

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

GENERAL ADMINISTRATION, FISH AND WILDLIFE BRANCH,
PROVINCIAL PARKS BRANCH, BRITISH COLUMBIA GOV-
ERNMENT TRAVEL BUREAU, PROVINCIAL MUSEUM OF
NATURAL HISTORY AND ANTHROPOLOGY, PHOTOGRAPHIC
BRANCH, AND COMMERCIAL FISHERIES BRANCH

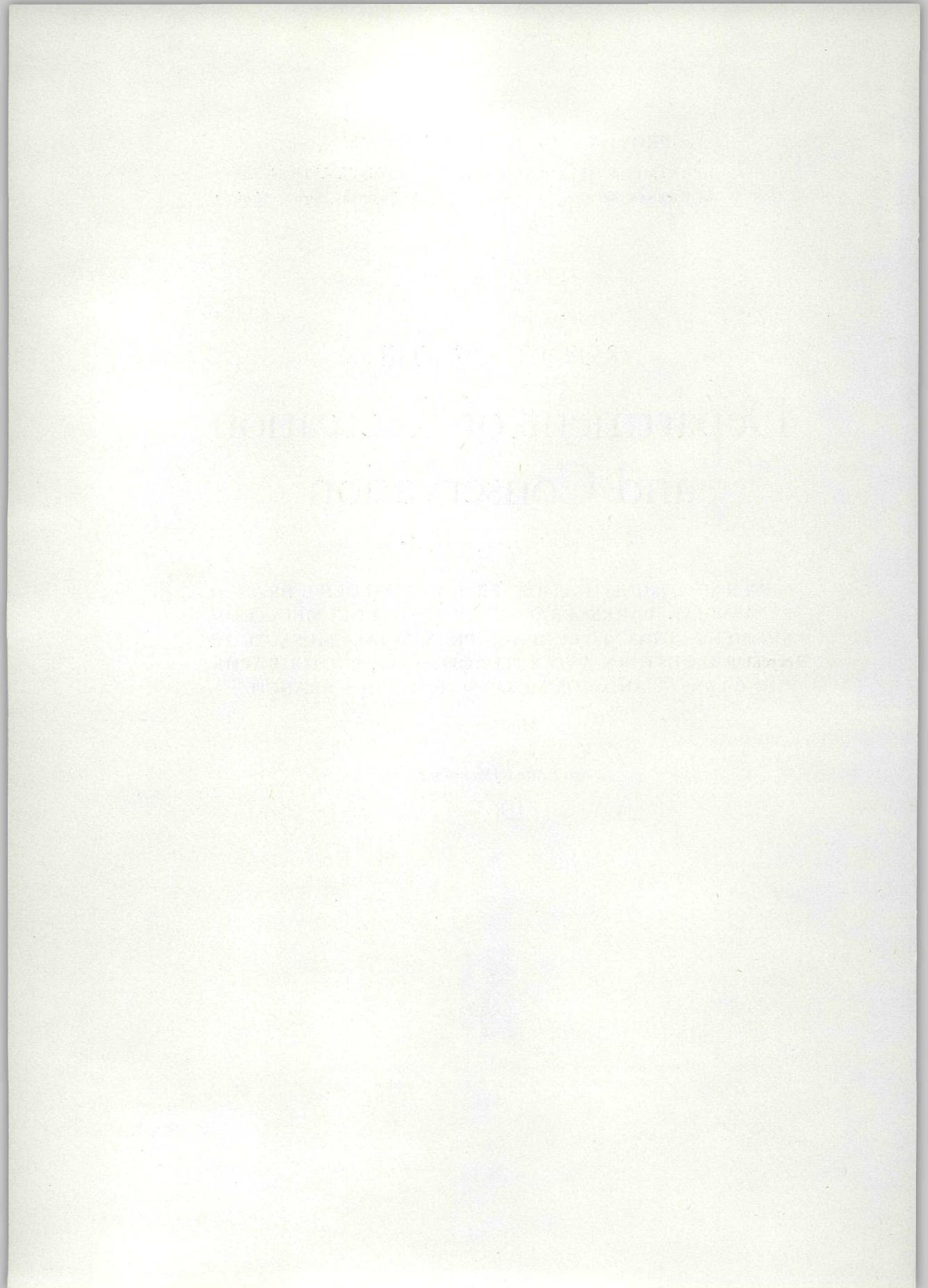
Year Ended December 31

1966



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in right of the Province of British Columbia.

