

PROVINCE OF BRITISH COLUMBIA

DEPARTMENT OF RECREATION AND CONSERVATION

HON. W. K. KIERNAN, *Minister*

D. B. TURNER, *Deputy Minister*

REPORT OF THE
Department of Recreation
and Conservation

containing the reports of the

FISH AND GAME BRANCH, PROVINCIAL PARKS BRANCH,
BRITISH COLUMBIA GOVERNMENT TRAVEL BUREAU,
PROVINCIAL MUSEUM OF NATURAL HISTORY AND
ANTHROPOLOGY, PHOTOGRAPHIC BRANCH, AND
COMMERCIAL FISHERIES BRANCH

Year Ended December 31

1964



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1965

DEPARTMENT OF BRITISH CONSULS
TREATMENT OF BURIALS AND MONUMENTS

THE NATIONAL ANTHROPOLOGICAL ARCHIVES
SMITHSONIAN INSTITUTION
WASHINGTON, D. C.

REPORT OF THE
Department of Recreation
and Conservation

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VICTORIA, B.C., January 21, 1965.

To Major-General the Honourable GEORGE RANDOLPH PEARKES,
V.C., P.C., C.B., D.S.O., M.C.,
Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR HONOUR:

Herewith I beg respectfully to submit the Annual Report of the Department of Recreation and Conservation for the year ended December 31, 1964.

W. K. KIERNAN,
Minister of Recreation and Conservation.

VICTORIA, B.C., January 21, 1965.

*The Honourable W. K. Kiernan,
Minister of Recreation and Conservation.*

SIR,—I have the honour to submit the Annual Report of the Department of Recreation and Conservation for the year ended December 31, 1964.

D. B. TURNER,
Deputy Minister of Recreation and Conservation.

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Report of the Department of Recreation and Conservation, 1964

D. B. TURNER, DEPUTY MINISTER AND COMMISSIONER OF FISHERIES

INTRODUCTION

The Department of Recreation and Conservation was created in 1957 and commenced operation as an entity April 1st of that year. That event was unique, for it was the first time in the history of Province or State in North America that the major elements of outdoor recreation were brought together under a single administration. Hunting, commercial and sport fishing, camping, ski-ing, picnicking, travel, photography, and subsequently natural history and human history from the museum standpoint were assembled from various departments of Government and meshed to form a Provincial Government department of recreational utility.

This seventh year for the Department, 1964, must be recorded as a 12-month of gratifying accomplishment. New records of achievement were again set. Refinements in administration led to operational and economic gains of significance, and new Government policies accented our goals and objectives and more clearly defined how they were to be reached. The over-all result of 1964 events, administrative modifications, and policy decisions is that the facilities for outdoor pleasures of British Columbians are being steadily acquired and secured for both the present and the future.

Some examples from the wide selection of Branch events and activities during the year 1964 illustrate the progress and the state of recreation and conservation in British Columbia today:—

Parks Branch.—Two policy decisions of Government in 1964 have been major steps in firming up definitions, establishing principles and philosophy, and clearing up often-expressed doubts about the present and future of British Columbia parks:—

- (a) All parks of 5,000 acres or less were made inviolate. This means that 142 parks out of 220 have been given full protection.
- (b) Nature conservancy areas were decreed in 1964, with the first such being established over 49,000 acres of the Black Tusk area of Garibaldi Park. In these areas, which are delineated for special reasons, such as historic interest, botanical or zoological excellence and uniqueness, geological significance, topographic beauty, or other special cultural interest, no resource development of any kind is permitted. They are key areas in existing and future parks and are in actuality wilderness areas, trail areas to be visited on foot, and hence without roads or man-made facilities other than emergency shelters.

Fish and Game Branch.—Great gains marked the year 1964:—

- (a) Record revenue, up 9 per cent from 1963, for the first time was over the \$2,000,000 mark. The gain came from increased hunting and fishing pressure from more hunters and from more non-resident hunters paying more for their sport.
- (b) Rescindings and relaxations of regulations for the use of aircraft contributed to simpler and more harmonious operations. There was also a step-up in Departmental air patrols.
- (c) Elimination of the four-wheel-drive ban was welcomed by sportsmen.

- (d) Introduction of the compulsory steelhead punch-card means that it is now possible to obtain the fundamental information about trends and yields of rivers, the facts and statistics which are so essential for sound management of a fishery.
- (e) Acquisition of the key Fraser Valley trout hatchery and start of construction on the modern Kootenay hatchery at Bull River are two 1964 events of enduring significance.
- (f) Reservation of the Duck Lake region for research and wildlife-management purposes is another 1964 highlight. Duck Lake and associated waters comprise a strategic part of the Pacific Flyway for migratory waterfowl. This water and wetlands lie in the valley of the Kootenay River near Creston.
- (g) The introduction of a new system relative to licences, trophy fees, etc., is a forward step which will produce a better basis for hunter sampling, permit better all-round basic licensing, and contribute toward better game management.
- (h) The reorganization of the Provincial Fish and Game Division areas, budget consolidations, the use of electronic computers, and the upgrading of the publication "Wildlife Review" are some of the 1964 administrative advances made in the interests of efficiency and economy.
- (i) The continuation and expansion of the wildlife inventory programme for Northern British Columbia led to the acquisition of information and management facts which relate directly to the economics of trophy fees and non-resident hunters.

British Columbia Government Travel Bureau.—The value of the tourist business to the Province shows a substantial increase, in all likelihood the greatest percentage increase in any Province for 1964 over 1963. The estimated value rose from \$150 million in 1963 to \$184 million in 1964, which is close to a 23-per-cent-increase. Travel is a surging major industry in British Columbia, and should end up second only to forestry within five years.

A few specifics for the Bureau are listed:—

- (a) Promotions in California and in the Prairie Provinces were singularly successful in stimulating interest in and attracting visitors to British Columbia.
- (b) The opening of the Kootenay Skyway and the excellent publicity obtained in connection with it has helped notably toward a major objective—the extension of the visitor year.
- (c) The new and successful Tourist Information Centre at Abbotsford, the continuation of promotion and publicity at British Columbia House in San Francisco, and use of the valuable facts gleaned through our "Tourist '63" research findings, all have contributed materially to the record 1964 tourist and travel year.
- (d) The special attention paid to out-of-Province and out-of-Canada travel writers has paid handsome dividends in the form of widespread newspaper and magazine accounts and columns beyond our borders. Some 60 members of the American Society of Travel Writers, for example, were introduced to the beauty, the people, the hospitality, and the immense outdoor natural resources of British Columbia.
- (e) The tourist drawing power of hydro dams was demonstrated strongly in the Peace River District, and this augurs well for the tourist wealth to come throughout the Province for this special kind of attraction.

- (f) Within British Columbia, strong participation in successful hospitality conferences with the British Columbia Hotels Association, the Canadian Restaurant Association, and the British Columbia Hotels and Resorts Association was designed to improve efficiency of staffs and lead to still better services to tourists.
- (g) Again, within the Province, the formation of the Provincial Tourist Advisory Council in October was a positive step toward unification of the many and varied tourist and travel interests in British Columbia. The aim of the council is to help government in increasing the scope and furthering the welfare of the tourist industry.

Photographic Branch.—Two new films were completed in 1964—a successful interpretation of Vancouver Island and, perhaps the film destined to win more acclaim and awards than any other in the history of our film-making, the dramatic "Valley of the Swans."

It may be remarked that 1964 is regarded by the Director as the worst year for photography in British Columbia he has ever experienced.

A study of the Photographic Branch was inaugurated in 1964, and a new establishment is set out in the 1965/66 estimates.

Provincial Museum of Natural History and Anthropology.—Growth continues strongly in all phases of museum operation, and never was the need greater for new and enlarged quarters. Fortunately the new Museum, together with the Archives, is on the drawing-boards as a complex of buildings which will be a reality in 1967 as a major centennial project of the Government of the Province of British Columbia.

Attendance at the Museum in 1964 was up about 100 per cent.

Community museums throughout the Province have increased by eight in the past few years and now total 48.

Commercial Fisheries Branch.—The 1964 cropping of the valuable commercial fisheries resource was better than anticipated and in total was regarded as satisfactory. The best fishing for chums and sockeyes since 1950 was experienced in northern waters. Over-all, only springs and pinks showed significant decline below the 1963 levels. The coho take, on the other hand, was better than average.

The operation, for a trial period and on a small experimental scale, of custom canneries for the processing of sport-caught salmon was legalized and introduced. The first went into business at Brentwood, near Victoria, and two others, near Campbell River and Pender Harbour respectively, are in process of construction.

In January, 1964, staff members took an active part in the Federal-Provincial Conference on Fisheries Development, convened in Ottawa by the Honourable H. J. Robichaud, Minister of Fisheries for Canada.

Staff members presented three papers at the first meeting of the Federal-Provincial British Columbia Fisheries Committee, held in Ottawa in November, 1964. The formation of this committee was an outcome of the January meeting in Ottawa.

Mr. R. G. McMynn completed his second-year research into jurisdictional and administrative management of commercial fisheries in British Columbia. The assignment was a comprehensive one, recommended by the 1963 Special Committee on Fisheries, Legislative Assembly of British Columbia. The final report will be submitted by March, 1965.

Dr. D. B. Turner served throughout 1964 as a member of the Federal-Provincial Committee on Wage and Price Disputes in the British Columbia Fishing Industry. The committee reports were submitted at the end of the year to the Honourable H. J. Robichaud, Minister of Fisheries for Canada, and the Honourable L. R. Peterson, Q.C., Minister of Labour for British Columbia.

To all those individuals and agencies, both within and without governments, it is a pleasure to take this opportunity of saying thanks for their invaluable co-operation, which has contributed to the advancement of the aims and objectives of the Department.

Our special thanks go to the generous donors of lands for the perpetual use and enjoyment of the people of British Columbia. By name these donors in 1964 were Capt. Burges J. Gadsden and Mr. L. T. Bellhouse.

HIGHLIGHTS OF 1964

FISH AND GAME BRANCH

RECORD LICENCE SALES

Sale of hunting licences to resident and non-resident hunters increased above the 1963 totals by (resident) 132,500, up 3 per cent, and (non-resident) 5,450, up 7 per cent.

NATURE CONSERVANCY AT CRESTON

Creation of a wildfowl conservation area on 11,000 acres of the Creston Flats.

HATCHERY ADDED IN LOWER MAINLAND

Acquisition of a fish-farm for adaptation to a hatchery was made near Abbotsford to ensure adequate supplies of game fish for the future.

PROVINCIAL PARKS BRANCH

NEW PARKS ADDED

Nine new Class "A" parks were added to the Provincial parks system, amounting to 4,391 acres. British Columbia parks now include 147 Class "A," 8 Class "B," and 71 Class "C," totalling 6,394,944 acres.

NATURE AMPHITHEATRE AT MANNING PARK

More than 2,500 nature-lovers attended lectures in Manning Park outdoor amphitheatre.

BARKERVILLE ATTENDANCE

Registrations at the Barkerville museum totalled 48,200.

BRITISH COLUMBIA GOVERNMENT TRAVEL BUREAU

TOURIST SEASON EXTENDED

The tourist industry, down in July due to inclement weather, extended into September and October to an extent never before attained.

GOODWILL TOUR

A promotional goodwill tour to Alberta and Saskatchewan was prelude to the opening of the Kootenay Skyway in late August.

ACCOMMODATION DIRECTORY SETS RECORD

The British Columbia Tourist Accommodation Directory, "bible" of the industry, was completed in record time and distribution began before the year-end.

"BEAUTIFUL BRITISH COLUMBIA" MAGAZINE CONTINUED GROWTH

Average circulation per issue of "Beautiful British Columbia" magazine exceeded 90,000, and the subscription list increased from 37,000 to 44,000.

**PROVINCIAL MUSEUM OF NATURAL HISTORY
AND ANTHROPOLOGY****MUSEUM ATTENDANCE**

Museum attendance increased by 100 per cent over 1963, from 82,311 to more than 160,000.

NEW MUSEUM

Plans for the construction of a new museum were announced.

PHOTOGRAPHIC BRANCH**NEW FILMS RELEASED**

"Valley of the Swans" and "Vancouver Island," 16-mm. films produced by the Department, received widespread acclaim following their releases during the year.

TELEVISION SHOWINGS INCREASED

Television showings of British Columbia films in the United States increased from 200 in 1963 to 536.

COMMERCIAL FISHERIES BRANCH**SALMON CATCH INCREASED**

The catch of all species of salmon, with the exception of pinks and springs, showed appreciable increases, with exceptionally fine catches registered in the northern area.

FISH and GAME BRANCH





Many trout are planted from the air.



Winter sport fishing in British Columbia.

FISH AND GAME BRANCH

JAMES HATTER, DIRECTOR

ADMINISTRATION

In 1964 the demands upon the Fish and Game Branch continued to accelerate. Most work functions are associated with the increase in hunters and fishermen, both residents and non-residents; the increases in human population, resulting in inquiries and requests for assistance; and the industrial expansion, especially hydro developments on the Peace and Columbia Rivers and the expansion in the forest industry.

Co-operation with Government agencies, both Federal and Provincial, and participation in the *Agricultural Rehabilitation and Development (British Columbia) Act* programme continued to expand. To handle these requests, the Fish and Game Branch has improved the administrative field programme outlined in the 1963 Annual Report.

There were several major changes in the Fish and Game Branch staff during the year. The Fisheries Division recruited Mr. R. C. Thomas from the Alberta Fish and Game Department. Mr. D. J. Robinson, formerly Chief of Game Management, became the Assistant Director, and Regional Game Biologist W. G. Smith has moved from Cranbrook to headquarters as Acting Chief of Game Management.

Several aerial patrols were flown in late July and again in early September. These patrols covered most of the Chilcotin Plateau country and were carried out to assess the impact of hunters and fishermen who are utilizing aircraft as a means of travel to reach out-of-the-way places. As a result of these random aerial checks, it has been concluded that at the present time the number and the department of the people using aircraft for hunting and fishing is not detrimental to the fish and game programmes. However, the Fish and Game Branch intends to continue with this type of patrol so that it will be aware of situations such as undue pressure on vulnerable herds of big game or during spectacular runs of fish.

The fifth in-service school was held again in the Green Timbers Forestry School. The benefits of these intensive two-week courses are reflected in the improved quality of work. Conservation Officers now initiate water-pollution investigations, carry out organized creel census and game-management surveys, as well as participate in more general types of programmes.

The co-operative junior firearms safety programme, which is administered by the Fish and Game Branch with the full co-operation and support of the British Columbia Federation of Fish and Game Clubs, continued to expand. During the last year over 2,000 young persons were graduated, bringing the total since the inception of the course to about 5,700. While this does not remove the possibility of accidents, it is quite apparent that those graduating from the course have a much lower probability of being involved in improper behaviour.

Firearms Accidents Caused by Hunting, 1962-64

Year	Fatal	Serious	Not Serious	Total
1964	9	10	9	28
1963	5	3	20	28
1962	9	2	10	21

Hunting and firearms accidents have not shown a great increase during the last year, but there has been an increase in the number of fatal and serious accidents over the previous two years.

The magazine "Wildlife Review" is now available by subscription at the cost of \$1 for eight copies spanning a two-year period. This change in policy from a free publication to one of nominal cost was caused by the extremely large distribution list, which was in excess of 60,000. The cost of \$1 for two years will, in part, prevent the publication from competing with other services. The general public has responded to this new approach, and the Fish and Game Branch has so far received over 24,000 subscriptions for the magazine.

Once again the Fish and Game Branch wishes to express its thanks for the co-operation and assistance received from other branches of the Department and also from other departments and individuals within the Provincial Government. Special thanks are also conveyed to the Royal Canadian Mounted Police for their valued assistance.

GAME MANAGEMENT

GENERAL

The estimated sale of 132,500 resident and 5,450 non-resident hunting licences in 1964 represents a *Provincial record* and an increase over last year of 3 per cent in resident and 7 per cent in non-resident hunters. The increasing number of hunters in the Province is attributable to a number of factors, of which the growing population, an increased level of participation in hunting, expanding access, and industrial developments are major contributors.

