness of the threats to the natural environment through the indiscriminate dumping of raw sewage, garbage and other waste matters into the lakes and streams in the Yukon, and Fisheries and Forestry personnel are approached regularly by interested groups and individuals requesting details of our present and future role in halting such practices and preventing further contaminations and pollutions.

The City of Whitehorse and District sewage disposal systems which dump approximately three million gallons of raw sewage into the Yukon River daily are a bitterly fought issue, with the municipal authorities promising improvements but declaring regularly that vast sums of money are required from Territorial and Federal funds to install the required treatment plants.

At the upper end of Lake LaBerge, some twenty miles downstream from Whitehorse, the Indians and commercial fishermen claim that all the Lake Trout and Whitefish have moved to the lower section of the lake, leaving only the suckers in the polluted south end.

At Carmacks, some 110 miles downstream from Whitehorse water samples taken from mid-channel of the Yukon River and sent outside for analysis were declared unfit for human consumption.

An aerial survey of a number of abandoned oil and mineral survey camps in a huge northern section of the Yukon was carried out in September, 1969. This survey covered many lakes, streams and the shoreline of the Arctic Ocean. A complete report on conditions found at several sites giving details of garbage-strewn areas, gas and oil drums on the lake-shores and in the waters, and discarded equipment of every description was forwarded to Regional headquarters, giving the names of the companies responsible where identification was possible. Those identified were contacted and thorough clean-ups of the sites after breakup have been assured. Similar surveys will be conducted in 1970.

Twelve miles of the U.S. Army oil pipeline along Dezadeash Lake was replaced in the fall of 1969. The installation work was carried out by Banister Ltd. of Calgary, Alberta, under the supervision of the U.S. Army Corps of Engineers and U.S. Army Petroleum Distribution Office personnel of Anchorage, Alaska. Every phase of the work involving removal of the old line and the installation of the new line was carried out in a very efficient manner, and there were no oil spills and no incidents of disturbance of the surrounding environment.

The old line is to be flushed out during the spring of 1970, utilizing an alcohol flushing process which will be watched with considerable interest by departmental personnel. Negotiations are proceeding for the replacement of a further five miles of this pipeline southward through the Klukshu River section.

Environment, Multiple Water Use (cont'd) District 10

All Fisheries and Forestry staff, permanent and seasonal, in District 10 have been instructed to inspect, record and report to this office all mining, logging, road and bridge construction and culvert installations and any type of work projected or being carried out on or adjacent to any stream or lake in their assigned areas.

Industrial Developments - claim staking and oil and mineral explorations and developments continue at a feverish pace throughout the Yukon Territory. A report from the Mining Recorder's office shows over 30,000 mineral claims in good standing up to March 31st, 1970, with 18,000 staked during the 1969 season. About 50% of these were taken up in the Casino Creek area, the site of a multi-billion ton copper and molybdenum showing, now owned by Brameda Resources Ltd. All work at this site is still exploratory and pre-development, but plans call for a large mining and milling operation in the near future. The principals of this development have contacted this office, obtained copies of the Fisheries Act and Regulations, and will submit their proposed plans of operations, water supply, effluent disposal, etc. prior to actual construction or production.

The huge Anvil Mining operation began shipments of their products, lead, zinc, silver, in the fall of 1969 and their ore carrier trucks run regularly from the mine site to Whitehorse, are carried by railroad to Skagway, Alaska, and then by ocean carriers to Japan.

No new mines went into production during 1969, and Mount Nansen Gold Mine and Arctic Silver Mine closed down temporarily due to financial difficulties. Venus Silver Mine is due to start producing in 1970, with their construction programme getting a late start in 1969.

A cloudburst which followed several days of heavy rainfall in September caused severe flooding in the Flat River Valley at Canada Tungsten Mine. A large section of the impounded tailings were flushed over the holding dam and the Flat River was heavily silted for about eight miles downstream. The site was inspected immediately following this incident, and a complete report with aerial photos was forwarded to the Regional Office. This led to a meeting between senior staff officers at Pacific Regional Headquarters and principals of the mining company when plans for a new impoundment and decant system were presented and approved.

Many small companies and subsidiaries of larger companies started up or moved to this area during the past year. A few of these represent building supply firms, mining and milling machinery, steel products, a culvert rolling plant and a wholesale grocery firm.

Obstructions and River Diversions - no stream clearance work was carried out in this District during the past year and no obstructions were noted in any of the streams visited. A report from the Indian Band at Champagne, representing the few who participate in the food fishery on the Klukshu River, stated that the Klukshu was plugged solid with beaver dams and no salmon could get through. The stream was inspected using aerial survey and foot patrols where possible and no beaver dams or other obstructions were found.

Logging Operations - no logging or milling operations have been added to the nine small operations listed in the previous years report, although two applications from large operators are still under consideration.

The present operations, all portable type mills with limited production, are carrying out their logging operations in the following areas:

Three sawmills in the Watson Lake area; logging operations in the Upper Liard River area. Attempted river drives in 1968 but now skid out on winter roads.

One sawmill near Faro, operated by Dept. of Indian Affairs. Cutting in the Pelly River Valley adjacent to the mill.

One tie mill in McLintock River Valley. Small operation well back from the river.

One sawmill at Teslin, cutting in Nisutlin River Valley. Ceased river drives in 1968. Operates only intermittently.

One sawmill on the Dawson-Mayo Road. Well back from the Stewart River and operates only intermittently.

One small portable mill at Old Crow operated by Dept. of Indian Affairs. Logs are towed up the Porcupine River. Local consumption, and hand saw used mainly for cutting firewood.

One portable mill at the north end of Big Atlin Lake: cutting back in the valley to the west of the lake; winter operation only.

Water Licence Applications - only two water licence applications were forwarded to this office during the past year, one from the Federal Supervisor of Lands dealing with the application of Atlin Industries for a chipper mill and small townsite near Carcross, Y.T. and the other from the Director of Municipal Affairs, Yukon Territorial Govt. concerning the application for the lease of a parcel of land adjacent to Albert Creek, in the Watson Lake area, for the operation of a portable sawmill and stock piling area.

Both applicants were furnished with a copy of the Fisheries Act with the sections applicable to their operation clearly marked, and approval in principle to their applications was granted from this office, pending receipt of final plans of their proposed operations.

Placer Mining Applications - no applications for placer leases were processed through this office during the 1969-70 season. The small number of placer claims recorded at the Mining Recorder's office were all on the same grounds which have been worked since the Klondike gold rush.