1967



VICTORIA, B.C., January 27, 1967.

*To Major-General the Honourable GEORGE RANDOLPH PEARKES,
V.C., P.C., C.B., D.S.O., M.C., C.D.,
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, 1966.

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

VICTORIA, B.C., January 27, 1967.

*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, 1966.

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

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Report of the Department of Recreation and Conservation, 1966

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

INTRODUCTION

For fear that a historical event of importance may be overlooked, let it be recorded here that the Department of Recreation and Conservation is presently completing its 10th year of existence. It was on March 28, 1957, that the Department was created by Act of Legislature. The Honourable E. C. Westwood assumed the portfolio, and for the next seven years, under his direction, the Department spent its formative period. He was succeeded on December 4, 1963, by the Honourable W. K. Kiernan.

This decennial birthday of the Department, it must be admitted, is somewhat overshadowed by the activities and celebrations marking British Columbia's Centennial in the year 1966 and Canada's Centennial in 1967. Nevertheless, the Department's decennium is of intense interest and inspiration, particularly to those of us who have been associated with the Department of Recreation and Conservation since its inception.

The philosophy and the theory behind the creation of the Department were that, in a Provincial or State Government, the elements of outdoor recreation and conservation should be combined into a single department which, with strong and essential liaison with other resource departments, could best serve the needs and desires of all citizens to make use of and enjoy the resources of the land in which we live. The conservationist's concern, it should be noted, is not alone with the basic values of a single resource, but with the values of all resources considered in relation one to the other. The aim of the Department of Recreation and Conservation, therefore, goes beyond the duties to protect, maintain, and fortify the environmental complex, to the major goal of actually improving the planet earth wherever possible. It is believed that the Department of Recreation and Conservation is making steady and definite progress to this end.

The Department is made up of six branches. A few of their individual accomplishments during the year 1966 are noted below. Other highlights in this 10th year of operation can be read in the following pages in the reports of the branch directors.

Fish and Wildlife Branch

The new Kootenay hatchery, situated near Cranbrook, went into operation in the spring of 1966.

Combined in highly attractive manner with the prime function of producing fish for stocking are the displays and information for the people of British Columbia and our visitors. Hatcheries have great appeal to people, and, in addition to producing trout for the entire Kootenay area, the hatchery drew 23,000 visitors during its first three months of operation.

A second major fisheries event is the construction of an 11,000-foot kokanee (land-locked salmon) fish-spawning channel on Meadow Creek, a tributary of the Duncan River, which in turn empties into the north end of Kootenay Lake. Work is scheduled for completion well in advance of the spawning run in September, 1967.

These two undertakings are examples of activities and accomplishments in the fish and wildlife field. To these should be added other significant advances—a new

Wildlife Act, a new *Firearms Act*, a uniform licence-year established, and 180 acres at Duck Lake near Creston purchased to complete this famous waterfowl unit.

Provincial Parks Branch

Public use of Provincial parks reached capacity. Our historic parks, Barkerville and Fort Steele, showed particularly noticeable attendance increases, up 15 and 100 per cent respectively.

Ski-ing facilities at Mount Seymour and Manning Parks were considerably improved.

Ten new wells to further the programme of good water in all Provincial parks were brought in during 1966, the paving of roads in parks was advanced, and the popular "stop of interest" signs programme saw 40 new signs go up.

British Columbia Government Travel Bureau

The business of tourism is of prime and fast-increasing importance in the economic picture of British Columbia. The year 1966 saw over 7,000,000 tourist "visits," worth \$227,000,000 to the Province (1965 figures respectively read 5,000,000 tourists enriching British Columbia's surging tourist industry by over \$200,000,000). Better than an 11-per-cent increase, therefore, is the remarkable advance in tourism in our Centennial Year.

Provincial Museum

Planning and production of exhibits and galleries proceeded apace during 1966 in preparation for the opening of the beautiful Provincial Centennial Museum in Victoria. Staff additions and intensive field work complemented this carefully planned programme.

The carving of totem poles was also a feature of Museum activities during 1966. A replica of a large Haida pole and a 65-foot pole for Expo 67 were but two of the special works of Indian wood-carving art completed or under way to mark the joint British Columbia-Canada Centennial Years of 1966 and 1967.

Commercial Fisheries Branch

The Commercial Fisheries Branch devoted much attention to our shellfish industry and the harvesting of aquatic plants (kelp). No effort was spared, in the new oyster regulations produced, to harmonize the important interests of producer, processor, and the Provincial Government.