The reservation of Crown lands on the Creston Flats of 11,000 acres for a major waterfowl refuge development was announced in 1964. This announcement by the Minister of Recreation and Conservation is a major contribution to the welfare of wildlife resources in the Province.

GAME REGULATIONS AND SEASONS

Unseasonably mild weather conditions in the latter half of the 1964 hunting season depressed game harvests in many areas of the Province. To compensate for this unpredictable circumstance, seasons were extended in several game management areas to permit allowable harvests of game.

The initiation of a basic resident hunting licence and a tag-licence on big-game animals in 1964 has greatly improved the basis for estimating the annual harvest of game species. For the first time, confident estimates of sheep, caribou, and grizzly harvests will be available. In addition, the estimates for deer, moose, and elk taken will be improved.

The Migratory Game Birds Regulations were separated from the Provincial Game Regulations in 1964 to permit earlier setting of seasons and also to facilitate their publication.

GAME HARVESTS

The 1964 harvest of game will not be known until March, 1965, following completion of the annual hunter sample. The hunter sample is a mailed questionnaire sent annually to hunters selected at random. The answers are used to determine harvest estimates. The following table of estimated game harvests for the past five years illustrates the magnitude and trend of the Provincial kill:—

Provincial Game-harvest Estimates from the Hunter Sample

	1959	1960	1961	1962	1963
Ducks	390,200	390,000	377,200	460,500	368,570
Grouse	365,000	344,000	413,600	360,500	245,470
Pheasant	50,700	46,600	57,100	664,700	54,940
Moose	12,200	11,300	15,200	16,675	16,510
Elk	2,300	2,300	3,500	2,300	3,950
Deer	61,400	58,600	67,000	69,500	71,520

Harvests of game species vary within regions of the Province, as illustrated by the following table, taken from the hunter sample estimates:—

1963 deer harvest by area—

Vancouver Island	23,550
Mainland Coast	16,890
Interior	17,420
Northern British Columbia	1,680
Peace River	1,980
Kootenay	10,000

1963 moose harvest by area—

South of Quesnel	3,890
North of Quesnel (excluding Peace River)	8,430
Kootenay	670
Peace River	3,040
South of Thompson River	500

1963 duck harvest by area—

Vancouver Island	54,000
Mainland Coast	9,000
Interior	70,000
Northern British Columbia	14,000
Peace River	13,000
Kootenay	19,000

1963 grouse harvest by area—

Vancouver Island	57,000
Mainland Coast	39,000
Interior	81,000
Northern British Columbia	19,000
Peace River	4,500
Kootenay	44,047

Antlerless seasons on various big-game species are designed to permit harvests within the capability of wildlife populations to produce an annual surplus. The following table from the hunter sample illustrates the extent to which this management measure has contributed to the Provincial game harvest:—

Percentage of Antlerless Animals in Hunter Sample Harvest Estimates, 1960-63

	1960	1961	1962	1963
	Per Cent	Per Cent	Per Cent	Per Cent
Deer	27	29	30	34
Moose	27	32	40	42
Elk	40	52	35	48

Road checks are operated at various locations throughout the Province, supplying detailed data on the species, sex, and age-class of game harvested, kill distribution, and general information about hunters. The Cache Creek Check-station, operated on a 24-hour-a-day basis throughout the season, provides the totals in the following table:—

Cache Creek Check-station Data, 1960-64

	1960	1961	1962	1963	1964
Deer	3,295	4,800	3,690	3,656	3,765
Moose	2,919	4,175	4,833	5,418	5,446
Black bear	140	121	158	96	116
Caribou	106	104	142	156	200
Elk	9	12	39	26	35
Mountain sheep	50	56	44	70	48
Mountain goat	121	112	122	169	136
Waterfowl	6,890	7,942	8,424	7,283	6,864
Grouse	5,701	12,000	6,188	3,215	4,065
Total hunters	17,902	20,757	23,291	22,779	21,533

GAME-POPULATION ASSESSMENTS

Post-season game counts which measure the sex and age composition of game populations, spring carry-over counts designed to measure the winter survival of game animals, and other seasonal and periodic inventories of game populations are a part of the wildlife-management programme carried out by the Fish and Game Branch.

Moose

Post-season and spring moose counts in 1964 reveal an average level of production indicated in the following table. An increased moose kill in the Province is indicated by the yet incomplete game check-station operations, agreeing with the indications based on field counts and observations.

Area	1962		1963		1964	
	Adult	Calf	Adult	Calf	Adult	Calf
G.M.A. 20, west half	Per Cent 76	Per Cent 24	Per Cent 84	Per Cent 16	Per Cent 82	Per Cent 18
G.M.A. 20, east half	74	26	78	22	79	21
Peace River	68	32	80	20	78	22

Deer

The 1964 deer harvest is expected to reach a new high, based on indications of good production and carry-over in 1963/64. Winter air counts in the East Kootenay region showed a 35 per cent level of fawn production in deer and a spring carry-over of 35 per cent fawns. This represents minimal winter losses. Carry-over counts in other areas of the Province indicated a juvenile deer population of 28 per cent on Vancouver Island, 30 per cent on Mainland Coast areas, 30 per cent in the Okanagan-Boundary area, and 27 per cent in the South Central Interior.

Data from the Cache Creek check shows an increase in the 1964 deer harvest from central and northern areas of the Province; game checks elsewhere in the Province indicate normal or above levels of harvest.

Elk

Vancouver Island game checks indicate an increased harvest of Roosevelt elk in 1964. In the East Kootenay the 1964 harvest of elk is expected to be above average level as a result of an extended antlerless season. Population assessments during the winter and spring of 1963/64 revealed good production and survival in elk populations of the East Kootenay. Numerous sightings of elk, especially in the Cariboo, indicate a steady extension of range for this species.

Goat

The initiation of the tag-licence for goat in 1963 permitted a detailed measure of the Provincial goat kill, estimated at 2,196 animals. Goat-hunters numbered 4,102, including 1,082 non-residents.

The goat harvest was widely distributed by area, as illustrated in the following table, showing the major kill areas in the Province:—

Area	Estimated Goat Harvest
G.M.A. 11 (East Kootenay)	788
G.M.A. 20 (North Central British Columbia)	301
G.M.A. 21 (Northern British Columbia)	284
G.M.A. 2 (Lower Mainland)	122
G.M.A. 15 (Lillooet area)	120
Remainder of Province	581

Game Birds

Interior grouse populations have undergone a periodic decline; however, check results indicate an increased level of harvest in 1964. Populations throughout the Interior and Northern British Columbia are expected to increase over the next four to six years. Vancouver Island blue grouse populations were below average levels this year due to poor weather before and during the reproductive period. Ruffed grouse populations and harvests on Vancouver Island were above average, and this species will soon become the most important upland bird on the Coast.

Chukar partridges in the south central areas of the Province continue to be scarce. This follows the anticipated pattern following the successful introduction.

Pheasant populations and harvest in 1964 were below average, a trend observed elsewhere in the Pacific Northwest.

GAME SURVEYS AND INVENTORIES

For the third successive year, aerial exploration of northern game populations and ranges has been done by Game Management personnel. Classified counts of 900 big-game animals were made, of which 479 were Stone sheep. In addition to game counts, range areas were mapped.

Additional field assessment of the Columbia Basin dam projects was done in 1964. New data on the distribution of elk and mountain caribou were obtained, to be added to the knowledge of game populations that will be affected by reservoir developments.

A number of areas of waterfowl habitat on the west coast of Vancouver Island were surveyed during the year, resulting in the establishment of land reserves on several important areas.

RESEARCH PROJECTS

Studies of Columbia black-tailed deer continued on Vancouver Island in 1964 as part of a major research project conducted in co-operation with the University of British Columbia.

An ecological study of California bighorn sheep in the Ashnola area was completed in 1964, yielding valuable information of management significance.

Preliminary A.R.D.A. studies have been commenced in the Prince George and East Kootenay areas, assessing the significance of wildlife resources as a part of the national land-capability inventory.

Initiation of the tag-licence on big-game species has provided a much-improved basis for estimating the Provincial game harvest. The hunter sample is currently being redesigned to improve harvest estimates.

The effects of phosphomodan on small birds and mammals were studied with the co-operation of the British Columbia Forest Service, which was conducting experimental hemlock looper control in the Queen Charlotte Islands. The results of this study, which are being prepared for publication, indicated heavy mortality of passerine birds and inconclusive evidence of any effects on small mammals.

PUBLICATIONS

The hunter sample analysis for 1963 was published with a separate treatment of the goat harvest. The special analysis of the goat harvest made use of the newly designed tag-licences experimentally issued for this species in 1963.

Records based on the Cache Creek game check were also published. This series goes back to the late 1940's.

PERSONNEL

Mr. P. W. Martin, formerly the Assistant Chief of Game Management, moved to Uganda, Africa, to assist this Commonwealth country in the development of a wildlife-management programme. Mr. Martin's move is the result of the Department of External Affairs Commonwealth Assistance Plan and is planned for a two-year period, after which Mr. Martin will return to British Columbia.

The former Game Biologist for the Kootenays, Mr. W. G. Smith, recently transferred to the Victoria headquarters of this Branch, where he is presently acting as Chief of Game Management.

FISHERIES MANAGEMENT

HABITAT PROTECTION

Hydro-electric and Water-storage Studies

Much of the year's effort in study of hydro-electric problems was concentrated at Duncan River, site of the partly constructed Duncan Dam. Here a study of the magnitude of kokanee runs migrating to Duncan River was undertaken, with funds provided by the British Columbia Hydro and Power Authority. The study will provide data required for design of facilities necessary to preserve fish populations which spawn or are reared within the reservoir area.

An intensive biological study of Buttle and Campbell Lakes was undertaken during the summer and fall. Purpose of the study was to determine the effects of water-storage and lake-level fluctuations on bottom fauna, plankton, and fish populations in hydro-electric storage reservoirs.

Pollution Control

The present extension of mining development in all parts of the Province demanded much of the time of the Conservation Officer staff and Fisheries Biologists. Of the approximate 150 actual or potential mining pollution situations investigated,

most were in the Kootenay, Cariboo, and northern districts. An agreeable attitude toward pollution control has been observed by many mining companies. It is now routine for companies to inquire as to necessity of installation of pollution-abatement facilities prior to design and installation of mining and milling operations.

A study of suitable methods of stabilizing mining impoundments presently in use or abandoned has been initiated in co-operation with the University of Victoria.

RESEARCH

General

A number of studies reached completion during 1964; results of these have been summarized in previous reports, and scientific papers on the projects will be published early in 1965. These include a long-term study on the spawning migration of suckers, investigation of factors controlling the spawning migration of kokanee, the ecology and interaction of juvenile steelhead trout and coho salmon in Coastal streams, distribution and abundance of invertebrates in weed beds, and migration of certain larvæ used as trout-food in Interior Lakes.

Algal Growth and Nutrient Enrichment in Kootenay Lake

An extensive study of the distribution, growth, and abundance of both attached and planktonic algæ in Kootenay Lake was started in the spring of 1964 and will continue during 1965.

Effect of "Shrimp" (Mysis relicta) Introduction on Growth of Kootenay Lake Sport Fish

The ecology and importance of the "shrimp" (*Mysis relicta*), recently introduced into Kootenay Lake, is being actively investigated. These organisms are heavily utilized as food by rainbow trout and kokanee, but also are frequently taken by Dolly Varden, mountain whitefish, burbot (ling), and peamouth chub.

Stream Research Facilities at Puntledge Park Hatchery

Stream research facilities at Puntledge Park Hatchery have been expanded in the past year. A large water-cooling unit has been installed with the stream aquarium, and a circular, continuous-flow aquarium is being constructed. These units will make it possible to study effects of temperature on competition between sport fish and other species in streams. In addition, the effect of temperature on the downstream migration of young trout will be examined in further detail.

Distribution of Young Steelhead and Cutthroat Trout in Coastal Streams

A study of the distribution of young steelhead and cutthroat in Coastal rivers is in progress, and 49 streams with different discharges and profiles have been investigated. The results to date indicate that differences in distribution of the two trout species result from differences in migratory behaviour of adult fish.

Growth Studies on Juvenile Salmonids in Coastal Streams

Material gathered in a previous project is being used in a study of the growth rate of young trout and coho in the Salmon, Alouette, and Chilliwack Rivers. The effect of other stream conditions on the production of young trout is being studied.

Reservoir Research

The effect of hydro-electric dams on the limnology and sport fishes of the Campbell River system was studied between May and September, 1964. Although analysis is still incomplete, results suggest that the portion of shoreline exposed by draw-down during part of the year supports a much lower bottom fauna than does the unexposed region. Changes in physical-chemical limnology, plankton abundance, and growth rate of sport fish also will be assessed.

Artificial Autumnal Aeration to Prevent Over-winter Mortality of Trout

Over-winter mortality of trout in Corbett Lake (Merritt) was prevented in 1962/63 by artificial circulation of the lake as described in the Annual Report for 1963.

Nearby Marquette Lake, similar in many respects to Corbett Lake, was not aerated artificially, and consequently was subject to complete over-winter mortality of its trout population (both rainbow and eastern brook trout). The feasibility of preventing over-winter mortality of valuable sport-fish populations has thus been conclusively demonstrated.

Evaluation of an Inexpensive and Portable Lake-aeration Unit

Numbers of small highly productive lakes in British Columbia that are located in high-utilization areas are subject to over-winter mortality of sport-fish populations. Because of the effective preventing of such mortalities in Corbett Lake, a small lake-aeration unit for use in other lakes was designed by the Engineering Division of the Fish and Game Branch. The evaluation of the effectiveness of this unit was conducted in 1964 at Corbett Lake.

As a result, oxygen concentrations in Corbett Lake at the end of November, 1964, are the highest ever recorded for that time of year. (See Engineering Section, Lake Improvement.)

Hatchery Evaluation Programme

A complete statistical analysis of the relative survival of four different sizes of rainbow trout at time of planting is in the final stage of completion. Results to date strongly suggest that slight changes in planting dates and changes in size of fish at time of planting result in increased survival of planted rainbow trout.

PUBLICATIONS

- Northcote, T. G., 1964. An inventory and evaluation of the lakes of British Columbia with special reference to sport fish production. Trans., 15th B.C. Natural Resources Conference, pp. 575-582.
- Northcote, T. G.; Lorz, W. H.; and MacLeod, J. C., 1964. Studies on diel movement of fishes in a British Columbia lake. Verb. Internat. Verein. Limnol. 15:940-946.
- Northcote, T. G., 1964. Use of a high-frequency echo sounder to record distribution and migration of *Chaoborus* larvae. Limnol. Oceanogr. 9 (1):87091.

ENGINEERING

Kootenay Hatchery

With completion of plans and specifications for the Kootenay hatchery to be built near Wardner, involvement of Fish and Game Branch engineering personnel came to an end. Modifications were made to the new all-aluminum hatchery troughs

to better fit these facilities to fish production in the new hatchery. Research was also concluded on pneumatic conveying of fish-foods. For the present, pneumatic conveying of fish-food does not seem to be feasible in Provincial Government trout hatcheries.

Loon Creek Hatchery

Water shortages late in the summer in Loon Creek necessitated the construction of a draw-down facility at Loon Lake which feeds the creek. A reinforced-concrete dam and control structure was completed in October and will enable draw-off of approximately 2,000 acre-feet of water in the late summer and autumn if required. Water control in Loon Creek will now enable operation of the Loon Creek Hatchery well into September and could result in doubling of fish production if required.

Fraser Valley Hatchery

Thirty-five acres of property were acquired within a mile of the town of Abbotsford to enable relocation of Lower Mainland hatchery facilities from Cultus Lake to Abbotsford. Already the Abbotsford Hatchery has shown indications of producing fish of superior quality and with a much lower mortality than observed in the out-moded facilities formerly used at Cultus Lake.