Trends in the Fishing Industry

As reported annually, the definite trend in the fisheries in District 10 is toward a sharply reduced commercial fishery and greatly expanded sport fishery. This trend does not indicate any radical change in the Salmon commercial fishery on the Yukon River and Pelly River, and refers only to the indigenous species in the lakes and streams, particularly in the most popular, accessible waters adjacent to the highways and recreational roads.

Enforcement District 10

Only two minor sport fishing violations were prosecuted in Magistrate's Court during the past season. Both offenders were taken to court only after repeated warnings by the Fishery Officer and R.C.M.P. for using two lines while angling off the Tagish Bridge. The two convictions served as a warning to other offenders and the practice ceased for the balance of the season.

There were no violations detected, reported or prosecuted under closed season regulations, none of which exist in the Yukon Territory Fishery Regulations. The only closures imposed are commercial quota restrictions governing certain lakes and prohibiting commercial fishing on lakes and waters not included in the commercial fishing list.

Preventive measures include increased patrols in the areas where the majority of the violations occur, interpretation and explanation of the regulations prior to and during the fishing season, and well publicized prosecutions in the local press and over the radio whenever violators are apprehended.

Predators

Predation by bears and other fish species are not considered to be prevalent or serious in the north. Although the bear population, black and grizzly, possibly exceeds those in southern areas, trophy hunting for these species, which opens on April 15th each year, tends to keep them well back from populated areas and accessible fishing and hunting sites.

Bears, wolves, coyotes, eagles, gulls and ravens, to name some of the better known predators, are frequently sighted during the summer and fall months, but our observations show that the bulk of the fish eaten are spawned-out salmon, taken from the river bars or banks and sport fish caught and discarded by anglers.

Administration

Three Fishery Officers were employed in District 10 during the season, but one was assigned on a temporary basis pending the appointment of a permanent officer to the District.

Information, Educational and Other Programmes

The lack of experienced staff presented a major handicap in carrying out the educational programme on fisheries conservation and protection during the past year and many of the requests for speaking engagements, meetings, radio interviews and broadcasts on the major subject of pollution in the north and other matters related to fisheries management and responsibilities were regretfully declined. We did, however, fill a number of engagements including a T.V. interview, two radio addresses and talks to two service clubs plus a number of office interviews.

The volume of mail received at this office from all parts of the world requesting information on fishing in the north increases annually, and applications for employment with the Department doubled during the last quarter of 1969-70. The majority of these applications were from graduates of colleges in the United States.

Information, Educational and Other Programmes (cont'd) District 10

The annual Rainbow Trout planting programme carried out by the Resource Development Branch assisted by staff members of the Department from this District, continues to draw favourable comment from the public, and requests for investigations into the feasibility of such plantings in many lakes in the Yukon Territory are received at this office.

Meetings were held in Anchorage, Alaska and in Whitehorse, Y.T. with the U.S. Army pipeline agencies concerning the replacement of the oil pipeline along Dezadeash Lake. Slides taken at the site of the 1968 oil spill were shown at the Anchorage meeting and these, coupled with our insistance that immediate replacement of the line was imperative were, we feel, significant factors in achieving the replacement.

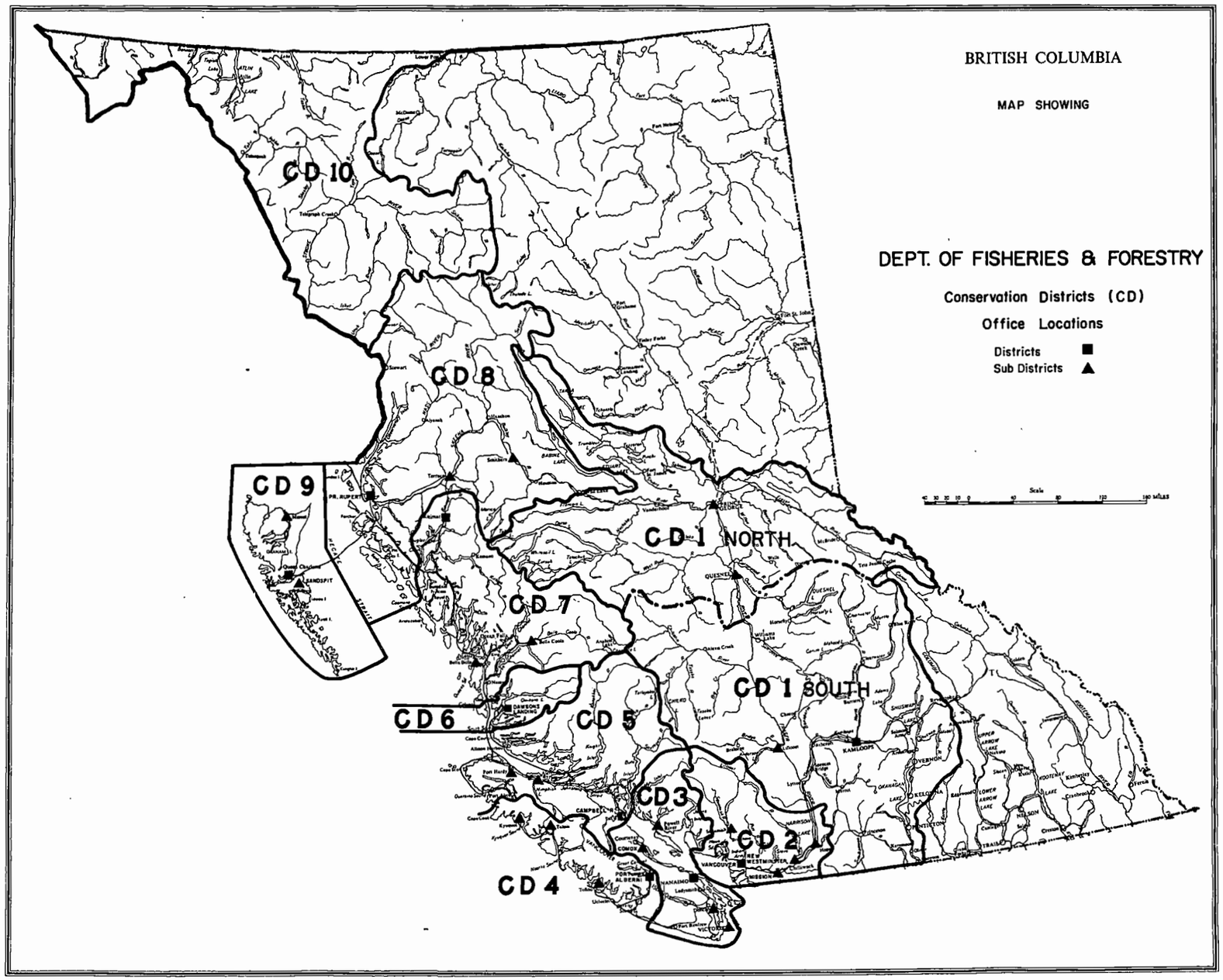
Personal contacts and correspondence are maintained with the U.S. Fish and Wildlife, Commercial Division, in Alaska concerning problems of mutual interest on Yukon River salmon management on both sides of the border.