Photographic Branch

The production of colour stills was at a high level in 1966 in the Photographic Branch, with some 2,500 stills added to the files. Emphasis was on picture stories for the Departmental magazine "Beautiful British Columbia."

Motion-picture production results in the completion of three new tourist films—"Barkerville or Bust," "East 1—West 1," and "Breath of Spring."

Direct screenings and television exposure of our films in the United States, United Kingdom, Canada, and many other countries showed a marked increase. Some 250 release prints of our films were purchased for distribution through the Canadian Travel Film Libraries.

As a final and special comment for this year's Annual Report, a word should be said about the success of the Department's two magazine publications, which are distributed now all over the world. On a comparable basis with all Canadian magazines, "Beautiful British Columbia" magazine and the "Wildlife Review" are outranked respectively in subscriptions and single sales only by a few Canadian national magazines. "Beautiful British Columbia" magazine reached 89,000 subscriptions and 40,000 single sales in 1966, while "Wildlife Review" circulation totalled 42,000. These are phenomenal growth figures to record, and they attest to the high quality of these two extremely popular magazines.

HIGHLIGHTS OF 1966

GENERAL ADMINISTRATION

PERSONNEL SECTION

A total of 98 requisitions to the Civil Service Commission was processed for the purpose of obtaining new and replacement positions; examinations were conducted to determine potential candidates interested in becoming Conservation Officers; two employees attended the Executive Development Course and three attended the Basic Administration Course; and four employees were awarded their 25-year continuous-service certificates.

PUBLIC INFORMATION

The Public Information Officers' Committee submitted a proposal that a Departmental Section of Information and Education be formed.

FISH AND WILDLIFE BRANCH

HATCHERY FACILITIES INCREASED

The Kootenay Trout Hatchery near Wardner was officially opened June 21, 1966.

KOOTENAY LAKE FISHERY STUDIES

Construction of a kokanee-spawning channel on Meadow Creek commenced, and studies of effects of Duncan Dam on the Kootenay Lake fishery continued.

CANADA LAND INVENTORY FOR WILDLIFE

The Canada land inventory has been expanded to cover the whole Province.

GAME REGULATIONS

Cougar, wolf, and coyote were given status of game animals. Tag licences introduced on black bear, and separate seasons introduced on whitetailed and mule deer.

KOOTENAY SHEEP STUDY

Research into bighorn sheep mortality continued, and intensified with investigation of the disease, populations, and winter range ecology.

ANGLING LICENCES CHANGED

To provide more useful management information, the steelhead punch-card licences were separated from the general angling licences of both resident and non-residents.

A short-term (three-day) non-resident angler's licence was also introduced.

PROVINCIAL PARKS BRANCH**RECREATIONAL AREA**

Manning Park Lightning Lake Recreational Area was officially opened. The area will provide excellent fishing, boating, and swimming for summer visitors.

MARINE PARKS

Purchase of two very desirable sites—Pirates Cove on De Courcy Island and Smugglers Cove on Sechelt Peninsula—increased the number of marine parks from 8 to 10. A generous donation from the British Columbia Council of Yacht Clubs assisted in these acquisitions.

WELL-DRILLING

Fourteen wells drilled during 1966, as part of a major undertaking during the past three years, brings us very close to having potable water in all developed parks.

PARK USE

Park use varied greatly throughout the Province, but showed an over-all increase of more than 200,000 visits to put the total over 5,000,000.

BRITISH COLUMBIA GOVERNMENT TRAVEL BUREAU**RECORD TOURIST SEASON**

Continuing the well-established pattern, the dollar value of the tourist industry established a record for the Province.

PUBLIC INFORMATION

Written material about British Columbia reached more people than any previous year.

ACCOMMODATION SECTION

New British Columbia "Approved Tourist Accommodation" signs were distributed to more than 2,000 establishments. A complete coverage of every tourist establishment was effected during the year.

CONVENTION SECTION

It is estimated that \$9,500,000 was spent in the Province during the year as a result of conventions.

COUNSELLING SECTION

It was the busiest year ever. At the end of November, 175,624 inquiries had been received and answered, 37,806 more than for the same period of the previous year.

"BEAUTIFUL BRITISH COLUMBIA" MAGAZINE

Average circulation per issue climbed from 145,000 to 155,000 in 1966. Subscriptions increased from 58,000 to 80,000.