Lake Improvement

In co-operation with research biologists at the University of British Columbia, engineering personnel designed and constructed an economical portable lake-aerating unit for aerating small bodies of water. Plans and specifications for the aerating unit will be available on request to other fisheries agencies or rod and gun club organizations who may wish to assist with management programmes by preventing over-winter mortality of trout in many of the richer lakes of Central British Columbia.

Columbia River Project

During the month of September, engineering personnel were involved with a kokanee enumeration programme on the Lower Duncan River. Fences were installed and seine-nets were set up at various locations in order to capture kokanee for tagging. Several surveys were completed on kokanee spawning-grounds and gravel samples taken for subsequent screen analyses to be carried out in the winter of 1964. Water-level gauges were installed at several locations on the Lardeau and Duncan Rivers.

Obstructions

A general hydrological survey has been initiated to investigate the possibilities of obstructions existing at many railroad or highway culvert crossings. Criteria have been established for maximum velocities in streams near or below culverts to ensure that migrant fish are not unduly delayed or blocked on their spawning migrations.

On Mission Creek, which is tributary to Okanagan Lake near the City of Kelowna, an engineering survey was carried out in conjunction with engineering staff of the Water Rights Branch and biologists of the Fish and Game Branch to determine the most effective means of passing fish over a major irrigation dam on Mission Creek. Mission Creek provides an extremely high potential for spawning kokanee and rainbow trout ascending from Okanagan Lake on their spawning migrations. Any measures which can facilitate the passage of these two species of

fish upstream can add a considerable recruitment to the sport fishery in Okanagan Lake each year.

A preliminary survey of the Coquihalla River obstruction in the canyons immediately downstream from Othello Station was made during the summer of 1964. The possibility of a fish passage through the canyon obstructions is being investigated. The Coquihalla River supports a limited but high-quality run of summer steelheads which migrate into the stream during the months of July and August.

TROUT HATCHERIES

The Fish and Game Branch operates three permanent hatcheries, located at Abbotsford, Sumnerland, and Nelson. The Fraser Valley trout hatchery serves the Lower Mainland and Vancouver Island districts, while the Okanagan hatchery serves the area in the Kamloops, Okanagan, Princeton, Revelstoke, and Boundary regions. Nelson hatchery will be closed early in 1965 upon completion of the new Kootenay hatchery near Wardner.

In addition to the permanent stations, a semi-permanent facility is operated at Loon Creek, near Clinton, and provides hatchery fish for the South Cariboo and northern districts, as well as small fish for aerial liberations in the North Thompson area. Four egg-collecting stations are operated at Beaver Lake, near Kelowna; Penask Lake, east of Merritt; Kiakho Lake, near Cranbrook; and Niskonlith Lake, near Chase.

Species cultured in 1964 included rainbow trout, eastern brook trout, and Yellowstone cutthroat trout. In addition, small numbers of experimental steelheads were handled and a shipment of chinook-salmon eggs was received from the Washington State Department of Fisheries. The chinook salmon are destined for Green Lake in the South Cariboo, where chinook salmon were planted in 1960 and 1961.

New Hatchery Facilities

Two significant increases in fish production will result from construction of new hatchery facilities in the East Kootenay region and in the Lower Mainland region near Abbotsford. At Wardner, approximately 30 miles south-east of Cranbrook, a modern trout hatchery will be completed by late summer of 1965. The hatchery will have a capacity of more than 80,000 pounds of trout annually at full production. This figure is approximately twice the total productive capacities of all Provincial Government hatcheries presently operating. Work carried out previously at the Kootenay site, plus the major contract for completion of the hatchery facilities, will total nearly \$1,500,000. The hatchery will be almost completely automated and will be one of the most modern fish-producing plants on this continent.

Early in 1964 a 32-acre piece of property located 1 mile south of Abbotsford was acquired for hatchery purposes. The new Fraser Valley trout hatchery has an excellent supply of spring water and adequate grounds for future expansion. It is also well protected by the surrounding terrain from any possibility of surface pollution. Present trout-raising facilities, which have been adapted from a commercial trout-farm previously operating on the site, are limited at present, but with further development sufficient trout can be raised at the Fraser Valley hatchery to meet foreseeable needs in the Lower Mainland and Vancouver Island. The Fraser Valley hatchery replaces the facilities formerly operated at Cultus Lake.

A further significant gain in trout production can be expected at Loon Creek Trout Hatchery. Previous to 1964, the main impediment to producing fish at Loon

Creek Hatchery was the inadequacy of the creek water supply, which fell to a low level in late August and early September. A draw-down structure at the mouth of Loon Lake has now been completed, and with operation of this facility a further 10 cubic feet per second of water will be available for raising trout well into September or October, as needed. Extension of Loon Creek Hatchery facilities can now be anticipated to meet future demands for the northern and Cariboo Districts.

Trout-egg collection facilities were increased in several areas. Additional traps were installed in the Beaver Lake area near Kelowna, a new trap was built on the inlet creek at Niskonlith Lake near Chase, and the trap at Kiakho Lake near Cranbrook was replaced.

Automation

In 1963 the first automatic feeding equipment used in British Columbia Government trout hatcheries was installed at Okanagan trout hatchery. By the end of 1965, feeding methods are expected to be fully automatic in all hatcheries from the time fry are hatched until large fish are planted. Already a significant saving in labour has been effected, and growth rate of young trout has been increased as much as 50 per cent in some cases.

Modifications have been effected on trout-transporting units. Both aerial liberations and truck liberations have been materially increased by increased efficiency of aeration of tank water. Further tests will be carried out in 1965 to increase the efficiency of liberating units to an even higher level.

Liberations and Egg Collections

Most lakes stocked in British Columbia are located across the southern one-third of the Province and with some in areas of the Lower Cariboo and northern districts. In 1964, 330 lakes were stocked with 6,200,000 trout, varying in size from fry to yearlings. A total weight of approximately 47,000 pounds of fish was produced and liberated in 1964.

One of the latest spring thaws in living memory occurred in 1964. Spawning runs partially failed, and only about 50 per cent of the trout eggs required for the annual programme were collected. Consequently autumn liberations were reduced or cancelled in some cases and a large reduction was made in the 1965 spring liberation quotas. Offsetting these reductions were the generally larger sizes of fish produced, which resulted in substantially the same poundage of fish being liberated in 1964 as in 1963.

A novel method of taking eggs from spawning trout was successfully tested and applied in May, 1964. The method, originated in Australia and applied in Washington State, involves pumping air into the body cavity of anaesthetized fish. A hypodermic needle attached to a very low pressure air hose is inserted through the body wall. Air is pumped in and eggs are gently forced out. This method, compared to that of forcing the eggs out by squeezing the fish, is much gentler and a great deal faster. Significant reductions in egg mortalities following artificial spawning have been effected by the air method of taking eggs.

Hatchery Research

A study was made of relative survival of eggs taken from rainbow trout which have been stocked into lakes which had been treated with toxaphene and from wild trout in untreated lakes. These studies were not entirely conclusive and will be extended in 1965. Present indications are, however, that toxaphene does not accumulate in significant quantities in the gonads of spawning trout.

A report is in the final stages of completion involving a study of comparative survival of rainbow-trout plantings from native British Columbia stocks and from brood stocks imported from the United States. In addition, an evaluation has been made of the merits of stocking fish from hatcheries at different sizes and ages. Highly significant results from some of the stockings have already made it possible to alter hatchery programmes and effect large savings of fish planted at certain times of the year, particularly those which formerly were released in midsummer with low survival.

Experiments in comparative behaviour of different stocks of wild trout from different parts of British Columbia are now under way. Objectives of this programme are to determine the relative rates of maturation of two different stocks of rainbow trout, as well as to determine the relative amount of fish eaten by either of the two strains. This research programme will be extended into 1965. Experiments of a somewhat different nature involving hybridization of heavily inbred wild strains of rainbow trout will commence in the spring of 1965.

A publication entitled "Carbohydrate Metabolism during Transportation of Live Rainbow Trout, *Salmo gairdneri*" was completed and will be published by the Fisheries Division as a management paper. The research work for this publication was carried out over the past two years in the Okanagan hatchery at Summerland by Koichiro Hayashi, N. W. Green, and Dr. Edgar C. Black. This research has resulted in significant gains in knowledge concerning the factors affecting mortality of trout during transportation from hatchery to liberation points.

In-service Training

The entire staff of the hatchery system attended the first annual hatchery school held at Summerland for five days in July, 1964. The training-school subjects dealt specifically with fish culture and allied hatchery work, as well as ecological implications involved in planting hatchery fish in waters containing wild fish. Lectures were presented by three University of British Columbia faculty members and by Branch biologists. The school was an unqualified success and will be repeated again in 1965.

In summary, the hatchery programme of the Fish and Game Branch made some very real gains in 1964, two of the most important of which were acquisition of property at Abbotsford for the Fraser Valley hatchery and the letting of a contract for completion of the Kootenay hatchery near Cranbrook. It can be expected that the Loon Lake draw-down structure to provide more water for Loon Creek Hatchery and the automation of all hatcheries with automatic feeding equipment will also produce significant gains in fish production in 1965 and future years.

Changes in the operating schedule of the hatcheries, particularly with respect to the strains of fish now used, necessitate an enormously increased demand for trout eggs. In 1961 the demand for trout eggs for local requirements never exceeded 4,000,000 in any year. The demand for trout eggs has now reached almost 7,000,000, and by 1968 the hatchery system will require approximately 10,000,000 trout eggs. Considerable planning is involved in providing for future fish-culture requirements since lakes must be set aside specifically for fish-culture purposes. Where new lakes are to be stocked to provide fish for artificial spawning operations, at least four years is required before the first eggs can be obtained from an initial planting. The new hatchery facilities in the Kootenay area plus acquisition of the property in the Fraser Valley will have a decided impact on other fish-culture stations. It is now possible to hold larger numbers of trout and to efficiently effect transfers between stations.

It should be noted that while production has risen from 13,000 pounds in 1956 to approximately 50,000 pounds in 1964, the annual operating budget has remained virtually the same. Cost of raising fish has been reduced consistently year by year and now approximates \$2 a pound, whereas in former years it was over \$7 per pound. Further significant reductions in the cost per pound can be expected with automatic feeding equipment. It is unlikely that further permanent installations of any consequence will be needed within the next 10 years to provide fish for regional programmes. The three permanent hatcheries in the Kootenay, Okanagan, and Fraser Valley districts respectively will be able to produce fish for the foreseeable future.

PROVINCIAL
PARKS
BRANCH





Wilderness tranquility, canoe country—Bowron Lake Park, Kibbee Lake and Indianpoint Mountain.



Nature interpretation display shelter, Okanagan Lake Park.

PROVINCIAL PARKS BRANCH

H. G. McWILLIAMS, DIRECTOR

During 1964, Branch activities were concentrated mainly on continuance of existing projects rather than new developments.

Among the projects were road, parking-lot, and electrical-supply improvement in Mount Seymour Park; completion of basic work on Manning Park recreational reservoir; road and trail improvement in Garibaldi Park; and near completion of a road to Helmcken Falls in Wells Gray Park.

Readily available, safe water is one of the most desirable features of a camp or picnic site. Supplying potable water has been a problem in several parks. The Branch is pleased to be able to report the drilling of 12 yielding wells in areas previously devoid of a suitable water supply.

New projects did include the development of a 20-unit camp-site at Liard Hot Springs on the Alaska Highway, which means there are now three Provincial park camp-sites between Dawson Creek and the Yukon Border.

For the first time, park-use figures show no increase over the previous year. There seems little doubt that park use was discouraged by the inclement weather of the summer of 1964.

LAND ACQUISITION

The main achievement of the land-acquisition programme was the purchase of five private properties within the boundaries of Bowron Lake Park, which involved lengthy negotiations and assessment of land values. The success in this field is regarded as an important step in maintaining as nearly as possible the original wilderness condition of Bowron Lake Park.

Field-work projects included a reconnaissance for potential roadside park-sites in the northern end of Vancouver Island, now that it has become accessible by road. A similar reconnaissance was made of the Stewart-Cassiar Road, still under construction. Other important items of field work included an assessment of the recreational values of Carp Lake in the Prince George district, Chilliwack Lake, and the headwaters of the Lussier River near Canal Flats. An initial examination was made in connection with a major alpine park proposal in the vicinity of the Bugaboo, Vowell, and Conrad Glaciers.

During 1964 nine new Class "A" parks, covering 4,399 acres, were created. These included Pilot Bay, Weaver Creek, Silver Lake, Bellhouse, Stagleap, Hyland River, China Beach, Prudhomme Lake, and Topley. In addition to these, the following Class "A" parks were enlarged by a total of 2,882 acres: Paul Lake, Beaumont, Little Qualicum Falls, Wasa Lake, Wickaninnish Beach, Davis Lake, and Antlers Beach. Five Class "C" parks were created, which added another 362 acres to the area of parks under this classification. These parks were Bridal Lake, Peace Island, Charlie Lake, Fort Nelson Centennial, and Rutland community. Besides the creation of the above new ones, the following existing Class "C" parks were cancelled: Golden, Silver Creek, and Clinton Creek. Beaton Park was reclassified from Class "C" to Class "A," and Cayoosh Park and Pass Creek Park were enlarged by a total of 8 acres. Class "A" parks now number 147 and include 2,320,266 acres; Class "B" parks, eight with 4,046,369 acres; and Class "C" parks, 71 with 28,320 acres.

The co-operation and assistance of other Government departments made possible 96 new land reserves for public recreational use. This involved an increase

of 13,670 acres in lands reserved for this purpose and brought the total of such sites to approximately 2,100, with a combined area of 325,800 acres.

The people of this Province are grateful to the following for their donations of land for park purposes, involving 555.5 acres:—
 Mr. L. T. Bellhouse, a scenic park on Galiano Island.
 Mr. B. J. Gadsden, a nature preserve park near Golden.

DEVELOPMENT PLANS OFFICE

Planning emphasis during 1964 shifted, to some extent, from site planning to master planning. This was a reflection of the total Parks Branch shift since 1963 from new developments to completion and improvement of existing ones. Due to heavy requirements for site plans prior to this period, planners had been only a little ahead of the engineers. Now there is a chance to take a more comprehensive view of some large parks, to enunciate suggested basic policy, and to draw up new guidelines for orderly development.

Manning Park was the subject of intensive study dealing with the entire complex of camp-sites, Pine Woods, new artificial lake, Gibson Pass ski area, and the alpine wilderness hinterland. Master planning was also done for Garibaldi Park, including the Golden Ears area, Bowron Lake Park, Kokanee Glacier Park, and Mount Seymour Park.

Field surveys were carried out and, in the case of Kokanee Glacier, Garibaldi, and Bowron Lake Parks, basic reconnaissance was required as the back country of these vast wildernesses still remains "terra incognita" to the Parks Branch even today. Cheakamus Lake and Singing Pass, two significant recreational features of Garibaldi Park, were reconnoitred for the first time in 1964.

Site-development plans were prepared for Otter Lake picnic-site, Bear Creek (near Wells Gray Park) camp-site, Beaver Creek Park, Bridal Veil Falls picnic-site, and Spectacle Lake picnic-site. In Manning Park, sites were planned for the park supervisor's residence, house-trailer court for staff, and Lightning Lakes reservoir. Improvements were planned for many camp and picnic sites along the Southern Trans-Provincial Highway.

A number of new designs for park equipment were produced during 1964. The most significant perhaps was that of a fireplace which has proved so successful that it is being used in all new developments. Other new designs include a water skier's float, a picnic-table shelter, a fire-hose shelter, and a smoke-house.

Landscaping continued to be an important effort, particularly in the Golden Ears portion of Garibaldi Park. Flooded Alouette Lake and surrounding logged-over timber lands are difficult park material, but painstaking rock work, grading, and planting are creating a beautiful and popular park. An over-all landscaping plan was prepared for the Pine Woods-Lightning Lakes area of Manning Park. Another landscaping plan was for the lower terminal of the chair-lift in Mount Seymour Park.