Quarterly and special meetings are attended representing the Department on the Federal Interdepartmental Co-ordinating Committee, the sub-committee on water quality control and the sub-committee on recreation, the latter a joint Federal-Territorial committee with voluntary representation from all interested Departments. It is obvious that inter-departmental meetings and discussions will increase in the near future when the proposed legislation governing environmental protection in the north is introduced.

The angling licencing structure and programme is undergoing several desireable changes. Under the new programme, the field staff will be relieved of the major part of the monthly revenue collections which in previous seasons involved thousands of driving hours and time consuming travel, which can now be used to greater advantage on enforcement and conservation duties.

The past and present policy of consultation and co-operation with other departments and agencies at all levels, and the public at large, will be continued and expanded by the Fisheries and Forestry staff in District 10 during the years to come, and we look forward to 1970-71 as a year of tremendous development and an added awareness of the value of the role of the departmental representatives in conserving and protecting the fisheries resources in the north.

APPENDIX


BRITISH COLUMBIA
MAP SHOWING
DEPT. OF FISHERIES & FORESTRY
Conservation Districts (CD)
Office Locations
Districts
Sub Districts
CD 10
CD 8
CD 9
CD 1 NORTH
CD 7
CD 1 SOUTH
CD 6
CD 5
CD 3
CD 2
CD 4

HEADQUARTERS PERSONNEL
AND
PATROL VESSELS

M.P. Houghton	Chief of the Branch
Miss J.E. Brok	Secretary
J.R. MacLeod	Asst. Chief of the Branch
R.G. McIndoe	Sr. Protection Officer (Water Use)
A.L. Murray	Sr. Protection Officer (Enforcement)
J.H. Ellis	Head Clerk, Administration
A. Domes	Fishery Officer, Clerical Duties
4 Clerks 2 Stenographers	Staff, Administration
vacant	Electronics Technician
2 Trainees	Fishery Officer and/or other duties

Marine Unit

M.B. Gay	Marine Officer
G. Wilson	Engineer i/c New Westminster Repair Stn.
1 Eng. Mechanic 3 Ships' Carpenters 4 Engine Fitters 1 General Service	Staff, New Westminster Repair Stn.
Capt. W. Furlong	Relief Master, F.P.C.s "Howay" & "Laurier"
Capt. R. Watts	" " F.P.C. "Tanu"
5 Engineers 4 Mates 5 Seamen 3 Oilers 2 Cooks 3 Stewards	Relief Crew for above vessels

Patrol Vessels

Capt. R. McLellan	Master, F.P.C. "Tanu"
Capt. C.P. Power	Master, F.P.C. "Howay"
Capt. Waters	Master, F.P.C. "Laurier"
Capt. R. Armstrong	Master, F.P.C. "Kitimat"
Capt. R. Walker	Master, F.P.C. "Atlin Post"
Capt. R. Scheck	Master, F.P.C. "Chilco Post"

FIELD PERSONNEL AND PATROL VESSELS

DISTRICT 1

L.C. Goodman	District Conservation Officer	Kamloops
J.P. Tuyttens	Fishery Officer	Prince George
W.J. Elias	" "	Quesnel
G.A. Hooser	" "	Lillooet
A.L. Hilland	" "	Kamloops
D.D. Aurel	" "	"
Mrs. M.E. Gordon	Clerk	"

Marine and Seasonal Service

Master Engineer (casual - 5 months) F.P.L. "Takla Rock"
7 Seasonal Patrolmen

DISTRICT 2

H. Burrow	D.C.O.	New Weatminster
G.T. McIndoe	Fishery Officer	New Westminster
J.O.L. Lake	" "	Vancouver
W.K. Elliott	" "	Steveston
A. Reynolds	" "	Squamish
V.H. Knoop	" "	Mission
R.S. Racey	" "	Vancouver (Sport Fishery)
J. Hipp	" "	Chilliwack
J.L. Bentley	" "	Mission
T.H.F. Carscadden	" "	Vancouver
R. Rogerson	" "	New Westminster
	Clerk	New Westminster

Marine and Seasonal Service			Crew
Capt. C. Such	Master	F.P.L. "F.D. 202"	1
Capt. J. Cowie	"	F.P.L. "Gavia"	1
Capt. R.K. Johansen	"	F.P.L. "Star Rock"	1
Capt. C. Kennedy	"	F.P.L. "Vedder Rock"	1
Capt. I. McCormick	"	F.P.L. "Warrior Rock"	1

8 Seasonal Patrolmen

DISTRICT 3

G.W. Winsby	D.C.O.	Nanaimo
H.V. Grainger	Fishery Officer	Victoria
L. Gudewill	" "	"
W.L. Hitchcock	" "	Duncan
E.S. Robertson	" "	"
E.E. Epps	" "	Nanaimo
T. Morris	" "	"
A.C. Skipper	" "	Parksville
W.D.C. Webber	" "	Comox
D.E. MacIntyre	" "	Powell River
G. Ibey	" "	Pender Harbour
Mrs. P.M. Phillip	Clerk	Nanaimo
Miss M. Heap	"	Victoria

DISTRICT 3 (cont'd)

Marine and Seasonal Service			Crew
Capt. H.R. Lewis	Master	F.P.L. "Crescent Rock"	
Capt. Blair	"	F.P.L. "Brama"	1
Capt. O.K. Webstad	"	F.P.L. "F.D. 102"	
Capt. W. Zitzewitz	"	F.P.L. "Thrasher Rock"	

14 Seasonal Patrolmen

DISTRICT 4

P.B. Harrison	D.C.O.	Port Alberni
E.T. Kasmer	Fishery Officer	Port Alberni
W.D. Anderson	" "	" "
R. Rogerson	" "	" "
	(To Dist. 2 April)	
T.A. Seymour	" "	Tofino
L.B. Duke	" "	Tahsis
	(To Dist. 5 August)	
J.A. MacKay	" "	"
	(From August)	
R.A.H. Slater	" "	Kyuquot
Mrs. S. Dzus	Clerk	Port Alberni