MATCHING GRANTS

The cost-sharing basis was changed so that the Department assumed 60 per cent of the costs and the regional organizations assumed the balance.

BRITISH COLUMBIA HOUSE, SAN FRANCISCO

Representatives were exposed to approximately 2,236,000 people at various shows and exhibitions; many more people saw films about British Columbia.

**PROVINCIAL MUSEUM OF NATURAL HISTORY
AND ANTHROPOLOGY****CORNERSTONE-LAYING**

The cornerstone of the new Museum-Archives complex was "well and truly" laid by Her Royal Highness the Queen Mother on March 19, 1966.

EXHIBIT PREPARATION

Specimens and materials were collected and prepared for four large dioramas being constructed for display in the new building.

ATTENDANCE

Attendance figures (210,000) were up 22 per cent as compared with 1964, the highest on record, except for 1962.

PHOTOGRAPHIC BRANCH**STILL PHOTOGRAPHY**

Assignments for "Beautiful British Columbia" magazine constituted the major part of the stills photography. Centennial activities, however, created many special assignments.

PRODUCTION

More than 2,000 colour prints and negatives were added to the Photographic Branch files during the year.

MOTION PICTURES

The motion pictures "East 1—West 1" and "Breath of Spring" were completed during 1966, and a new short version of "Barkerville or Bust" entitled "Echoes of Gold" was ready for evaluation.

TELEVISION SCREENINGS

Television screenings in the United States of our motion pictures showed a further increase over past years. Practically all telecasts are now done in colour, adding a further dimension to our exposure.

COMMERCIAL FISHERIES BRANCH**RECORD LANDINGS**

Based on anticipated landings at the time of writing, the 1966 wholesale value of fish production in British Columbia was expected to exceed \$115,000,000.

OYSTER PERMITS

A permit system regulating the taking of wild oysters from vacant Crown foreshore was begun in 1966.

AQUATIC-PLANT LICENCES

To foster the development of an aquatic-plant processing industry in British Columbia, the Branch initiated a licensing system whereby prospective companies could obtain long-term leases of suitable kelp and other aquatic-weed producing areas.

GENERAL ADMINISTRATION



THE UNIVERSITY OF CHICAGO
LIBRARY

GENERAL ADMINISTRATION

General Administration consists of the Deputy Minister's Office, the attached Public Information Officer, and the Accounts and Personnel Office.

The staff of General Administration works closely with all branches in such Departmental matters as putting policy into effect, office and work facilities, personnel, and finance. Currently there is liaison with the Department of Public Works for the purpose of planning and organizing office and work facilities of new office accommodation.

The Personnel Section of General Administration processed 98 requisitions to the Civil Service Commission for the purpose of obtaining new and replacement positions for all branches of the Department. There was an increase of 92 per cent over the previous year on the number of requisitions that were processed. The Personnel Officer sat in on many interviewing panels for the selection of these candidates.

During the month of March, examinations were conducted at Nanaimo, New Westminster, Prince George, Kamloops, and Creston for the purpose of seeking potential candidates interested in becoming Conservation Officers with the Fish and Wildlife Branch. There were more than 200 applications received, and from these 115 were selected to write this examination.

This Department had two people selected to participate in the three-year Executive Development Course. Three employees in this Department were selected for the one-year Basic Public Administration Course.

The staff of General Administration assisted the Provincial Parks Branch in conducting an in-service training course for its field staff during the month of February. These in-service training courses have proved most beneficial in training fieldmen on new techniques and revised policy procedures, thus aiding them to carry out their work more efficiently.

Regular meetings are held with employees of the Parks Branch and Fish and Wildlife Branch for the purpose of reviewing personnel accidents and seeking methods of improving safety.