Extension planning—that is, park-planning advice to organizations outside the Branch—continued at an accelerated rate in 1964. Indians are becoming park conscious, as evidenced by a request from the Bella Coola Band. A staff member, who has become a specialist in extension work, was hard put to keep up with the spate of requests from recreation associations, private companies, and other Government agencies. He prepared park plans for five communities and gave assistance to the Y.M.C.A. on Vancouver Island and in Howe Sound. Other extension work

included preparation of a park plan for Munday Lake to assist the Lower Mainland Regional Planning Board. The British Columbia Ferry Authority received assistance in beautifying and landscaping its terminal facilities at Long Harbour, Salt-spring Island. At the request of Tahsis Company, a camp-site was planned and laid out at Gold River.

In addition to more regular work, a number of special problems engaged the attention of the Development Plans Office from time to time. Staff had to seek the best possible solutions to such problems as a logging access road through Davis Lake Park, a commercial ski development extending into Garibaldi Park, the use of power-boats in Bowron Lake Park, the development of Weaver Creek by the International Pacific Salmon Fisheries Commission, and conflicts between hunting and other recreation in Bowron Lake and Garibaldi Parks.

Park planning is based on park mapping. Surveys are usually by two- or three-men crews using chain and compass. Maps are produced at a scale of 50 feet to 1 inch, with a typical contour interval of 5 feet. The ever-present need for maps called forth a rather ambitious programme during the past year when 14 sites were mapped, including the following: Portland Island (north and south coves), Bridal Lake (Salmo-Creston Highway), Dry Gulch, Thunder Hill, Crownsnest, Moberly Lake, Prudhomme Lake, Salt Lake, Shawnigan Lake, Cottonwood House, Bowron Lake, Smithers Landing (Babine Lake), Barkerville, and Bridal Veil Falls.

INTERPRETATION AND RESEARCH

Throughout the summer, park naturalists conducted daily interpretation programmes in five parks—Manning, Miracle Beach, Mitlenatch Island, Shuswap Lake, and Goldstream. Using nature houses, nature trails, guided walks, and an outdoor theatre, this staff made over 132,000 contacts with park-users.

Nature houses in Manning, Miracle Beach, and Shuswap Lake Parks served 62,000 people, most of these in July and August. A record day at Miracle Beach nature house on Labour Day saw over 1,500 people jam into the building.

Nature trails were maintained in Manning (two trails), Miracle Beach, Goldstream, Shuswap Lake, Emory Creek, and Skihist Parks. They were used by an estimated 70,000 people.

Guided walks, outdoors, were daily features in Miracle Beach and Goldstream Parks, and frequent attractions in Manning Park. Over 4,100 people participated.

A new feature in Manning Park was an amphitheatre, an outdoor theatre where park naturalists gave 40 late-evening talks, using slides, to more than 2,500 people. Some evenings the theatre was filled to capacity.

Fifteen new indoor displays were constructed and installed in nature houses. Numerous outdoor signs and displays were made and placed. Three new pamphlets were produced—one on nature houses, one on blueprinting natural objects, and one on star identification.

A survey of stands of large trees located in parks or recreational reserves on Vancouver Island revealed an only fair preservation of samples of the forest that made British Columbia famous. One stand has trees rivalling the record height for Douglas firs in the Province.

A brief survey of our "almost desert" country, on the valley floor from Osoyoos to Oliver, revealed that natural vegetation is now almost gone. No adequate sample is preserved.

On Mitlenatch Island a small staff met daily visitors, gave almost daily tours, dug fire-guards, constructed trails, and made other improvements. Biological studies involved banding 1,300 gulls and doing a general biological reconnaissance.

Twenty-six parks not mentioned above were variously surveyed and assessed for their possible future interpretative needs.

HISTORIC SITES SECTION

BARKERVILLE HISTORIC PARK

Funds were available through the Provincial Secretary's Department for programmes as defined by the Barkerville Restoration Advisory Committee.

Approximately 100,000 visitor-days were spent at Barkerville, with an actual registration at the museum of 48,200 individuals.

In the restoration area, the John Bowron House and the Post Office-Telegraph Office were reconstructed. Furnishing of the two front sitting-rooms of the House Hotel was completed, and a start was made toward equipping the J. P. Taylor Drugstore.

An 1870 four-stamp ore-mill has been rebuilt and will be moved to the outdoor museum exhibit near the Cornish wheel and pump. Foundation repairs and replacement continued, with a large number of buildings still requiring attention.

The sale of souvenirs in the museum and in the souvenir booth is becoming significant. Quality items of local interest are stressed.

The Theatre Royal continued to be a popular attraction. A propane furnace installed in the building proved an asset during cooler evenings. Demand was heavy for a recording of the 1963 performance.

Third phase of the permanent water system was completed, which will permit installation of several fire-hydrants within the restoration area next season.

The four-horse stage-coach operated a successful season under a park-use permit. More than 12,000 passengers were transported.

Camping facilities were fully taxed during the high-use period, with a peak of 116 families crowding into the camp-sites at one time. Plans are under way toward additional camping areas.

FORT STEELE HISTORIC PARK

Funds were available through the Provincial Secretary's Department for programmes as defined by the Fort Steele Foundation. With the appointment of a full-time park supervisor, a good start was made toward re-creation of a typical East Kootenay town of the nineties.

The following buildings were moved into the restoration area: N.W.M.P. buildings, United Church, Catholic Church, Anglican Church, Vicarage, Masonic Hall, School-house. The National Historic Sites Cairn was also moved to the new location of the N.W.M.P. buildings.

The first stage of a permanent water system was installed by a contractor under the design and direction of the Water Resources Branch. A palisade fence was constructed along the east side of the restoration area, and the Department of Highways began construction of the new highway, which will pass just to the south of the restoration area.

Donations and purchases continue to be made toward building up an inventory suitable for furnishing the many buildings planned for the re-creation of Fort Steele.

ROADSIDE REST AREAS

The co-operative programme, begun in 1963 with the Department of Highways, was continued as planned.

PUBLIC INFORMATION

During the first half of the year, public demands for information were 50 per cent greater than during the same period of 1963; after mid-year, requests dropped to normal. Requests for illustrated talks also increased slightly to a total of 40, or 14 per cent greater than 1963.

A special woodcraft course was presented twice during the year—at West Sumnerland to a group of Girl Guide leaders, Boy Scout leaders, and outdoorsmen, and to members of the Canadian Youth Hostels Association in Vancouver.

Assistance was given the R.C.N. during the formation of a youth recreation programme, which functioned during the summer under naval sponsorship for the benefit of children of naval personnel.

Several of the illustrated talks, noted above, were requested by leaders of various youth groups, including Girl Guides, Boy Scouts, and church organizations. In almost every case it was requested that the audience be given an insight to nature study, other outdoor activities, and conservation. This would seem to indicate a growing awareness of the value of nature study and outdoorsmanship in youth training and recreation.

Throughout the year, work continued on a new Parks Branch map designed to show the location of Provincial parks in the Fraser Canyon-Okanagan area. The new map will be ready for release early in 1965.

Other routine work, news media relations, assisting with exhibitions, assisting other branches, etc., continued as usual.

ENGINEERING DIVISION

Construction of basic facilities, such as camp-sites and picnic-sites, remained at a low level during 1964, and the only new works were a camp-site at Liard Hot Springs, boat-launching ramps and picnic-sites at Moberly Lake, Beaver Creek, Salsbery Bay, and Bridal Veil Falls.

PARKS BRANCH—ATTORNEY-GENERAL'S PROGRAMME

Correction-camp labour gave great assistance in development and maintenance of Alouette Lake, Wells Gray Park, and Cultus Lake. A new programme was started at Morton Lake by the inmates from the new corrections camp near Campbell River.

PROJECTS UNDERTAKEN IN 1964 BY PARKS

1. Alice Lake: Garage-workshop.
2. Alouette Lake: Paving road and parking-lots.
3. Beaver Creek: Picnic-site; boat-launching ramp.
4. Bowron Lake: Trail.
5. Bridal Veil Falls: Picnic-site; trails.
6. Ellison Park: Temporary water system.
7. Garibaldi: Road improvements in Diamond Head area; trail improvement in Black Tusk area.
8. Kokanee Glacier: Road improvement.
9. Liard Hot Springs: 20-unit camp-site.
10. Long Harbour: Picnic-site; Landscaping.
11. Morton Lake: Parking-lot; picnic-site.
12. Mount Seymour: Electric-power installation; parking-lot and road reconstruction.

13. Manning Park: Dam for recreational reservoir; Gibson Pass road; maintenance work to Pine Woods buildings—aluminum roof, furnaces, painting, and sewage.

14. Moyie Lake: Camp-site work.

15. Moberly Lake: Picnic-site and boat ramp.

16. Prince George: Garage-workshop.

17. Ten Mile Lake: Camp-site work.

18. Wells Gray Park: Helmcken Falls road and service-area building.

19. Waterworks: New wells and pumps established at Thunder Hill, Yahk, Moyie Lake, Mount Fernie, Cottonwood River, Whiskers Point, Kiskatinaw, Haynes Point, Stenwinder, Bromley, Monck, and Beaumont Parks.

DESIGN AND PREPARATION OF CONTRACTS

Contracts were prepared and issued for paving (Alouette Lake), two garage-workshops (Alice Lake and Prince George), painting and roofing contract (Manning Park), and transformer building and electrical line (Mount Seymour Park).

Design work was concluded on the cafeteria building for Mount Seymour Park.

Preliminary design was carried out on a skiers' building for Manning Park and a chair-lift terminal building for Mount Seymour park.

DRAUGHTING

Approximately 98 separate maps and plans and 40 engineering-architectural drawings were prepared.

YOUTH CREW PROGRAMME

One hundred and forty-four boys were employed in the following camps: Black Tusk, Diamond Head, Moyie Lake, Ten Mile Lake, Manning Park, and Champion Lakes.

MAPPING AND SURVEYS

Mapping projects were carried on at Spectacle Lake, Gabriola Pass, Rathrevor Beach, China Creek, Hicks Lake, Deer Lake, Cambie Camp-site, Gibson Pass ski area, and Morton Lake, for a total of 550 acres.

LANGFORD WORKSHOP PRODUCTION (MAIN ITEMS ONLY)

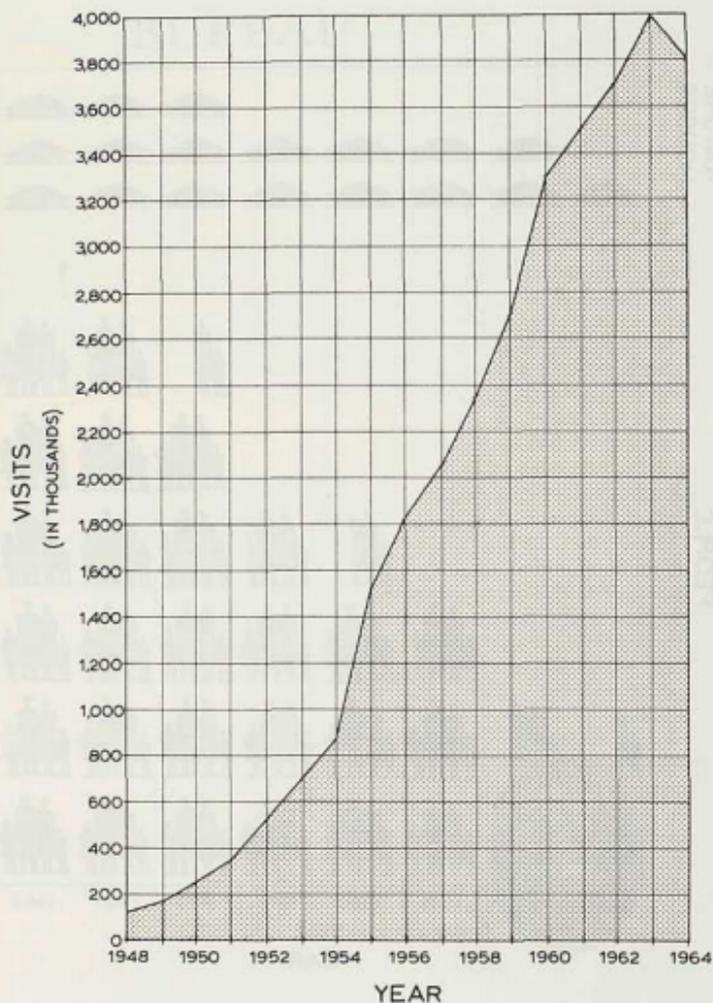
Tables	90	Number-posts	87
Benches	4	Fireplaces	91
Standard signs	380	Entrance portals	1
Garbage gobblers	38	Incinerators	1
Type A signs	9	Registration boards	8

There was a drop in the production of standard campsite-picnicsite furniture, but a large increase in the demand for displays, plaques, special signs, map-holders, and specialized furniture for various branches of the Department.

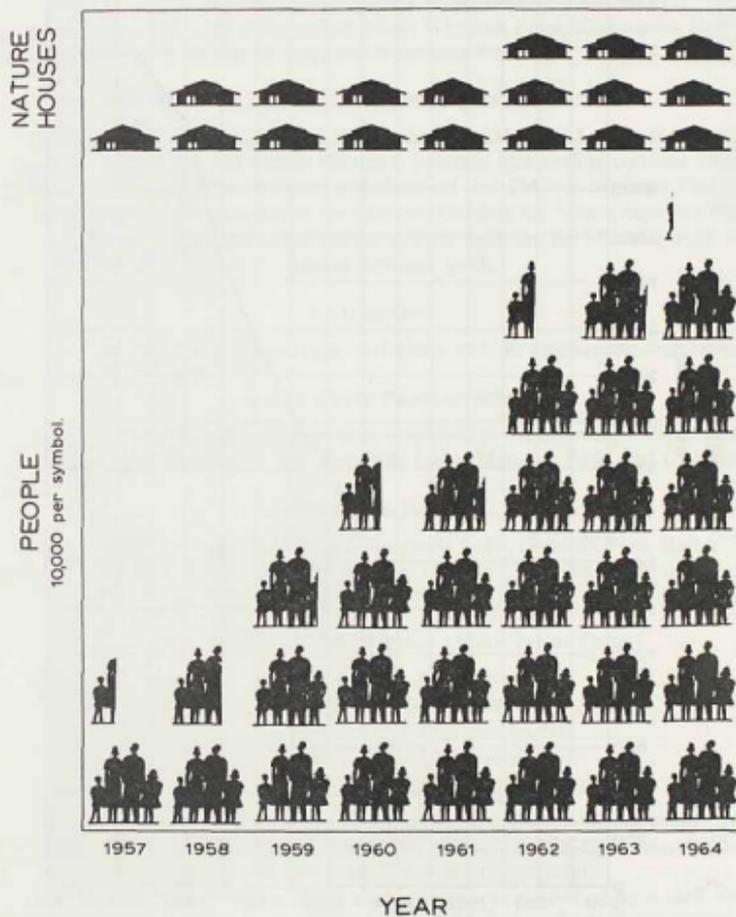
Maintenance and operation of the park system was carried on by a staff varying from 50 during the winter to approximately 175 during the high-use season of July and August.

Regional supervisors were appointed in Garibaldi and Bear Lake regions. Permanent garage-workshops were constructed at Alice Lake and in Prince George as maintenance headquarters for these regions.

ANNUAL ATTENDANCE PROVINCIAL PARKS



NATURE HOUSE ATTENDANCE



BRITISH COLUMBIA GOVERNMENT

TRAVEL
BUREAU





British Columbia display at California travel show.



Customer service at Victoria office of the Travel Bureau.

BRITISH COLUMBIA GOVERNMENT TRAVEL BUREAU

R. L. COLBY, DIRECTOR

*Value of Tourism to British Columbia
during the Past Five Years*

1960	\$100,400,000
1961	115,000,000
1962	145,000,000
1963	150,485,480
1964	183,936,000

A visitor season which began earlier than usual, and extended to greater length than in the past, gave British Columbia tourism its most lucrative return to date and saw more visitors than ever before within the Province. The estimated value of the industry was \$183,936,000, provided by 4,245,300 visitors from the United States and other parts of Canada and British Columbians vacationing within the Province.