Marine and Seasonal Service			Crew
Capt. J.H. Thompson	Master	F.P.C. "Comox Post"	3
Capt. E.J. Arnet	"	F.P.L. "Atolla" (replaced by "F.D. 202")	
Capt. J. Coates	"	F.P.L. "Gull Rock"	

14 Seasonal Patrolmen

DISTRICT 5

J. Fielden	D.C.O.	Campbell River
G. Graham	Fishery Officer	Campbell River
A. Gibson	" "	Alert Bay
R.P. Kraft	" "	" "
T.M. Moojalsky	" "	Port Hardy
C.R. Wilson	" "	Campbell River
G.E. Jones	" "	Quatsino
Mrs. M. Barcley	Clerk	Campbell River
	Clerk (seasonal)	Alert Bay

Marine and Seasonal Service			Crew
Capt. M. Minnette	Master	F.P.C. "Stuart Post"	3
Capt. R. Davis	"	F.P.L. "Beaver Rock"	2
Capt. J.W. Lundy	"	F.P.L. "Seal Rock"	1
Capt. M.J. Cox	"	F.P.L. "Pholis"	

21 Seasonal Patrolmen
1 Guardian

DISTRICT 6

J.D.C. Holland	D.C.O.	Vancouver (Rivers Inlet seasonally)
J.A. MacKay	Fishery Officer (To Tahsis July 31)	Dawson's Landing, R.I.

Marine and Seasonal Service

			Crew
Capt. L. Neilssen	Master	F.P.L. "Falcon Rock"	2

5 Seasonal Patrolmen
3 Guardians

DISTRICT 7

J.B. Hawley	D.C.O.	Kitimat
E.R. Christiansen	Fishery Officer	Kitimat
E.W. Armstrong	" "	Bella Coola
J.A. Macdonald	" "	Bella Bella
K.H. Hebran	" "	Butedale
H. Gjaltema	" "	Bella Coola
G.S. Zealand	" "	Kitimat
Miss J. Macdonald	Clerk	Kitimat

Marine and Seasonal Service

			Crew
Capt. G. Barber	Master	F.P.C. "Babine Post	3
Capt. J.R. Harris	"	F.P.L. "North Rock"	1
Capt. C.R. Forbes	"	F.P.L. "Surge Rock"	2
Capt. H.W. Veelbehr	"	F.P.L. "Temple Rock"	1
Capt. J.M. Lewis	"	F.P.L. "Gale Rock"	

11 Seasonal Patrolmen
16 Guardians

DISTRICT 8

J.W. Connor	D.C.O.	Prince Rupert
J.A. Kent	Fishery Officer	Prince Rupert
G.E. Scott	" "	Prince Rupert
G.W. Lowdon	" "	Prince Rupert
H. Gjaltema	(To Dist. 7)	Prince Rupert
A.M. Groat	Fishery Officer	Smithers
J.R. Cairns	" "	Prince Rupert
P.C. Harvey	" "	Prince Rupert
M.E. Bogart	" "	Terrace
L.J. Gelley	" " (Retired, March)	Smithers
D.M. Meyers	Fishery Officer	Smithers
N. Lemmen	" " (Sports Fishery)	Prince Rupert
Mrs. M. Ross	Clerk	Prince Rupert
Mrs. Landrath	-----	Prince Rupert

DISTRICT 8 (cont'd)

Marine and Seasonal Service			Crew
Capt. A.W. Wiley	Master	F.P.L. "Cutter Rock"	3
Capt. spare — manned as required		F.P.L. "Diaphus"	
" seasonal launch	"	F.P.L. "Babine River"	
Capt. R.L. Newton	Master	F.P.L. "Petrel Rock"	2
Capt. A.L. Swim	"	F.P.C. "Clavella"	3

DISTRICT 9

V.H.B. Giraud	D.C.O.	Queen Charlotte City
F.B. Wheeler	Fishery Officer	Sandspit
L.S. Freeman	" "	Queen Charlotte City
J.D. McCulloch	" "	Massett

Marine and Seasonal Service			Crew
Capt. K. Harley	Master	F.P.C. "Sooke Post"	3
Capt. R.M. Kinnie	"	F.P.C. "Arrow Post"	3
Capt. G. Kelly	"	F.P.L. "Pillar Rock"	

9 Seasonal Patrolmen
8 Guardians

DISTRICT 10

J.A. Summers	D.C.O.	Whitehorse
	Fishery Officer	

Seasonal Service

2 Guardians

MARINE UNIT

R.R. Mallory	Asst. Marine Officer	Prince Rupert
J. Scott	Engineer in Charge	Prince Rupert Repair Station
1 Ships Carpenter 2 Engine Fitters	} Staff, Prince Rupert Repair Station	
Capt. D.S. Snidal	Relief Master	F.P.C.'s "Atlin Post", "Kitimat" and "Chilco Post" and Class AA Vessels
1 Engineer 1 Mate 1 Cook/deckhand	} Relief Crew	
Capt. L. George Capt. P. Hudson Capt. C.M. Bygdnes	} Relief Masters	Class B & BB patrol boats
1 Engineer	Relief	

TABLE 1

ANNUAL SALMON LANDINGS (PIECES) FROM 1952

TOTAL PIECES & VALUE ALL AREAS

	Sockeye	Coho	Pinks	Chums	Springs	Total	Total Value Million
1969	4,265,500	2,412,400	2,569,600	1,308,800	1,098,400	11,653,700	27.9
1968	6,263,900	5,255,500	19,635,800	3,080,500	1,080,000	35,315,700	44.9
1967	6,743,000	3,302,000	9,818,000	1,127,000	1,130,000	22,145,000	36
1966	4,020,300	5,411,700	17,261,400	1,310,700	1,165,000	29,169,100	38.6
1965	3,019,400	4,443,200	5,109,000	633,100	981,300	14,200,100	26
1964	3,619,000	4,148,800	9,628,400	2,252,800	965,300	20,639,000	30.2
1963	2,086,100	3,421,700	12,201,800	1,463,000	805,300	19,990,800	22.8
1962	3,499,200	3,625,600	23,428,700	1,495,800	719,500	32,792,700	30.6
1961	4,564,700	3,297,300	8,304,800	1,217,700	685,300	18,091,400	26.2
1960	2,858,000	2,030,100	4,097,600	1,836,500	742,500	11,590,100	18.4
1959	3,259,600	2,896,900	4,345,200	1,356,600	948,300	9,572,400	20.5
1958	12,044,500	2,989,500	6,908,200	3,191,400	987,200	26,229,300	37.1
1957	3,036,000	3,136,700	11,310,400	2,412,100	845,200	20,850,100	18.9
1956	3,257,500	2,869,600	7,352,000	2,458,400	945,800	16,943,600	21.3
1955	2,835,500	2,970,000	11,246,500	1,567,600	810,000	19,515,100	18.5
1954	6,710,400	2,445,100	5,443,900	5,941,400	851,000	21,470,600	23.6
1953	5,926,700	2,894,000	11,110,000	4,670,000	986,500	25,657,700	21.9
1952	4,863,300	2,745,400	11,235,200	2,481,100	905,000	22,284,600	19.5