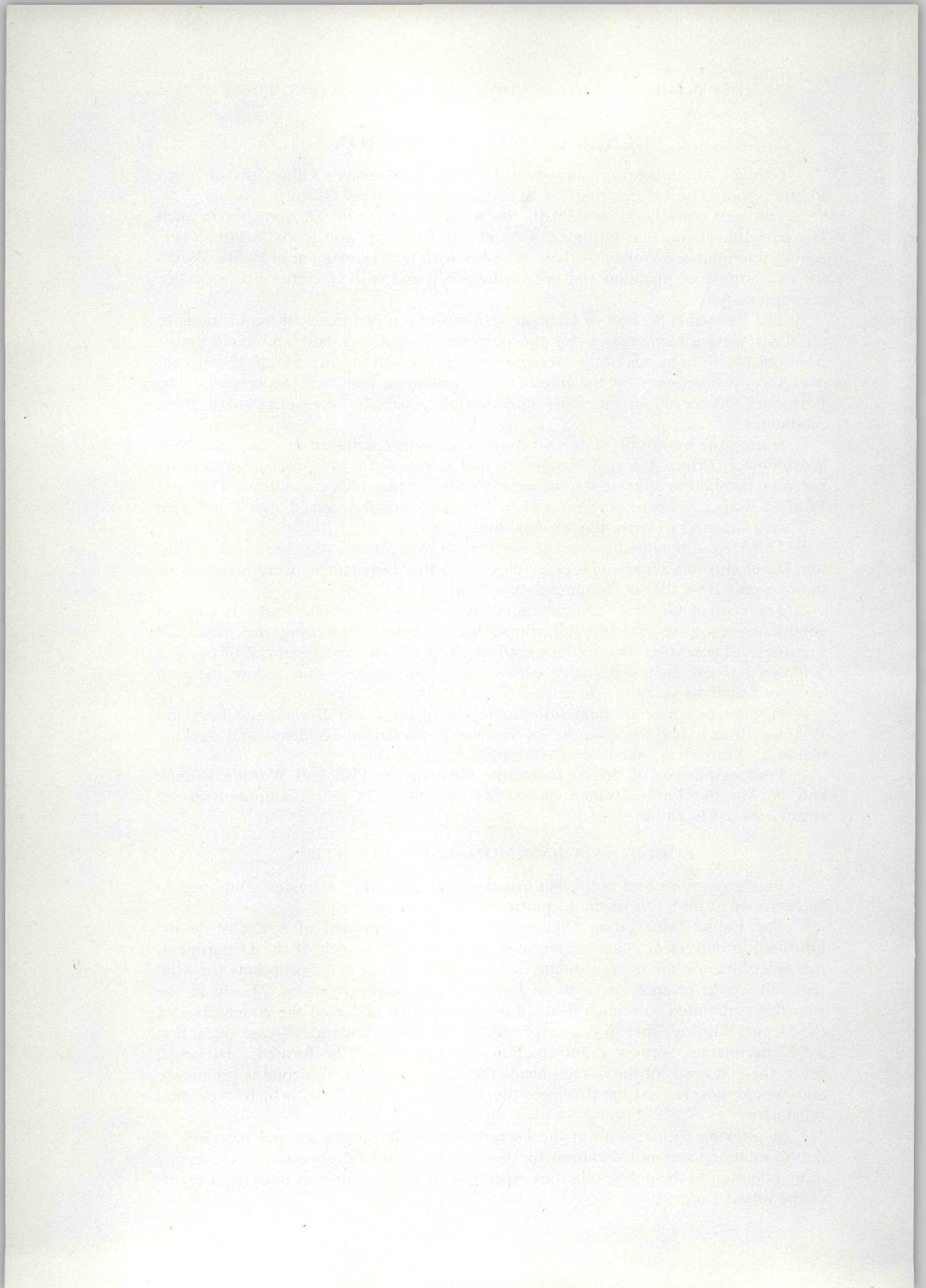
Four employees of this Department, three in the Fish and Wildlife Branch and one in the Parks Branch, were awarded their 25-year continuous-service certificates in December.

PUBLIC INFORMATION AND EDUCATION

Public relations and public information and education activities continued to be exercised at all levels of the Department during 1966.