The United States continued to be the greatest contributor to visitor totals, with 2,664,652 crossing our borders. These included United States visitors entering through Alberta. Other parts of Canada, with Alberta in the vanguard, contributed 1,580,680.

The method of computing total revenues resulted from the findings of the visitor survey, instituted by the Travel Bureau, and entitled "Tourist 1963." Had the previously used formula been continued, the result for 1964 would have been \$150,485,480 (previous revenue) \times 13 per cent (percentage of increase in vehicle permits issued at United States Border points) or \$170,047,591.

The new figure takes into consideration the influx of both Canadian and United States visitors through the Alberta Border, a figure unavailable before the 1963 tourist survey was completed.

PROMOTION

The Bureau organized and implemented a promotional goodwill tour to Alberta and Saskatchewan in conjunction with the opening of the Kootenay Skyway section of the Southern Trans-Canada Highway. It is conceivable that this promotion contributed greatly to the increased number of visitors to British Columbia during September and October. Visitations were made to Edmonton, Calgary, Lethbridge, Medicine Hat, and Swift Current, and invaluable publicity resulted from television, radio, and newspaper interviews.

Local, national, and international travel exhibits and sportsmen shows were manned by Departmental personnel at Toronto and Chicago.

ACCOMMODATION AND CONVENTION SECTION

This section of the Travel Bureau completed its first year of operation as a unit, an arrangement that proved satisfactory.

Field personnel kept the Convention Section informed of new accommodation and convention facilities within the Province.

Compilation of the popular "green book" was completed before the end of the year, and distribution of 350,000 copies was commenced. This is the earliest date this important piece of literature has been published.

Field personnel continued to visit and classify accommodation establishments in an endeavour to assist new operators with the problems of management and promotion of their establishments.

The Convention Section concentrated on the promotion of pre- and post-convention tours in an endeavour to prolong the average stay of delegates in the Province. Conventions within the Province were contacted to assist in stimulating attendance to their meetings. Assistance was given in planning and operating conventions when requested.

National advertising programmes were continued, and arrangements completed to have the list of British Columbia conventions published in National magazines and distributed to convention organizations. It is anticipated the number of conventions to be held in British Columbia during 1965 will increase considerably, with a consequent increase in the amount of revenue brought to the Province from this important segment of the tourist industry.

It is conservatively estimated that during 1964 \$3,274,150 was added to the Provincial economy through the presence of conventions. This is estimated from conventions with which the branch was aware. The figure could conceivably be greater due to the fact that not all conventions were made known to the Department.

ADVERTISING

A continuing programme of advertising in Canadian and American magazines and newspapers was maintained, and the image of British Columbia kept in the forefront of potential visitors. Joint advertising with Washington and Oregon was continued in selected United States publications. Joint advertising in Eastern Canada was also undertaken with the Provinces of Alberta and Saskatchewan.

LITERATURE

For the first time in many years, the Bureau undertook to create its own road map, which was favourably received. A new pictorial folder was launched and given wide distribution, and the Accommodation Directory continued to be in popular demand from inquirers in many countries.

PUBLICITY

Two special issues of the British Columbia Government News were prepared during the year. Another issue was produced specifically to help promote "Beautiful British Columbia" magazine. Other editions outlined particular activities of various Provincial Government departments. An issue devoted to child adoption aroused tremendous interest, with beneficial results.

Altogether, 1,134 stories were sent out to editors and writers in Canada, the United States, and Europe. Narration for "Valley of the Swans" was written for the Photographic Branch, and a three-month series of broadcast talks prepared for the Canadian Broadcasting Corporation. Copy was checked for publishing houses in Canada, United States, Alaska, Switzerland, and Denmark.

The Public Information Officer co-operated with British Columbia Ferry Authority in escorting several groups of American Society of Travel Agents from Victoria to Vancouver. He made an extensive field trip to west Vancouver Island with a staff writer from the Chicago Daily News and another on Vancouver Island

with a photographer from Paris, France, at the request of the Canadian Government Travel Bureau. Two visiting French journalists were also assisted, as were numerous corresponding free-lance writers and editors. He also assisted in the editorial preparation of "Beautiful British Columbia" magazine.

Special stories were written for the Canadian Government Travel Bureau, two of which were distributed world-wide by this source. A day trip was made with Mr. Wyn Davis, of *Outdoor Life*.

The year-long activity resulted in much valuable publicity, and increased harmony and pleasant relationships with global contacts.

"BEAUTIFUL BRITISH COLUMBIA" MAGAZINE

Sales of "Beautiful British Columbia" magazine continued to increase steadily during the year, and subscriptions rose from 37,000 in 1963 to 44,000 by the end of 1964. Sales averaged 90,000 per issue, or 360,000 during the year. More than 100,500 copies of the fall issue were sold.

TOURIST INFORMATION CENTRES

Tourist Information Centres, located strategically along heavily travelled routes, continued to serve increasing numbers of visitors.

In the *Vancouver* office, 38,548 inquiries, directly or by telephone, were received, a substantial increase over 1963. Mail inquiries amounted to 5,840, up from 3,500 in the previous year, and 1,369 of these required detailed replies.

White Rock.—This office served 17,118 cars and an estimated 50,000 persons who planned on visiting for 84,162 visitor-days. It is estimated the staff was instrumental in encouraging visitors to travel 8,216,000 miles within the Province.

Abbotsford.—This office replaced the Flood operation of the previous year and was installed on an experimental basis. Indications are it was highly successful, but a complete survey of its effectiveness is planned. In all, 12,642 cars containing 40,195 people used the office, and it is estimated the staff assisted immeasurably in selling 14,250,000 visitor-miles within the Province. Their survey indicated that visitors to the centre planned 97,740 visitor-days in the Province.

Sicamous.—This office served 5,858 cars with 19,605 people who anticipated 47,343 days in the Province. The staff estimated they sold an extra 7,129,900 miles of travel in British Columbia.

Cache Creek.—An Information Trailer was installed separate from the Cache Creek Checking-station, used previously, and was instrumental in improved service to the visitor. Four thousand cars with 12,000 people utilized the centre, and it was instrumental in persuading visitors to travel an extra 5,946,300 miles.

Banff.—The Department's operation at Banff was relocated to a position adjacent to the park information office, and consequently was able to better serve the public. More than 4,200 cars with 12,600 occupants used the office, with an estimated revenue to the Province of \$120,000.

MATCHING GRANTS

The matching-grant programme was continued to stimulate regional promotion. The amount of \$150,000 available for matching purposes was used more fully than ever before. Most of the major urban regions claimed their entire share—regional allotments are on a quota basis—and smaller regions used a greater percentage of funds available to them.

FIELD WORK AND LIAISON

The branch gave active co-operation to a series of hospitality conferences jointly sponsored by hotel, motel, and restaurant organizations. Aim of the conferences was to improve customer service and improve still further the image of the tourist industry in the Province.

The Director attended the Federal-Provincial Tourist Conference and worked closely with the Canadian Tourist Association. He also attended a convention of the Society of American Travel Writers in Chicago.

SETTLEMENT

The Bureau is grateful for the assistance given by other Government departments in processing some 674 settlement inquiries. Indications are that there exists a growing interest in British Columbia from people in all parts of the world and especially from within the British Commonwealth.

BRITISH COLUMBIA HOUSE, SAN FRANCISCO

The staff of British Columbia House in San Francisco has now increased the number of contacts on the Pacific Coast, the Mid-west, and the Southern, South-eastern, and South-western States to the point that our regular mailing-list of 2,340 calls now includes organizations interested in travel and the tourist industry from the territories we have been able to cover. Interest emanating from transportation companies and travel agencies is growing.

In addition to the letters and telephone calls we receive from private individuals, we find an increasing amount of inquiries from transportation companies for detailed information on hunting, fishing, areas for rock-hounds, dude ranches, circle tours, ship and train trips, resorts of all types, accommodations, yachting, mountain-climbing, camping trips, horseback riding, and many other forms of recreation.

During the year British Columbia House increased its personal contact with prospective tourists by adding three more exhibitions to the five participated in the previous year. In some instances, space was increased to cope with the increased work that developed in our booths. Results in this most valuable medium of direct publicity registered increases over 1963 of 558,926 in total gate admissions, and, for our booth, 125,930 pieces of literature distributed. The figures for the 1964 exhibitions are as follows:—

	Gate Attendance	Literature Distribution
National Boat Show, San Francisco	347,176	50,000
Boat and Sport Show, Portland	112,000	35,000
Sportsmen's Show, Los Angeles	300,000	50,000
San Diego County Fair, Del Mar	305,251	40,000
California State Fair, Sacramento	864,772	60,000
World Trade Fair, San Francisco	268,000	16,700
Los Angeles County Fair, Pomona	1,109,151	100,000
World Travel Show, Long Beach	10,000	9,230
Totals	3,316,350	360,930

Coupon requests from newspapers, magazines, etc., were all shipped the same day as received, giving in most cases a reply within 24 hours during the advertising campaign commencing in April, 1964, totalling 4,202 kits. Kits contained 20 pieces of literature, or 84,040 pieces in total.

Requests for literature from telephone calls, letters, and other sources received in the same period were shipped the day received—1,754 kits. Sample kits contained 20 pieces of literature, totalling 35,080 pieces.

Travel kits for travel agents and other agencies, such as bus lines, railways, etc., during the year were shipped. Each kit contained 24 pieces of general literature for use as a sample kit to allow agencies to reorder, using the order card enclosed. In some cases the kits served as office copies, while many agencies reordered large quantities of literature, usually requesting information to assist them in making up itineraries—2,340 kits. Sample kits contained 24 pieces of assorted literature, totalling 56,160 pieces.

Automobile clubs order larger quantities for redistribution to their sub-offices. Reordered quantities varied from 10 to 25 pieces of literature.

Approximate number of persons who called at British Columbia House during the season requesting information on all phases of travel to assist them in planning their itineraries was 8,600.

The Commissioner and staff made 58 addresses and showed 121 films to 10,740 persons.

Special promotions, successfully completed during the year, included the showing of British Columbia films by a major film festival in Laguna Beach, the presentation of a Victoria Highland Dance group on the stage of the San Diego County Fair, publicity contacts leading to the seven-day visit of eight Washington, Oregon, and California outdoor writers to a Northern British Columbia fishing area, acceptance of new British Columbia film footage by a California travel film distributor and its subsequent showing on a United States national television network, agreement of a major motel chain to display and distribute British Columbia literature in its motels throughout the seven Western States, and publication of Provincial fishing and hunting information in a newsletter reaching 670 California outdoor clubs with a total membership of 120,000 sportsmen.

Calls are made on travel editors and sports writers in all major centres throughout the entire territory worked by British Columbia House. Many newspaper writers contact British Columbia House for pictures and general information, and in many cases for confirmation and correction of information they desire to use in articles on places they have visited.

Promotional work in the Mid-western States has now been extended to include Tennessee, Alabama, Georgia, and Florida. An invitation was extended for October, at the request of a Mr. Mack, representing agencies in St. Petersburg. The A.A.A. club of St. Petersburg arranged a meeting with its staff, giving the Commissioner an opportunity to discuss travel to British Columbia. Films have been lent at their request and literature for the offices in Central and Northern Florida supplied. In Jacksonville and Miami, contacts with the A.A.A. club, who have jurisdiction over the other Florida clubs, extended the same courtesies as did the club in St. Petersburg.

Intensive promotion with major motor-coach carriers through South-eastern United States and Gulf Coast States should have a beneficial effect on future British Columbia tourist business.

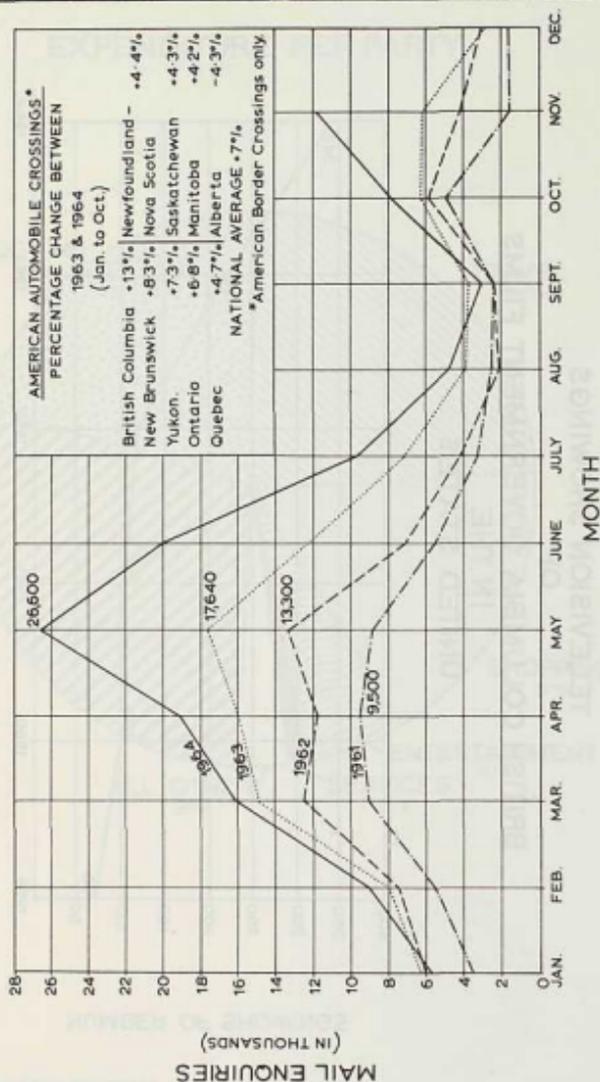
GENERAL

The Travel Section, with two permanent staff members and two temporary clerk-typists, received a total of 147,683 inquiries by mail during the year, with an unrecorded number of counter and telephone inquiries. The figure for total mail represents an increase of almost 42 per cent over 1963.

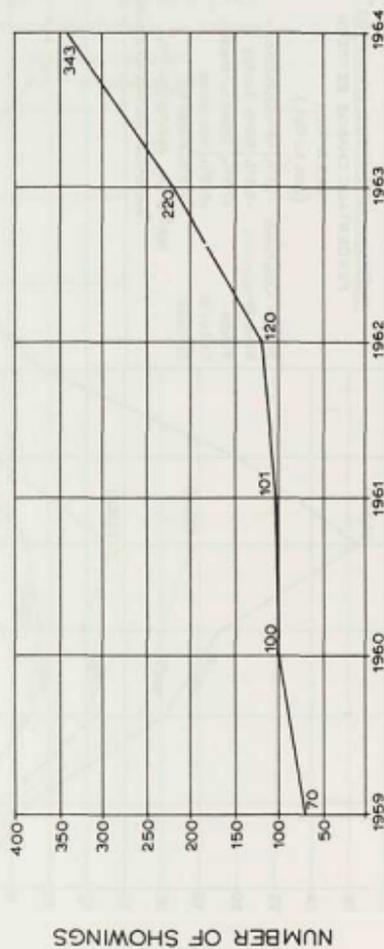
A breakdown of the types of inquiries is as follows:—

Mail inquiries receiving individual attention	25,000
Mail inquiries (coupons, lists) receiving kits	111,234
Mail inquiries from children	11,449
Settlement inquiries	674

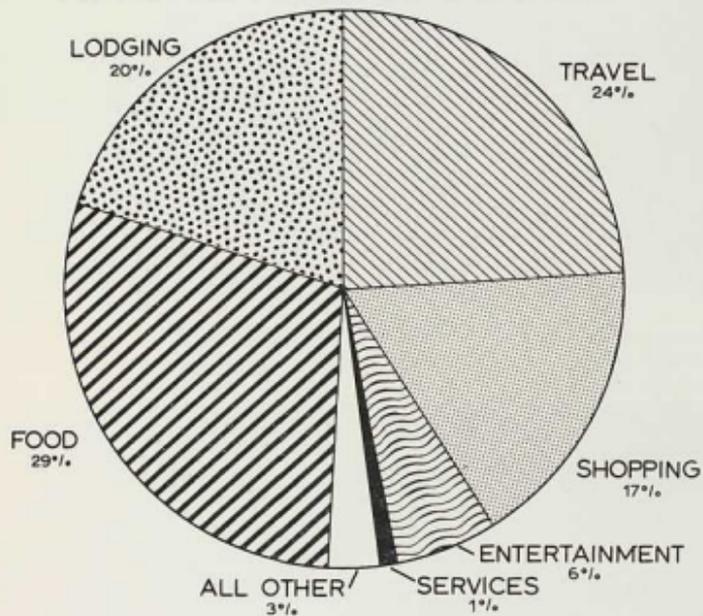
MAIL ENQUIRIES GOVERNMENT TRAVEL BUREAU VICTORIA.