SKEENA AREA

1969	539,500	71,400	372,400	16,600	49,100	1,040,000
1968	780,900	241,100	413,300	45,200	55,800	1,536,300
1967	1,043,800	81,100	419,600	26,600	559,000	1,627,000
1966	592,700	291,100	1,076,600	37,400	47,700	2,045,500
1965	294,400	133,600	149,500	8,000	37,100	622,600
1964	766,100	183,600	964,900	3,800	49,600	1,968,000
1963	142,500	122,600	490,600	26,700	25,400	807,800
1962	484,200	146,600	579,700	21,600	32,300	1,264,400
1961	894,900	61,000	1,053,500	26,600	23,400	2,059,400
1960	186,100	59,600	170,300	21,300	38,800	476,100
1959	195,900	86,500	577,200	31,900	38,200	929,700
1958	602,100	87,600	901,400	43,500	42,800	1,677,400
1957	282,200	98,800	2,341,500	35,700	27,000	2,531,200
1956	149,100	120,500	416,400	51,400	30,000	767,400
1955	157,400	142,600	1,329,900	29,600	37,600	1,697,100
1954	571,900	178,900	738,700	121,100	46,500	1,657,100
1953	659,200	89,200	425,900	56,000	33,500	1,263,800
1952	1,294,500	150,000	1,450,800	37,500	65,800	2,998,600

TABLE 1 - (cont'd)

FRASER RIVER (Canadian Convention Area)

	Sockeye	Coho	Pinks	Chums	Springs	Total
1969	1,593,200		673,400			
1968	887,900					
1967	1,735,800		3,200,400			
1966	1,198,130					
1965	1,039,195		592,467			
1964	514,500					
1963	686,681		4,173,288			
1962	836,399					
1961	1,357,099		545,128			
1960	1,255,195					
1959	1,581,883		2,312,906			
1958	5,241,617					
1957	1,360,760		2,634,720			
1956	894,836					
1955	1,108,081		4,129,063			
1954	4,722,463					
1953	1,992,343		4,142,117			
1952	1,154,383					

DISTRICT NO. 2

Areas 28 - 29 A,B,C, and D

1969	956,800	22,900	254,500	88,700	87,400	1,410,300
1968	831,200	81,900	200	202,300	105,300	1,230,900
1967	878,400	33,800	532,500	46,500	124,000	1,615,200
1966	605,430	35,780	200	11,200	95,900	748,510
1965	865,800	43,100	110,200	12,300	93,400	1,124,800
1964	464,800	133,900	300	61,300	167,000	827,300
1963	497,600	36,400	583,400	53,800	117,800	1,289,000
1962	537,800	68,200		47,500	114,700	768,200
1961	716,200	32,400	116,600	48,900	97,800	1,011,900
1960	697,300	57,200	200	67,600	129,600	951,900
1959	897,600	59,600	482,900	234,500	176,500	1,851,100
1958	1,848,400	76,900	3,400	196,700	176,500	2,302,900
1957	645,100	49,400	915,600	125,700	139,100	1,872,100
1956	582,200	127,500	2,000	78,300	126,600	916,600
1955	529,400	78,800	844,200	128,800	148,200	1,729,400
1954	2,165,100	135,500	300	538,900	184,400	3,022,200
1953	1,328,800	85,600	1,068,600	386,300	181,900	3,051,200
1952	957,300	85,900	900	655,000	135,700	1,834,800

TABLE 1 - (cont'd)

DISTRICT NO. 3

Areas 14 - 15 - 16 - 17 - 18

	Sockeye	Coho	Pinks	Chums	Springs	Total
1969	48,000	35,500	13,300	34,500	81,300	212,600
1968	8,800	89,300	3,900	11,800	69,900	183,700
1967	17,900	82,000	35,500	100	99,100	234,600
1966	7,150	187,800	850		77,300	273,100
1965	3,900	126,100	3,200	300	75,500	209,000
1964	1,800	199,700	400	3,500	69,800	275,200
1963	25,100	104,400	320,000	14,000	104,400	567,900
1962	16,000	242,200	1,000	83,300	98,200	440,700
1961	12,100	254,800	125,400	67,300	94,000	553,600
1960	13,300	457,400	300	77,900	81,400	630,300
1959	53,400	235,000	193,700	241,000	111,600	834,700
1958	305,900	343,400	1,600	283,000	110,500	1,044,400
1957	22,800	270,200	73,700	77,300	99,200	543,200
1956	5,700	200,800	500	51,200	71,400	329,600
1955	8,000	497,700	101,300	84,900	48,000	739,900
1954	865,900	290,600	1,500	560,200	75,600	1,793,800
1953	13,600	292,700	231,800	404,900	92,400	1,035,400
1952	6,400	373,000	13,100	261,900	60,900	715,300

Area 20

1969	636,400	267,400	418,900	18,300	40,300	1,381,300
1968	56,700	400,700	900	26,700	22,100	507,400
1967	857,400	462,600	2,667,900	20,600	20,600	4,029,700
1966	680,300	561,500	5,000	26,500	28,000	1,301,300
1965	170,000	460,000	413,000	23,600	29,000	1,095,600
1964	34,100	315,500	700	37,300	21,300	408,900
1963	143,500	355,800	3,356,600	19,600	24,300	3,899,200
1962	287,500	408,800	1,200	13,700	21,800	733,000
1961	618,500	463,500	349,100	13,300	33,600	1,478,000
1960	550,300	82,700	1,600	15,800	15,000	665,400
1959	606,400	417,200	1,538,000	36,200	16,900	2,614,700
1958	2,809,700	266,600	1,300	29,400	23,500	3,130,500
1957	688,800	461,800	1,679,500	3,100	19,900	2,853,100
1956	250,400	127,000	600	1,500	19,100	398,600
1955	540,200	256,400	3,255,600	19,000	32,400	4,103,600
1954	1,582,100	112,200	700	6,400	18,900	1,720,300
1953	645,900	358,200	2,920,800	10,100	33,200	3,968,200
1952	174,900	27,100	1,200	2,700	19,000	226,900

TABLE 1 - (cont'd)

DISTRICT NO. 4

Areas 21 - 22 - 23 - 24 - 25 - 26

	Sockeye	Coho	Pinks	Chums	Springs	Total
1969	195,100	988,100	330,800	4,200	435,200	1,953,400
1968	148,300	1,695,600	118,000	800	389,000	2,352,700
1967	252,500	899,600	1,199,100	400	372,000	2,725,700
1966	102,750	1,314,200	112,300	100	483,100	2,012,400
1965	68,000	1,510,100	97,900	300	397,100	2,073,400
1964	50,300	1,138,100	7,900	46,200	332,600	1,572,100
1963	40,100	941,600	481,900	79,100	254,700	1,797,400
1962	70,700	989,700	23,600	126,500	224,300	1,434,800
1961	49,400	949,400	104,600	176,100	222,300	1,501,800
1960	56,100	344,200	2,100	382,500	252,300	1,037,200
1959	122,700	861,000	266,200	285,300	332,500	1,867,700
1958	27,800	641,500	29,500	536,600	375,600	1,611,000
1957	44,200	588,500	73,100	377,200	483,500	1,566,500
1956	97,700	593,800	32,600	560,000	525,500	1,809,600
1955	109,400	486,900	143,000	207,300	423,600	1,370,200
1954	162,200	521,200	5,700	869,000	373,600	1,931,700
1953	209,800	636,200	193,200	613,900	334,900	1,958,000
1952	190,800	752,500	900	112,800	382,200	1,439,200

DISTRICT NO. 5

Areas 11 - 12 - 13 - 27

1969	602,200	357,600	620,300	497,700	133,500	1,935,100
1968	557,400	922,500	3,799,600	661,800	143,700	6,087,000
1967	1,426,500	820,100	3,843,200	152,700	156,900	6,042,800
1966	696,700	1,105,400	3,163,200	43,400	122,500	5,231,200
1965	193,700	722,300	694,000	24,700	78,500	1,713,200
1964	194,700	581,800	870,800	127,100	77,600	1,852,000
1963	245,800	574,200	2,065,600	289,800	94,400	3,269,800
1962	178,000	458,900	733,500	136,400	65,100	1,571,900
1961	626,700	572,400	1,672,400	153,700	74,000	3,099,200
1960	270,600	292,200	350,700	611,200	77,000	1,601,700
1959	394,100	602,100	2,328,100	808,500	117,900	4,250,700
1958	4,355,700	793,200	1,395,300	880,100	131,900	7,556,200
1957	649,500	633,600	4,363,300	379, 00	80,600	6,106,900
1956	162,500	651,700	1,082,600	587,900	98,400	2,583,100
1955	201,600	645,500	3,060,900	518,400	69,000	4,495,400
1954	177,700	498,000	565,900	1,960,700	63,200	3,265,500
1953	619,700	611,400	4,889,000	1,657,000	92,800	7,869,900
1952	320,900	498,500	2,916,000	693,900	47,000	4,476,300

TABLE 1 - (cont'd)

DISTRICT NO. 6

Areas 9 - 10

	Sockeye	Coho	Pinks	Chums	Springs	Total
1969	903,300	70,500	29,700	65,300	21,200	1,090,000
1968	3,187,000	183,900	1,261,000	91,300	26,200	4,750,500
1967	1,404,100	288,600	206,500	36,200	38,600	1,975,000
1966	673,300	154,000	278,000	21,700	19,000	1,146,000
1965	934,800	268,700	58,500	18,700	30,000	1,310,700
1964	1,304,800	80,200	270,700	69,100	15,200	1,740,000
1963	612,500	41,400	41,600	47,400	9,900	752,800
1962	1,288,000	61,000	802,500	44,200	11,400	2,207,100
1961	1,056,300	92,200	166,900	31,400	13,800	1,360,600
1960	735,900	57,300	137,900	44,600	14,500	990,200
1959	552,900	50,000	51,500	22,800	9,100	686,300
1958	1,241,500	42,700	203,500	72,100	10,400	1,570,200
1957	437,000	32,100	62,200	50,500	3,700	585,000
1956	1,514,600	47,700	119,500	24,800	9,400	1,716,000
1955	909,700	51,900	126,500	48,400	10,300	1,146,800
1954	766,500	37,400	51,200	70,400	7,800	933,300
1953	1,889,400	29,000	123,300	56,900	8,000	2,080,500
1952	1,280,900	46,700	181,700	47,500	8,000	1,564,800

DISTRICT NO. 7

Areas 6 - 7 - 8

1969	86,800	161,500	99,700	353,100	66,600	767,700
1968	308,200	599,900	9,706,200	1,008,900	819,000	11,707,300
1967	328,700	171,500	219,200	247,000	81,700	1,051,500
1966	207,500	519,500	7,057,500	734,900	90,300	8,609,700
1965	190,100	515,500	2,464,200	269,700	100,200	3,543,100
1964	471,900	616,000	5,151,400	865,800	94,700	7,203,700
1963	239,600	552,300	3,966,900	695,400	82,500	5,540,200
1962	276,700	496,700	17,381,200	791,000	67,000	19,016,400
1961	212,600	408,800	3,402,300	383,200	41,900	4,462,600
1960	152,300	317,000	2,438,300	389,400	46,200	3,397,200
1959	120,900	240,900	659,700	167,200	42,800	1,231,500
1958	370,100	393,300	2,025,600	883,600	52,900	3,731,500
1957	88,600	358,200	816,400	988,300	26,000	2,271,400
1956	266,500	423,000	3,718,700	566,600	33,800	4,913,000
1955	153,700	256,200	993,400	362,200	35,400	1,804,800
1954	233,100	259,100	1,752,000	865,500	32,800	3,152,100
1953	273,600	291,100	877,500	1,090,800	34,500	2,575,400
1952	254,200	371,000	2,405,600	433,900	37,200	3,509,300
1951			4,296,000			

TABLE 1 - (cont'd)