TELEVISION SHOWINGS
OF
BRITISH COLUMBIA GOVERNMENT FILMS
IN THE
UNITED STATES



EXPENDITURE PER PARTY



BASED ON RESEARCH PROGRAM
CARRIED OUT BY THE TRAVEL
BUREAU DURING THE SUMMER
OF 1963.

EXPENDITURE PER PARTY



FIGURE 10. EXPENDITURE PER PARTY

BASED ON RESEARCH PROGRAM
CONDUCTED BY THE BUREAU
OF ECONOMIC RESEARCH
IN 1957

PROVINCIAL MUSEUM OF NATURAL HISTORY AND ANTHROPOLOGY





(B.C. Government photo.)
Canoe carvers at work, Thunderbird Park.



(B.C. Government photo.)
Model of a proposed diorama for the new building.

PROVINCIAL MUSEUM OF NATURAL HISTORY AND ANTHROPOLOGY

G. CLIFFORD CARL, DIRECTOR

The major event in the museum field in 1964 was the Premier's public announcement that a new museum-archives building was to be constructed as British Columbia's centennial project. This decision was followed by a series of activities involving technical staff members in varying degrees, as noted elsewhere in this report.

Apart from this noteworthy event, the Museum enjoyed an average year in so far as general activities were concerned. Attendance, however, was almost doubled. A brief summary of the year's operation follows.

FIELD WORK

In the biological division, staff members made several collecting trips to various parts of the Province for various purposes. Botanical field trips were made to the Okanagan Valley, to the Rogers Pass area, and to the west coast of Vancouver Island in the vicinity of Gold River. Mammal work was carried on in Barkley Sound and in the Big Bend region of the Columbia Valley. The latter field work was in collaboration with biologists of the Fish and Game Branch who made a big-game survey in that area.

Investigations of archaeological sites were again undertaken in co-operation with the Archaeological Sites Advisory Board of the Department of the Provincial Secretary and the Parks Branch of the Department of Recreation and Conservation. The programme consisted of excavations at Montague Harbour and Dionisio Point on Galiano Island (June 15th to July 28th) and a survey of the Peace River and Bella Coola River valleys and parts of the Chilcotin Plateau (July 30th to August 30th). Of particular interest is an important site at Ash Point, Pedder Bay, which is being studied intensively by Mr. D. N. Abbott.

We wish to acknowledge our indebtedness to all those persons who have assisted in field work in some way, especially Mr. Stan Sharcott, Federal Fisheries Officer at Gold River; officials of the Department of Transport at Bamfield; and Mr. James C. DeWilde, Mr. William Duncan, Mr. Geoffrey Mitchell, and the various volunteers who assisted at the Pedder Bay "dig."

PUBLICATIONS

The following publications have appeared in 1964:—

Donald N. Abbott—

"Care of Museum Objects." *Museum Round-up*, No. 16, pp. 15-18.

Frank L. Beebe—

"Alpine Rockslide." *Wildlife Review*, Vol. 3, No. 3, pp. 16-17.

G. Clifford Carl—

"Care of Biological Specimens." *Museum Round-up*, No. 16, pp. 19-21.

"Some Common Marine Fishes of British Columbia." *British Columbia Provincial Museum Handbook* No. 23, pp. 1-86.

"Diving Rhythm in the Hair Seal." *Victoria Naturalist*, Vol. 21, No. 4, pp. 35-37.

"Vanishing Treasures." *Wildlife Review*, Vol. 3, No. 3, pp. 4-7.

Wilson Duff—

"Contributions of Marius Barbeau to West Coast Ethnology." *Anthropologica*, N.S., Vol. VI, No. 1, 1964, pp. 63-96.

"President's Report." *Museum Round-up*, No. 16, pp. 7-8.

C. J. Guiguet—

"The Birds of British Columbia: (8) Chickadees, Thrushes, Kinglets, Pipits, Waxwings, and Shrikes." *British Columbia Provincial Museum Handbook No. 22*.

"White Bears Are Really Black." *Wildlife Review*, Vol. 3, No. 4, p. 21.

(With G. C. Pike)—

"First Specimen Record of the Gray Grampus or Risso Dolphin, *Grampus griseus* (Cuvier) from British Columbia." *Murrelet*, Vol. 46, No. 1.

Adam F. Szczawinski—

"The Case of the Disappearing Poison Oak." *Victoria Naturalist*, Vol. 20, No. 5, pp. 53-55.

"True Morel versus False Morel." *Victoria Naturalist*, Vol. 20, No. 9, pp. 105-108.

(With R. J. Bandoni)—

"Guide to Common Mushrooms of British Columbia." *British Columbia Provincial Museum Handbook No. 24*, pp. 1-179.

Anthony J. Erskine and Robert C. Stein—

"A Re-evaluation of the Avifauna of the Cariboo Parklands." *Report of the Provincial Museum for 1963*, pp. 18-35.

Josephine F. L. Hart—

"Shrimps of the Genus *Betaus* on the Pacific Coast of North America with Descriptions of Three New Species." *Proceedings, United States National Museum*, Vol. 115, No. 3490, pp. 431-466.

In press is Wilson Duff's "The Indian History of British Columbia," which will appear as No. 5 in *Anthropology in British Columbia* Memoir series. A companion number on Indian pre-history is in preparation.

Several other publications are completed and ready for printing or are in final stages of preparation. These include a revised edition of "The Mammals of British Columbia," by Cowan and Guiguet; "The Lily Family (Liliaceae) of British Columbia," by T. M. C. Taylor; and "The Intertidal Univalves of British Columbia," by Lela Griffith.

"The Amphibians of British Columbia," "The Barnacles of British Columbia," "Guide to Marine Life of British Columbia," several of the bird handbooks, and others are now out of print and have been added to the list of publications to be reissued.

CURATORIAL ACTIVITIES

Routine inspection of all stored and displayed material revealed that all specimens are in satisfactory condition. No sign of insect damage has been noted since the building was fumigated last year.

The remounting and labelling of the Newcombe plant collection, a major job, was completed. These plus the specimens collected in the field and those obtained on exchange now bring the total number of sheets in the herbarium to 43,640.

Several lots of Indian materials obtained by gift and by purchase during the year have been accessioned and added to the permanent collection.

DISPLAYS

No major changes in current displays were undertaken this year, but considerable time was spent in planning layouts for displays in the new building to be erected. In the natural history division, some preliminary work on over-all design was done and scale models of two habitat groups were constructed. In this connection, several fresh mammals were obtained and turned over to Mr. John Herman for mounting and additional work space was acquired through the kindness of the Department of Public Works.

RESEARCH

In the long-term small-mammal study being made of coastal populations, several islands in Barkley Sound were trapped, and the specimens so obtained have been added to the collection for future reference.

A further contribution to the study of plumage changes in the glaucous-winged gull was made in the form of several series of birds collected locally at definite dates. The work is being sponsored by the University of Washington at Seattle.

In the archaeological field, an intensive study is being made of the Pedder Bay site, as already reported.

The results of a research project carried on by volunteer assistant Dr. J. F. L. Hart were published during the year (*see* Publications), and a second paper has been submitted for publication. This research programme was supported by a special grant from the National Research Council administered by the Provincial Museum. The contract was concluded on December 31st.

THUNDERBIRD PARK

Totem-pole carvers Henry Hunt and Eugene (Tony) Hunt worked throughout the year on two large poles and a number of smaller projects. They completed a copy of the 50-foot Nass River pole obtained from the City of Prince Rupert last year and made considerable progress on a copy of a 55-foot pole acquired by the curator from Kitwancool in 1962. Arrangements are being made to place these two large and excellent Tsimshian carvings on permanent exhibit on the new campus of the University of Victoria. The carvers also made several model totems as official gifts and for the Museum collection. In September, at the Peace Arch ceremony, an original sculpture by Henry Hunt was given to Prime Minister Pearson and one by Tony Hunt was given to President Johnson.

In June, thanks once more to the Royal Canadian Navy, three more old Haida poles, donated by the City of Prince Rupert, were brought to Victoria. These were stored, with others obtained last year, in the Indian house in Thunderbird Park.

A long-held ambition was realized in October when the carving programme was temporarily expanded to include canoe-making. David Frank, a well-known craftsman from Ahousat, was brought to Victoria for two months to demonstrate the construction of an authentic Nootka canoe. He was assisted by Paul Sam, of the same village. The type constructed was a two-man sea otter hunting canoe (the log provided being unsuitable for a larger type). The project proved to be a very popular public attraction. A photographic record of its progress was obtained by the Photographic Branch.

STAFF ACTIVITIES

As Chairman of the Archæological Sites Advisory Board, Mr. Wilson Duff organized and directed exploratory work undertaken by two field parties at "digs" in several parts of the Province, and as a member of the Indian Advisory Committee he attended meetings in Victoria and New Westminster.

Several staff members contributed to instruction programmes given at Green Timbers for Conservation Officers and at Nelson in connection with the annual seminar of the British Columbia Museums Association.

In June the Director attended the annual meeting of the Canadian Museums Association in Hamilton and made use of the opportunity to consult with various museum people in Toronto and Ottawa.

Mr. Donald Abbott, Assistant in Anthropology, rejoined the staff after eight months' leave of absence to attend Washington State University.

In June Dr. Adam F. Szczawinski was elected member-at-large to the Canadian Botanical Organization, and in September Mr. Wilson Duff was elected president of the British Columbia Museums Association during the annual meeting at Nelson.

EXTENSION

Extension work, usually in the form of illustrated talks, was carried on by various members of the staff and at various times.

In February the Director gave a series of wildlife lectures, mostly in the Eastern States, under the combined auspices of the Canadian Audubon Society, the National Audubon Society, and local conservation groups. In June the Curator of Botany spoke to natural history groups in the Okanagan Valley, a visit arranged by the Central Okanagan Naturalists' Club.

The Director has continued to take part in the weekly radio panel "Outdoors with the Experts," sponsored by radio station CJVI, a programme which was started in 1955.

PLANNING PROGRAMME

Soon after the new building project was announced, a Steering Committee and a Planning Committee were set up, the first to set policy and to act as a guide, the second to develop plans. In July five members of the Planning Committee, representing both the architectural division of the Department of Public Works and the Museum, made a tour of museums, art galleries, and other public buildings. A sixth member, Mr. W. E. Ireland, representing the Provincial Archives, joined us in Ottawa. Altogether the group visited 17 different institutions in San Francisco, Berkeley, Denver, Toronto, Ottawa, Milwaukee, Helena, and Spokane.

A great deal of valuable information was gained by the tour. We are greatly indebted to officials, staff members, and others connected with each establishment we visited; without reservation they gave us answers to all our questions and placed services and sources of information at our disposal. The material gathered has already proved invaluable.

Both the Steering Committee and the Planning Committee have met many times, and by the end of the year a set of preliminary plans was produced by the architectural division of the Department of Public Works. These were approved by officials of the Provincial Government and also by the joint Federal-Provincial Centennial Committee, and the first detailed drawings were under way before the year's end.

ATTENDANCE

The following attendance figures for 1964 are estimates based upon sample counts at irregular intervals:—

January	2,550	August	53,500
February	2,990	September	15,000
March	7,770	October	2,500
April	6,690	November	2,800
May	7,400	December	2,000
June	11,500		
July	47,000	Total	161,700

Compared with the total estimated attendance of 82,000 for the previous year, the number of visitors this year has shown a 100-per-cent increase.

As in the previous year, an extra service was provided visitors by extending the Museum open hours to 9 p.m. each evening, except Sunday, during the summer season. Many persons availed themselves of this added opportunity, particularly on evenings when the flag-lowering ceremonies were conducted in front of the Legislative Buildings.

A significant number of Museum visitors come as a group, and usually these are given a guided tour by one or more members of the technical staff. In all, 158 such groups were served in 1964, with a total attendance of 6,887 persons. Average attendance was 43.6 per group. Visiting groups in 1964 were as follows:—

Kindergartens	14
Elementary and secondary schools	63
Play groups (summer)	5
Guide and Scout groups	36
Others	40
Total	158

MISCELLANEOUS

In midsummer the Hudson's Bay Company arranged an exhibit called "The Graphic Art of Mungo Martin," making use of paintings which Mungo Martin made for the Museum some years ago. At the opening of the exhibit on June 29th, the Canada Council Medal, which had been granted posthumously to Mr. Martin, was presented to the Museum for permanent safekeeping. At the same time a fund-raising drive was started by a local committee to provide a lasting memorial to Mungo Martin.

OBITUARIES

With regret we record here the passing of four persons who, over the years, have rendered many services to the Museum or to the Province as a whole.

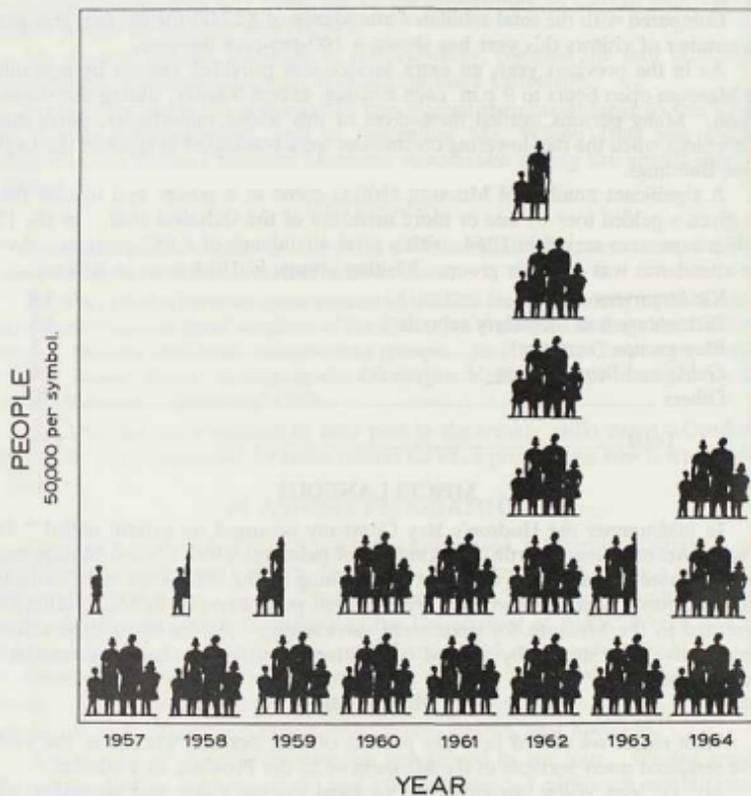
Mr. G. Van Wilby, an authority on local marine fishes and co-author with Dr. W. A. Clemens of "Fishes of the Pacific Coast of Canada." (January 27th.)

Mr. P. Walker, former Deputy Provincial Secretary, in which Department the Museum operated for many years. (February 9th.)

Mr. John Moffat, formerly part-time attendant on the Museum staff and locally known amateur artist. (March 29th.)

Dr. Wilbert A. Clemens, formerly Director of the Biological Station, Nanaimo; Head of the Department of Zoology, University of British Columbia; and an eminent fisheries biologist. (June 21st.)

PROVINCIAL MUSEUM ESTIMATED ATTENDANCE



PHOTOGRAPHIC BRANCH



For more information, contact the British Columbia Department of Recreation and Conservation, 1000 Burrard Street, Vancouver, B.C. V6Z 1G6. Telephone: (604) 675-2222.