DISTRICT NO. 8

Areas 3 - 4 - 5

	Sockeye	Coho	Pinks	Chums	Springs	Total
1969	786,400	176,800	721,000	106,300	115,200	1,912,300
1968	1,113,600	740,400	3,058,600	416,200	149,100	5,488,900
1967	1,542,200	218,000	994,800	166,800	144,100	3,079,200
1966	890,600	810,400	4,448,500	250,100	115,700	6,552,100
1965	564,600	453,100	1,185,800	103,400	110,600	2,417,500
1964	1,183,700	547,000	2,977,600	245,200	114,500	5,068,000
1963	272,600	384,800	1,405,300	113,600	76,800	2,258,100
1962	820,700	448,500	3,311,800	141,900	87,700	4,072,600
1961	1,269,000	225,000	2,322,500	162,800	53,200	4,032,500
1960	369,100	219,400	703,600	241,000	89,200	1,622,300
1959	488,500	210,300	1,200,900	217,300	94,900	2,211,900
1958	1,075,600	280,900	2,062,900	276,100	98,500	3,794,000
1957	452,100	284,100	3,168,900	334,400	64,400	4,303,900
1956	474,500	336,800	1,993,900	439,300	33,800	3,278,300
1955	386,400	333,400	2,678,700	115,900	77,300	3,591,700
1954	757,600	311,400	1,551,200	292,900	80,400	2,993,500
1953	941,600	206,500	784,500	307,600	97,500	2,337,700
1952	1,673,700	308,900	2,954,400	162,200	137,300	5,236,500

DISTRICT NO. 9

Areas 1 - 2AE - 2AW - 2BE - 2BW

1969	47,100	321,500	78,000	140,700	98,500	685,800
1968	52,700	531,700	1,685,000	660,700	92,400	3,023,200
1967	34,700	320,300	115,200	456,700	91,800	1,019,500
1966	18,300	509,000	1,805,000	209,200	74,300	2,612,800
1965	28,500	337,500	80,000	180,100	66,300	692,400
1964	12,900	533,600	347,700	797,200	72,400	1,763,800
1963	9,300	433,900	78,700	145,300	37,400	704,600
1962	23,800	445,000	1,073,200	111,300	30,700	1,684,000
1961	4,900	294,200	44,700	70,800	44,500	459,100
1960	7,100	198,800	412,700	6,500	36,700	661,800
1959	3,100	205,100	31,700	16,800	45,200	301,900
1958	9,800	238,700	1,209,000	33,800	42,800	446,000
1957	7,200	454,200	157,700	85,700	31,700	736,500
1956	3,400	363,000	403,600	148,700	33,500	952,200
1955	7,100	460,600	42,900	82,700	28,300	621,600
1954	100	375,200	1,515,300	667,400	38,500	2,596,500
1953	4,300	228,600	142,500	19,300	68,800	463,500
1952	3,900	246,700	2,760,900	111,300	50,400	3,172,300

TABLE 2

HERRING - LANDED TONS

Districts	1969	1968	1967	1966	1965	1964
2	14	29	68	98	128	63
3	1,019	313	9,179	47,537	21,796	39,252
4	-	-	12,927	29,505	38,490	49,746
5	128	107	12,408	30,863	38,308	32,581
6	-	-	2,717	5,068	4,434	2,363
7	198	1,163	22,134	33,348	45,539	45,720
8	749	1,301	6,250	21,449	30,369	47,918
9	186	173	229	6,824	45,458	35,203

TABLE 3

HALIBUT, GROUNDFISH, SHELLFISH (LBS.)

DISTRICT 2

Year	Halibut	Groundfish	Shellfish
1969	-	67,000	1,244,300
1968	-	94,800	1,196,100
1967	-	100,900	1,261,200
1966	-	40,100	1,290,000
1965	-	119,500	1,554,700
1964	-	93,500	1,361,600

DISTRICT 3

1969	1,700	1,255,600	8,036,672
1968	9,500	1,296,842	6,690,579
1967	8,900	1,131,738	8,831,565
1966	10,100	1,818,493	8,622,360
1965	22,800	1,787,643	8,463,200
1964	27,200	3,310,653	7,272,794

DISTRICT 4

1969	646,300	4,605,600	1,980,800
1968	515,000	4,242,000	902,000
1967	995,000	4,729,000	1,371,000
1966	1,336,000	6,105,000	1,498,000
1965	485,000	4,899,000	1,539,000
1964	464,000	3,510,000	777,000

TABLE 3 - (cont'd)

Year	Halibut	Groundfish	Shellfish
		DISTRICT 5	
1969	1,164,200	1,987,500	641,600
1968	1,021,500	2,326,400	683,800
1967	986,400	2,221,300	1,676,700
1966	1,338,300	3,904,000	1,397,100
1965	744,320	3,137,800	2,044,600
1964	869,600	2,244,800	715,000
		DISTRICT 6	
1969	93,000	106,400	71,100
1968	46,900	9,765	-
1967	105,500	119,500	-
1966	77,800	149,400	-
1965	36,500	28,400	-
1964	35,100	65,700	-
		DISTRICT 7	
1969	789,900	3,608,200	31,000
1968	513,900	2,796,908	1,800
1967	555,600	1,597,600	-
1966	578,100	5,326,800	-
1965	498,200	3,863,100	-
1964	322,200	2,217,200	6,600
		DISTRICT 8	
1969	2,069,200	9,020,100	361,800
1968	1,570,000	10,555,500	382,100
1967	1,261,100	9,839,100	345,100
1966	1,943,800	12,121,500	541,800
1965	1,963,900	12,480,100	394,900
1964	2,278,300	7,822,400	525,600
		DISTRICT 9	
1969	7,445,100	3,016,900	2,213,100
1968	5,104,800	2,704,400	2,778,700
1967	5,639,800	2,847,900	3,677,000
1966	4,822,300	3,273,900	2,833,900
1965	6,217,800	1,736,900	1,593,300
1964	5,601,200	1,041,500	2,669,800

TABLE 4

SALMON SPORT FISHERY (TIDAL WATERS)

(Catch in Pieces)

DISTRICT 2

Year	Coho Grilse	Coho	Chinooks Under 5 lbs.	Chinooks Over 5 lbs.	Pinks	Boat Days	Catch per Boat Day
1969	3,055	4,009	6,504	6,775	420	62,630	.30
1968	3,587	8,400	10,969	14,942	11	60,427	.63
1967	5,850	4,975	4,850	4,500	3,600	50,950	.47
1966	10,750	10,050	10,325	6,800	50	60,925	.62

DISTRICT 3

1969	47,557	65,012	38,312	28,725	36,367	182,917	1.18
1968	62,540	99,664	20,426	21,227	403	173,890	1.24
1967	63,624	67,567	16,124	22,369	19,872	168,768	1.11
1966	69,670	108,455	19,975	17,726	438	164,037	1.45

DISTRICT 4

1969	1,274	4,304	4,432	3,353	2	13,953	.92
1968	665	3,095	1,695	2,541	855	10,961	.95
1967	390	1,227	487	2,560	6	9,392	.75
1966	520	1,518	674	2,273	1,534	6,695	1.00