Berg Lake and Mount Robson.

PHOTOGRAPHIC BRANCH

R. L. COLBY, CHIEF

The Photographic Branch completed many varied assignments for other Government departments during the year, besides maintaining a steady flow of material for use in "Beautiful British Columbia" magazine.

More than 100 special assignments were completed satisfactorily for advertising purposes. Also recorded was the work of different departments and the ceremonies marking the opening of Parliament.

Photographic records of the signing of all important transfers and deeds of land, including lands deeded to the Parks Branch from private citizens, were made. Each month coverage was extended to the Civil Defence Department at the Keating Cross Road headquarters for the graduating classes. Other departments requesting coverage included the British Columbia Ferry Authority, the Purchasing Commission, Queen's Printer, Fish and Game Branch, and Health Services and Hospital Insurance. Pictures were taken at Government House; important functions were covered; and 35-mm.-slide shows were prepared for use at conventions and on promotional tours. More than 5,000 pictures were produced on these assignments.

The year concluded with fall and winter pictures being taken for "Beautiful British Columbia" magazine and a general catching-up of album and darkroom work. Progress on the two new motion-picture films "Region 'E'" and "Nature Trails and Provincial Parks" continued.

There were 102 showings of Departmental films in the Branch theatre, and 21 special shows were projected at other places by our staff projectionist.

MOTION PICTURES

Two new motion pictures were completed during the year — "Vancouver Island" and "Valley of the Swans." Both these films have received wide acclaim and are in constant demand. The National Film Board is considering translating "Valley of the Swans" into German and French for European distribution. Two additional films are currently being produced by our staff cameramen-directors.

DARKROOM PRODUCTION

Of the 13,959 prints produced in our darkroom, 5,058 were sent to writers to illustrate articles on British Columbia. This substantial increase over 1963 indicates a greater interest in the Province. The darkroom also produced 1,850 negatives, and 54 portraits were taken in the Branch studio.

Colour-print production maintained a fair level in spite of generally poor weather to the end of August. Picture stories were taken for "Beautiful British Columbia" magazine, and individual colour photographs for advertising, brochures, and other publicity media.

MOTION-PICTURE LIBRARY

Films distributed from this office accounted for 2,545 showings with an audience of 200,457. Those distributed in Canada from the National Film Board on our behalf accounted for an additional 894 showings and an audience count of 65,670, making a grand total of 3,439 screenings for an audience of 266,127. Films distributed in the United States by the Canadian Government Travel Bureau showed

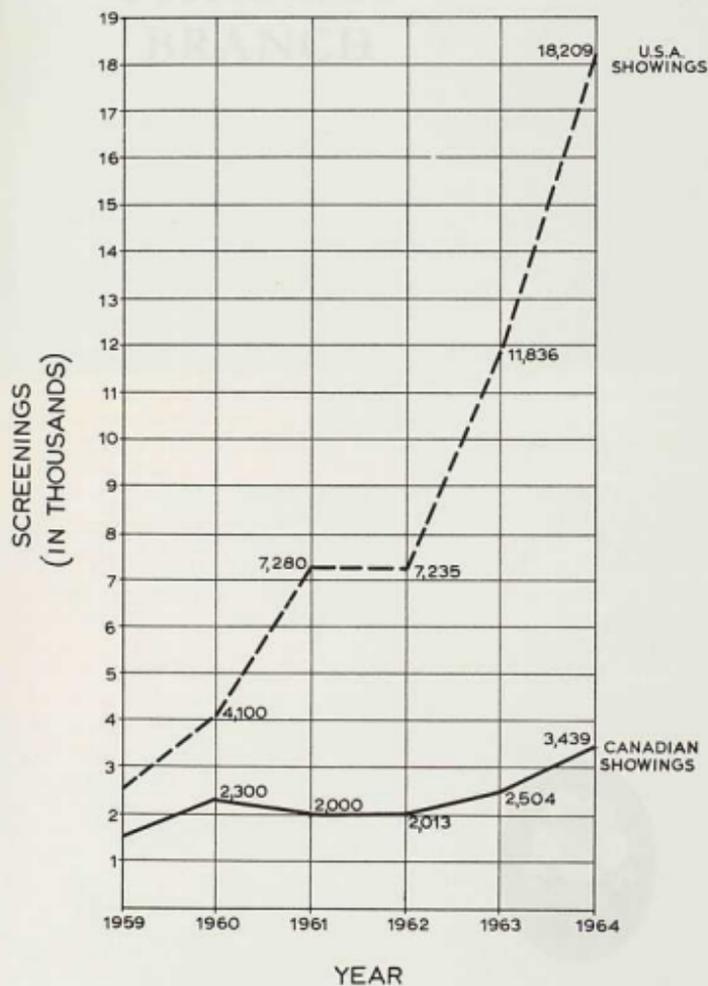
an audience of 915,342 for 18,208 showings. Eight television showings were directed from this office for Canadian audiences, while there were 536 television showings in the United States.

GENERAL

Branch photographers and motion-picture cameramen travelled by land, sea, and air some 68,700 miles throughout the Province for photographs, slides, and motion-picture footage.

Some 25,500,000 pictures of this Province were seen throughout the world through the medium of "Beautiful British Columbia" magazine. This figure is based on the average quarterly sale of 85,000 copies with an average of 75 pictures per issue. If the readership per copy were five, the figure would reach more than 127,000,000 pictures viewed.

PHOTOGRAPHIC BRANCH DIRECT FILM SCREENINGS



PHOTOGRAPHIC BRANCH
DIRECT FILM SALES



COMMERCIAL FISHERIES BRANCH





Successful herring catch.



Halibut fishermen at work in Hecate Strait.

COMMERCIAL FISHERIES BRANCH

J. KEMP, SUPERVISOR

<i>Total Marketed Value of Fish</i>		<i>Number of Licensed Boats</i>	
1959	\$66,400,000	1959	8,478
1960	52,300,000	1960	8,623
1961	77,900,000	1961	8,856
1962	94,700,000	1962	9,143
1963	76,000,000	1963	9,745
<i>Number of Licensed Fishermen</i>		<i>Value of Gear</i>	
1959	14,463	1959	\$7,701,000
1960	14,191	1960	8,545,000
1961	15,660	1961	8,946,000
1962	15,060	1962	9,946,000
1963	15,370	1963	10,096,000

The canned-salmon pack for 1964 was 1,251,618 cases, 48,347 more than the 1963 pack of 1,203,271 cases. This year no strikes tied up the salmon-fishing fleet, and in spite of rather gloomy predictions for the 1964 season, only two species—springs by 907 cases and pinks by 293,119 cases—showed significant decline from the 1963 level.

The best fishing for chums and sockeyes since 1950 was experienced in northern waters. The sockeye catch in District 2 totalled 2,700,000 fish for the season, the best in 10 years. These factors helped to make this year one of the best the north coast has experienced for many years. The total catch of coho in all sections of the British Columbia coast exceeded 3,000,000 fish this year, thus making it a better-than-average season for this species.

BRITISH COLUMBIA CANNING INDUSTRY

Twenty-one salmon canneries were licensed to operate in the Province by this Branch. The locations were as follows: Queen Charlotte Islands, 1; Skeena River, 7; Central Area, 1; Vancouver Island, 1; Fraser River and Lower Mainland, 11. This year saw five previously licensed canneries—namely, Glenrose, Tulloch-Western, Klemtu, Tofino, and Bella Bella—not operating. Partially offsetting this were two new operations, both in the Vancouver area—North Coast Cannery and Crest Cannery.

Comparative Pack by Species (48-pound Cases)

	1963	1964
Sockeyes	157,747	343,276
Springs	9,940	9,033
Steelheads	770	1,211
Bluebacks	11,361	36,392
Cohoos	145,692	167,883
Pinks	757,087	463,968
Chums	118,309	229,855

HALIBUT

The International Pacific Halibut Commission was set up under treaty between Canada and the United States for the protection and rehabilitation of the halibut fishery. For the purpose of regulation, the Pacific Coast is divided into a number of areas. The 1964 regulating areas were as follows:—

Area 1—South of Willapa Bay.

Area 2—Willapa Bay to Cape Spencer.

Area 3A—Cape Spencer to Shumagin Islands.

Area 3B South—Shumagin Islands to Cape Wrangell, Attu Island, not including Bering Sea.

Area 3B North—Bering Sea, exclusive of Area 3B, North Triangle.

Area 3B North Triangle—In Bering Sea.

Halibuting opened in the Bering Sea on March 25th and off the British Columbia coast on May 1st. Landings from the Bering Sea at Canadian plants were only half as heavy by June as at the same time last year, but the difference was made up by increased landings at Seattle from Canadian boats. Total catch of Canadian fishermen was a little bigger than last year, but their income from it declined because of lower per pound prices. To partly cushion this drop, boats carried more of their fish to Seattle, where the price range was a little higher than at Vancouver.

Halibut landings at Canadian ports for 1964 were 25,600,000 pounds, worth \$6,143,000. This was an increase in value of \$577,000 over the previous year.

HERRING

Once again the herring fishery was interrupted by a strike lasting from October 24th to November 23rd. The fishermen returned to work after establishing a medical plan for themselves and setting a landed price for herring of \$14.48 per ton.

Last available reports for 1964 show herring-meal production of 23,951 tons and herring-oil production of 3,978,531 imperial gallons.

WHALING

A record was set for the British Columbia whaling industry this year with a total catch of 880 whales, 302 more than the 1963 total of 578 whales. Unfortunately, of this total 612 were sei whales, which yield comparatively small amounts of meat and oil. Had larger species, such as finbacks, been predominant, this would have been a highly successful season.

PACIFIC OYSTER BREEDING

The summer of 1964 was quite unfavourable for Pacific oyster breeding, for the poor weather held water temperatures down to lower than normal levels. In Ladysmith Harbour the water temperature did not reach 68° F. at any time. In Pendrell Sound, while the surface-water temperature did reach as high as 71° F., it did not last for an appreciable period of time, and a mean of 68° F. was the normal level.

In Ladysmith Harbour there was no appreciable spawning, and no larvae were found at any time.

In Pendrell Sound the only major spawning, on July 20th, provided enough larvae to produce a commercial spatfall which was forecast for the first week in August. Experimental shell cultch exposed between August 3rd and 17th caught an average of 75 spat per shell, with a range between 40 and 136 per shell.

Strangely, the commercial cultch did not do nearly as well, and during the same period caught an average of between 5 and 17 per shell in different areas. Low-level spitting continued for several weeks, which increased the catch slightly. However, it means that the commercial catch was hardly adequate, particularly for export sale. Approximately 30,000 strings of shell cultch were exposed.

RESEARCH OFFICER

As a result of a recommendation made by the Special Committee on Fisheries to the Minister of Recreation and Conservation, a study of the commercial fisheries resource of British Columbia is being made. Mr. R. G. McMynn, formerly Chief Fisheries Biologist of the Fish and Game Branch, was appointed to prepare the report. The report consists of two parts. The first reviews and delineates the jurisdictional and administrative responsibilities of the Federal and Provincial Governments in the fisheries field. The second part will be concerned with specific problems facing the tidal commercial- and sport-fishing resources; for example, stream pollution and industrial development in relation to salmon production, interrelationship of sport and commercial fisheries, and the related problems, such as gravel removal in streams and logging practice.

The first part of this report has been completed, and it is anticipated that the second will be ready for submission to the Special Committee on Fisheries by February, 1965.

FEDERAL-PROVINCIAL CONFERENCE ON FISHERIES DEVELOPMENT

The basis for a National fisheries development programme was laid at the first Federal-Provincial Ministerial Conference on Fisheries, which was held in Ottawa, January 20 to 24, 1964, at the invitation of the Honourable H. J. Robichaud, Minister of Fisheries for Canada. British Columbia was represented by Dr. D. B. Turner, Deputy Minister of Recreation and Conservation, and Mr. R. G. McMynn, Research Officer of the Commercial Fisheries Branch.

On August 19, 1964, a meeting was held in Nanaimo, B.C., to choose three Provincial and three Federal Government employees to act as committee members on the Federal-Provincial British Columbia Fisheries Committee. This Committee was formed as a result of the January Ministerial Conference in Ottawa. At the same time as committee members were named, an agenda was established for presentation at the group's first meeting.

The first meeting of the Federal-Provincial British Columbia Fisheries Committee was held in Ottawa, November 3 and 4, 1964. The Provincial Commercial Fisheries Branch presented three papers—(1) "The Oyster Industry in British Columbia," (2) "Commercial and Sport Salmon Fishing in British Columbia," and (3) "Stream Management and Salmon Stocks, Commercial and Sport Salmon Fishing."

The next meeting of this group will be held in Victoria in late April or early May, 1965.

CUSTOM CANNERIES

An Order in Council, approved in July of this year, will enable resort and marina owners to operate small "custom" canneries for the processing of sport-caught salmon. Two main reasons for the establishment of such operations are:—

- (1) These canneries reduce wastage of good food fish which sports fishermen away from home cannot immediately use or preserve.

- (2) The custom canning of sport-caught fish was being done illegally each summer, but it was extremely difficult to obtain sufficient information to prosecute. The fact that such illegal canning operations were carried out with unsuitable equipment, without proper knowledge of canning procedure, and under unsanitary conditions constituted a danger to health of individuals using the service and of others to whom they gave the product.

Subsequent to the passing of this Order in Council, one custom cannery is now in operation at Brentwood, near Victoria, and has processed 3,500 cans of sport-caught salmon to date. Two more custom canneries are under construction—one on Vancouver Island and one on the Mainland of British Columbia.

REVIEW OF FISHERIES PRODUCTION, 1963

The total marketed value of the fisheries of British Columbia for 1963 amounted to \$76,000,000, \$18,700,000 less than 1962.

Several factors contributed to this drop in value, notably a general strike in the fishing industry lasting from July 13th to August 3rd, a below-average salmon pack, a dip in the average unit price of halibut amounting to 9.6 cents per pound, and a subsequent drop in market value from \$9,300,000 in 1962 to \$8,000,000 in 1963.

The principal species as marketed were salmon, with a value of \$49,000,000; halibut, with a value of \$7,993,000; and herring, with a marketed value of \$11,700,000.

The landed value of the 1963 halibut catch was \$5,721,000, as compared to \$7,773,000 in 1962.

In 1963 the marketed value of shellfish amounted to \$2,694,000. The value of the clam production was \$340,000; oyster production, \$781,000; crab production, \$1,000,000; shrimp and prawn production, \$573,000.

VESSELS AND BOATS

The number and value of boats used in the commercial catching and landing of fish in British Columbia for 1963 included 1,367 boats in the 10-ton-and-over class and 8,378 in the under 10-ton group, which totalled 9,745 boats, valued at \$70,860,000. There were 602 more boats operating in coastal waters than in 1961.

GEAR AND EQUIPMENT

The 1963 inventory of fishing-gear included 9,392 salmon gill-nets, 484 salmon seine-nets, 113 herring seine-nets and 99 herring gill-nets, valued at \$5,584,000. Wire, cotton, and nylon trolling-lines were valued at \$498,000.

NUMBER OF FISHERMEN LICENSED

Fifteen thousand three hundred and seventy-four commercial fishermen were licensed in British Columbia in 1963, compared with 15,060 licensed in 1962. The number of men employed on fish packing and collector boats totalled 1,250.

REVIEW OF BRITISH COLUMBIA'S SALMON-CANNING INDUSTRY

The Commercial Fisheries Branch licensed 24 salmon canneries to operate in 1963, three more than in 1962 and the highest total since 1959. The operating canneries in 1963 were located as follows: Queen Charlotte Islands, 1; Skeena

River, 7; Central Area, 3; Vancouver Island, 2; Fraser River and Lower Mainland, 11.

The total canned-salmon pack for British Columbia, according to the annual returns submitted to this Branch by canners licensed to operate in 1963, amounted to 1,203,271 cases, 613,344 cases less than the 1962 pack and below the 10-year 1953-62 average of 1,400,000 cases. With a value of only \$34,500,000, the 1963 pack was \$21,000,000 under the previous year's figure.