DISTRICT 5

1969	3,253	11,319	1,161	6,064	795	37,914	.60
1968	5,560	26,075	870	4,920	1,215	32,725	1.20
1967	1,700	29,750	1,100	6,450	4,100	36,100	1.20
1966	5,200	49,625	545	4,775	2,625	35,480	1.70

DISTRICT 6

1969	-	20	-	210	2	690	.34
1968	-	55	-	320	10	620	.60
1967	-	50	-	360	10	320	1.31
1966	-	170	25	433	60	555	1.40

DISTRICT 7

1969	25	378	387	1,052	40	1,993	.94
1968	50	755	206	640	60	1,396	1.20
1967	15	727	531	1,389	100	2,775	.99
1966	325	1,291	476	1,819	50	2,167	1.60

DISTRICT 8

1969	5	218	-	1,101	5	2,212	.60
1968	2	589	241	743	40	2,682	.60
1967	-	200	350	1,607	50	3,268	.70
1966	-	1,510	500	1,259	150	3,571	.95

DISTRICT 9

1969	392	990	2	20	263	1,522	1.01
1968	1,060	1,456	-	2	610	3,720	.85
1967	863	1,513	-	1	-	3,436	.68
1966	487	1,554	-	15	-	908	2.15

TABLE 5

DISTRICT 4

SALMON SPORT FISHERY - GOLD RIVER PERMIT AREA

(Catch in Pieces)

Year	Permits Issued	Chinooks Under 30 lbs.	Chinooks Over 30 lbs.	% of Total Catch Over 30 lbs.	Heaviest Fish-lbs.
1969	876	321	52	16	48
1968	850	85	12	14	38
1967	1,056	295	36	12	51½
1966	1,031	380	282	74	53
1965	711	373	137	63	48
1964	702	397	192	48	57

TABLE 6

DISTRICT 8

SALMON SPORT FISHERY (NON-TIDAL WATERS)

(Catch in Pieces)

Locale	Coho	Chinooks Under 5 lbs.	Chinooks Over 5 lbs.
Nass Sub-district	250	105	180
Skeena	50	56	30
Terrace - Lakelse	1,075	435	800
Babine - Morice	585	580	545
	1,960	1,176	1,555

TABLE 7

INDIAN FOOD FISH

(Catch in Pieces)

DISTRICT 1

Year	Sockeye	Coho	Pinks	Chums	Chinooks	Steelhead	Kokanee	Game Fish
1969	95,597	485	2,695	-	2,916	490	14,900	7,250
1968	62,606	195	-	-	2,860	115	19,800	14,300
1967	61,199	260	3,494	-	1,734	203	16,800	14,600
1966	58,393	545	-	-	2,177	185	16,500	13,600
1965	43,510	2,045	1,256	-	1,865	220	14,500	13,600

TABLE 7 - (cont'd)

DISTRICT 2

Year	Sockeye	Coho	Pinks	Chums	Chinooks	Steelhead
1969	63,738	15,094	22,750	6,665	11,369	1,020
1968	60,890	18,957	-	14,602	7,142	1,783
1967	47,621	6,809	22,193	11,936	4,440	2,092
1966	96,867	24,192	-	13,231	7,036	3,436
1965	77,060	22,739	29,475	8,692	8,450	3,655

DISTRICT 3

1969	24	1,328	16	10,391	889	-
1968	4	1,743	5	11,333	1,032	-
1967	37	1,477	163	8,516	571	-
1966	-	2,307	5	7,062	730	-
1965	-	1,450	10	4,414	579	-

DISTRICT 4

1969	8,116	265	-	5,313	797	8
1968	4,450	285	640	7,840	400	70
1967	8,330	460	-	5,400	400	35
1966	4,490	835	1,700	5,150	265	-
1965	4,760	590	-	3,525	170	-

DISTRICT 5

1969	7,744	249	1,345	6,713	143	7
1968	5,575	1,202	637	7,070	125	20
1967	7,010	278	2,069	6,909	46	19
1966	1,206	2,589	706	5,800	13	9
1965	5,977	703	2,018	4,930	46	4

DISTRICT 6

1969	2,500	50	-	300	10	-
1968	1,100	70	20	200	20	50
1967	300	25	-	-	10	-
1966	285	10	-	30	5	-
1965	385	25	-	-	-	-

DISTRICT 7

1969	7,195	1,797	1,310	6,927	1,608	415
1968	8,179	4,390	4,650	8,245	1,455	470
1967	9,521	2,126	1,000	6,175	1,597	373
1966	9,806	3,080	1,510	7,300	1,065	434
1965	3,823	1,572	800	4,620	864	353

DISTRICT 8

1969	49,961	3,864	2,859	440	1,761	877
1968	52,300	13,253	6,832	1,234	3,436	1,147
1967	53,641	7,501	8,291	1,495	6,024	881
1966	51,312	11,079	4,845	1,651	2,959	1,880
1965	52,275	13,270	8,717	371	3,764	689

DISTRICT 9

1969	11,000	400	-	2,550	25	-
1968	10,300	450	-	6,000	40	25
1967	5,800	-	-	100	-	-
1966	9,110	50	-	180	35	-
1965	10,370	950	130	5,530	36	-

TABLE 8

HERRING

(Lineal Yards of Spawn)

Districts	1969	1968	1967	1966	1965
2	13,800	9,146	35,720	6,050	8,130
3	76,375	36,795	32,305	26,475	43,830
4	29,125	26,200	22,600	29,600	46,500
5	69,925	34,530	32,921	37,760	30,000
Area 27*	6,525	1,800	800	980	12,800
6	9,950	15,080	14,100	13,200	11,700
7	28,920	31,630	39,375	14,625	31,440
8	2,400	14,000	7,000	8,500	15,500
9	12,450	7,430	8,650	11,610	10,000
	249,470	176,611	193,471	148,800	209,900

* This West Coast Vancouver Island area may be considered with District 4

TABLE 9

YUKON TERRITORY - DISTRICT 10

COMMERCIAL SALMON LANDINGS - (PIECES)

Year	Chinooks	Value	Chums	Value
1969	1,640	$ 8,297.00	2,279	$4,038.00
1968	2,212	13,638.00	435	1,044.00
1967	2,187	13,460.00	3,343	7,020.00
1966	1,942	9,320.00	3,157	6,630.00
1965	2,265	8,154.00	2,071	2,900.00
1964	3,208	9,625.00	1,929	2,900.00

INDIAN FOOD FISH

Year	Chinooks	Chums	Sockeye	Coho
1969	1,034	5,497	460	70
1968	2,930	11,100	400	50
1967	3,023	13,618	500	40
1966	2,690	8,605	4,000	25
1965	2,989	9,825	750	0