SOCKEYE SALMON

The sockeye pack for 1963 was 158,375 cases, with a value of \$8,324,734. The sockeye pack was the smallest in the history of the industry and pushed the price on the wholesale market to an average of \$52.56 per case, \$1 over the 1962 average.

PINK SALMON

The pink pack of 757,452½ cases was valued at \$17,862,786 and comprised 63 per cent of the total canned pack.

COHO AND BLUEBACK SALMON

Once again the pack was smaller than the previous year. The coho (blueback) pack was 157,482½ cases, worth \$5,477,978. In 1962 the pack was 187,735 cases, worth \$6,886,213. Total coho sales of canned pack and all other forms in 1963, however, amounted to \$11,400,000, very close to 1962's \$12,200,000.

CHUM SALMON

The chum pack dropped from a total of 138,483 cases in 1962, worth \$3,024,801, to 119,190 cases in 1963, worth \$2,546,703. In 1963, 1,463,000 chums were caught. This is the second lowest catch of this species since 1951; only 1961, with a total of 1,218,000 chums landed, has a lower figure.

SPRING SALMON

This year saw an increase of 2,825 cases in the spring-salmon pack. In 1962, 7,175 cases were packed, worth \$185,734. The 1963 figure was 10,000 cases, worth \$229,837. Spring landings were the highest for the last three years with 10,165,000 pounds, valued at \$4,020,000.

STEELHEAD

The 1963 steelhead pack amounted to 771 cases, 44 fewer than the 1962 pack of 815 cases. Steelhead are not salmon, but some are canned each year, principally those caught incidental to fishing other species.

OTHER CANNERIES

Shellfish Canneries.—In 1963, 7 of the 12 shellfish canneries licensed to operate in British Columbia produced a pack as follows: Clams, 15,731 cases; crabs, 16,165 cases; abalone, 55 cases; shrimps, 50,000 pounds.

Tuna-fish Canneries.—Four tuna-fish canneries were licensed to operate in 1963 and produced 32,081 cases plus 10,729 cases of creamed tuna.

Specialty Products.—Four plants produced the following: Smoked oyster chowder, 195 gallons; oyster cocktail in 6-ounce jars, 45 gallons; creamed salmon with peas, 5,532 cases; pickled herring, 9,242 cases, 85 25-pound barrels, and 19

50-pound barrels; fish and chips (cod and halibut), 1,333,300 pounds; fish cake (miscellaneous), 49,000 pounds.

FISH-CURING

Twelve smoke-houses processed the following: Herring (kippers, 64,015 pounds; bloaters, 14,000 pounds); cod, 448,761 pounds; salmon, 241,420 pounds; mackerel, 5,000; black cod, 29,000; eels, 4,000 pounds; sturgeon, 101 pounds; trout, 38 pounds.

DRY-SALTED HERRING

One plant operated in 1963 and packed 1,153 boxes of salted herring, worth \$26,573.

MILD-CURED SALMON

Four of the five plants licensed to mild-cure salmon in 1963 operated and produced 428 tierces, with a total weight of 3,530 hundredweight. In 1962 four plants operated and produced 462½ tierces.

FISH ROE

Three firms processed a total of 207,540 pounds of salmon roe for bait and the following: 55 90-pound kegs, 7,552 cases of 24 3-ounce jars, 4,830 cases of 12 3¾-ounce jars, 1,070 cases of 24 7-ounce jars, 350 cases of 12 23-ounce tins, 90 cases of 6 7-pound gallon tins of salmon-egg caviar, and 4,000 pounds of salted fish roe.

HALIBUT

The 1963 halibut fishery was marked by three outstanding features: the sharp decline in landed prices at all ports; the taking by the Canadian fleet of the largest share of the total catch; for the first time Japanese fishermen engaged in the eastern Bering Sea fishery. Canadian vessels landed 52 per cent of the season's catch, which was worth \$5,721,000. Unfortunately the lower price of 22.06 cents per pound caused a drop of \$2,052,000 in the landed value in spite of a 1,407,000-pound increase in total landings.

The year saw 1,200 men on 236 vessels engaged in halibut-fishing.

FISH OIL AND MEAL

Records were broken in the herring fishery in 1963 with 286,290 tons landed, 63,653 tons more than 1962. Landed value of the catch was \$6,481,000.

In 1963, 10 herring-reduction plants were licensed to operate. These plants produced a total of 53,271 tons of meal and 50,037,000 pounds of oil. Total value of all herring products was \$11,695,000.

Fish-liver Reduction (Cod, Dogfish, Halibut).—Three plants were licensed in 1963; two of them operated, processing 156,367 pounds of fish livers and producing 938,135 million U.S.P. units of Vitamin A. In 1963 three plants processed 173,099 pounds of fish livers and produced 575,337 million U.S.P. units of Vitamin A.

Fish-offal Reduction.—During the 1963 season nine plants were licensed to operate and produced 1,464 tons of meal and 403,309 gallons of oil. In 1962 nine plants produced 1,704 tons of meal and 167,349 gallons of oil.

STATISTICAL TABLES

TABLE I.—LICENCES ISSUED AND REVENUE COLLECTED,
1960 TO 1964, INCLUSIVE

Licence	1960		1961		1962		1963		1964	
	Number	Revenue								
Salmon cannery	23	\$4,600	23	\$4,600	21	\$4,200	24	\$4,800	21	\$4,200
Herring cannery	1	100	2	200	—	—	—	—	1	100
Herring reduction	8	800	6	600	9	900	13	1,300	9	900
Tierced salmon	5	500	5	500	6	600	5	500	4	400
Fish cold storage	18	1,800	18	1,800	20	2,000	19	1,900	20	2,000
Fish-processing	20	20	19	19	21	21	38	38	45	45
Shellfish cannery	8	8	9	9	8	8	13	13	14	14
Tuna-fish cannery	2	2	3	3	2	2	4	4	3	3
Fish-offal reduction	7	7	8	8	9	9	9	9	8	8
Fish-diver reduction	3	3	3	3	3	3	3	3	3	3
Whale reduction	—	—	—	—	1	100	1	100	1	100
Herring dry-saltery	—	—	—	—	—	—	2	200	1	100
Fish-buyers	425	10,625	434	10,850	448	11,200	447	11,175	403	10,075
Pickled-herring plant	—	—	—	—	—	—	—	—	1	100
General receipts	—	—	—	—	—	—	—	—	3	60
Totals	520	\$18,465	530	\$18,592	548	\$19,043	578	\$20,042	537	\$18,108

TABLE II.—SPECIES AND VALUE OF FISH CAUGHT IN BRITISH COLUMBIA,
1959 TO 1963, INCLUSIVE

	1959	1960	1961	1962	1963
Salmon	\$45,140,000	\$35,963,000	\$57,314,000	\$69,763,000	\$48,960,000
Herring	8,843,000	3,450,000	8,207,000	8,492,000	11,695,000
Halibut	6,236,000	6,534,000	7,099,000	9,312,000	7,993,000
Crabs and shrimps	1,376,000	1,729,000	1,511,000	1,415,000	1,573,000
Ling-cod	510,000	593,000	551,000	544,000	492,000
Grey cod	630,000	647,000	487,000	405,000	705,000
Oysters	471,000	406,000	480,000	608,000	781,000
Sole	552,000	795,000	552,000	584,000	643,000
Black cod	147,000	253,000	147,000	173,000	162,000
Clams	310,000	535,000	324,000	448,000	340,000
Livers and viscera	271,000	126,000	122,000	58,000	57,000
Miscellaneous	1,891,000	1,228,000	1,092,000	2,876,000	2,599,000
Totals	\$66,377,000	\$52,259,000	\$77,886,000	\$94,673,000	\$76,060,000

TABLE III.—STATEMENT SHOWING THE QUANTITY OF HERRING PRODUCTS
PRODUCED IN BRITISH COLUMBIA, 1958 TO 1964, INCLUSIVE

Season	Canned	Dry-salted	Meal	Oil
1958/59	Cases	Tons	Toons	Gal.
1959/60	10,351	—	43,527	4,545,474
1960/61	—	—	32,559	4,249,801
1961/62	9,074	—	31,203	2,966,547
1962/63	19,102	—	40,746	4,751,082
1963/64	892	206.35	41,299	40,243,000 lb.
	—	562.3	53,271	50,037,000 lb.

TABLE IV.—STATEMENT SHOWING THE QUANTITY OF MEAL, OIL, AND VITAMIN A PRODUCED FROM SOURCES OTHER THAN HERRING, 1957 TO 1964, INCLUSIVE

Season	From Whales		Oil from Fish Livers	From Other Sources	
	Meal	Oil		Meal and Fertilizer	Oil
	Tons	Gal.	Units ¹	Tons	Gal.
1957/58	3,446	952,702	3,292,552	1,570	170,433
1958/59	4,226	908,482	1,821,994	2,318	272,223
1959/60	4,058	940,455	3,474,267	1,140	110,977
1960/61	—	—	2,258,748	2,099	62,983
1961/62	—	—	3,228,748	1,157	121,580
1962/63	2,661	639,060	575,337	1,704	167,349
1963/64	3,060	707,596	938,135	1,464	403,309

¹ Million U.S.P. units of Vitamin A.

The above figures are for the season October to March 31st annually.

TABLE V.—BRITISH COLUMBIA SALMON PACK, 1959 TO 1963, INCLUSIVE, SHOWING AREAS WHERE CANNED

(48-pound cases.)

These tables supplied by courtesy of the Canadian Department of Fisheries in Vancouver.

1959

Species	Area			Total
	District No. 1	Skeena River	Central Area and Queen Charlottes	
Sockeye	189,297	46,827	20,046½	256,170½
Red spring	2,417½	824½	66½	3,308½
Pink spring	4,925	811	598½	6,334½
White spring	4,832	527	228½	5,587½
Steelhead	418	329	119½	866½
Blueback	10,114	—	—	10,114
Coho	150,756	32,215	20,020	202,991
Pink	338,947	82,005	37,644	458,596
Chum	75,709½	36,136	21,283	133,128½
Totals	777,416	199,674½	100,006½	1,077,097

TABLE V.—BRITISH COLUMBIA SALMON PACK, 1959 TO 1963, INCLUSIVE,
SHOWING AREAS WHERE CANNED—Continued

(48-pound cases.)

1960

Species	Area		Total
	District Nos. 1 and 3	District No. 2	
Sockeye	172,505	54,339	226,844
Red spring	1,113½	458½	1,572
Pink spring	1,436	1,056	2,492
White spring	1,151½	700	1,851½
Steelhead	339½	164½	504
Blueback	23,345	—	23,345
Coho	41,194½	26,965	68,159½
Pink	52,689½	166,874½	219,564
Chum	47,081	39,737½	86,818½
Totals	340,855½	290,295	631,150½

1961

Sockeye	239,667	158,538	398,205
Red spring	1,735	412	2,147
Pink spring	2,678	1,022½	3,700½
White spring	1,471	602½	2,073½
Steelhead	587½	391	978½
Blueback	12,527½	—	12,527½
Coho	153,994	74,857½	228,851½
Pink	286,544½	374,745½	661,290
Chum	28,994	66,391	95,385
Totals	728,198½	676,960	1,405,158½

1962

Sockeye	198,001	99,715½	297,716½
Red spring	1,217½	904	2,121½
Pink spring	1,145½	1,190	2,335½
White spring	1,698½	1,019	2,717½
Steelhead	520½	294½	815
Blueback	12,097	—	12,097
Coho	120,038	55,600	175,638
Pink	508,878½	679,783	1,188,661½
Chum	70,304	64,179	134,483
Totals	913,900½	902,685	1,816,585½

1963

Sockeye	125,480½	32,894½	158,375
Red spring	1,866	912	2,778
Pink spring	1,362	1,078	2,440
White spring	2,811	1,971	4,782
Steelhead	330	441½	771½
Blueback	11,329	54½	11,383½
Coho	89,252	56,847	146,099
Pink	542,700½	214,752	757,452½
Chum	62,905½	56,284½	119,190
Totals	838,036	365,235	1,203,271½

CATCHES BY CANADIAN BOATS IN WATERS NORTH OF DIXON ENTRANCE ARE CLASSIFIED AS ALASKA AREAS PREVIOUSLY DESIGNATED AS 'X' AND 'Y' ARE NOW SHOWN UNDER THIS HEADING.

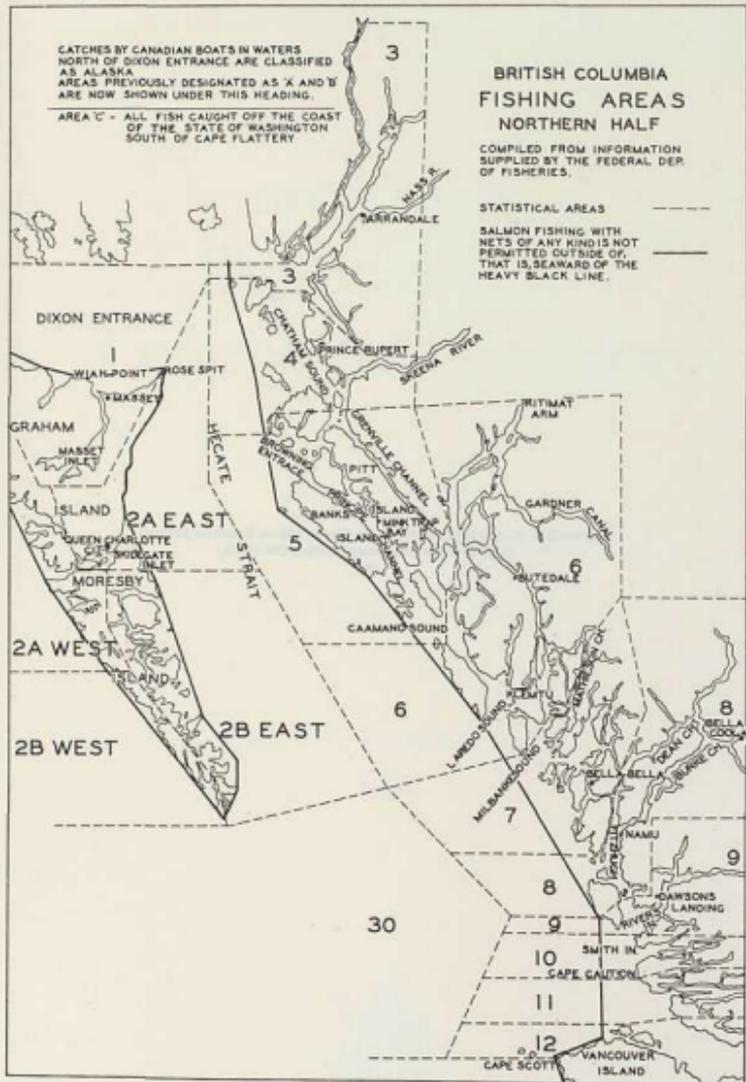
AREA 'C' - ALL FISH CAUGHT OFF THE COAST OF THE STATE OF WASHINGTON SOUTH OF CAPE FLATTERY

BRITISH COLUMBIA FISHING AREAS NORTHERN HALF

COMPILED FROM INFORMATION SUPPLIED BY THE FEDERAL DEP. OF FISHERIES.

STATISTICAL AREAS

SALMON FISHING WITH NETS OF ANY KIND IS NOT PERMITTED OUTSIDE OF, THAT IS SEAWARD OF, THE HEAVY BLACK LINE.





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1965

PROVINCE OF BRITISH COLUMBIA

DEPARTMENT OF COMMERCIAL TRANSPORT

THE HON. THE ATTORNEY GENERAL

THE HON. THE MINISTER OF COMMERCIAL TRANSPORT

REPORT OF THE
Department of
Commercial Transport

consisting of the reports on

RAILWAYS, AERIAL TRANWAYS, BICYCLES,
INDUSTRIAL TRANSPORTATION
and COMMERCIAL VEHICLES

YEAR ENDING DECEMBER 31

1954

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