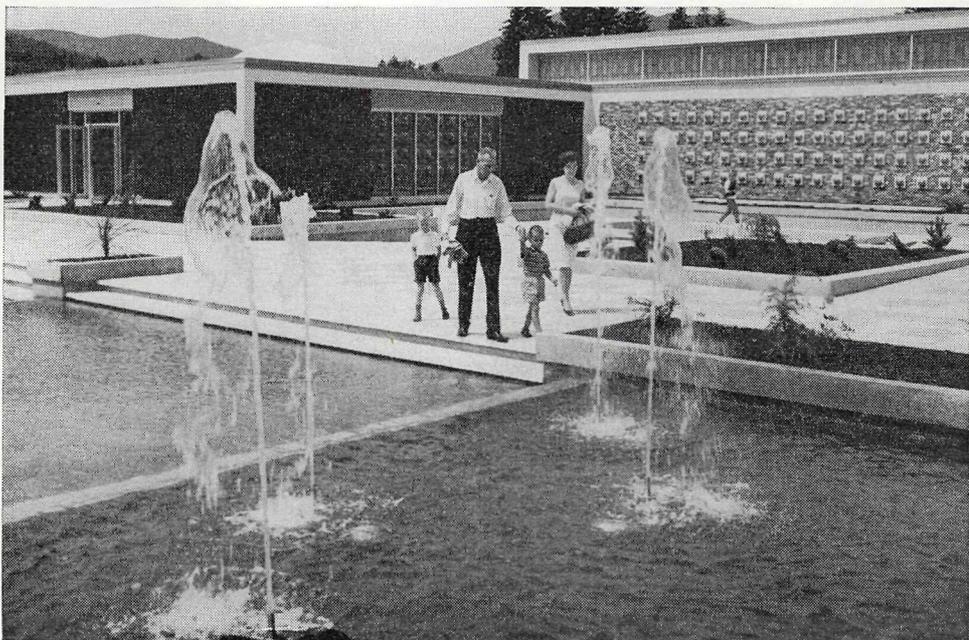
The Public Information Officers' Committee, composed of specialist public information officers or other representatives from each branch of the Department, met from time to time to co-ordinate their activities and to make proposals for what they felt would be improvements in Departmental public relations. Early in the year they submitted to branch heads a proposal which endorsed the conclusions of the Deputy Minister in 1963, as expressed in the Departmental 10-year plan, that a "Departmental Section of Information and Education" be formed. However, it was the consensus of the branch heads that the proposal at this time is premature and would not be an improvement over current procedures, which they find satisfactory.

A growing appreciation in the Department of the principles and practices of public relations was noted during the year. Departmental personnel were giving more attention to the public relations aspects of their operations as integral elements of the job at hand.

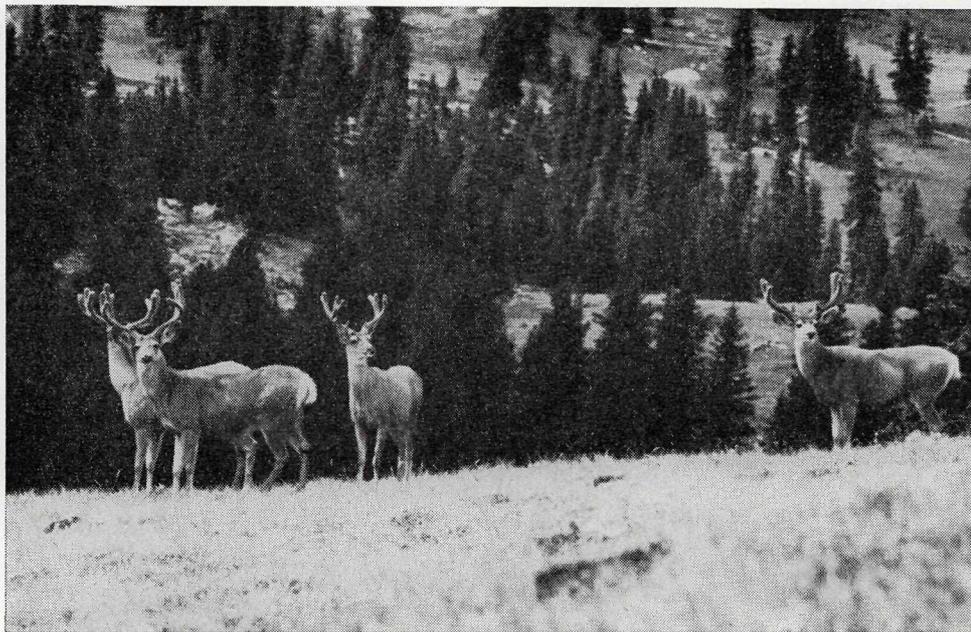


FISH and WILDLIFE BRANCH





Modern architecture and attractive displays are uniquely combined with fish-culture facilities at the new Kootenay Hatchery.



Mule deer on summer range in the Okanagan.

FISH AND WILDLIFE BRANCH

JAMES HATTER, DIRECTOR

ADMINISTRATION

1966 was a significant year for the Fish and Wildlife Branch. The following events took place which directly increased the Branch's ability to look after the fish and wildlife resource:—

- (1) A new *Wildlife Act*:
- (2) A new *Firearms Act*:
- (3) Kootenay Hatchery opened:
- (4) Two more administrative regions were established, with headquarters at Prince George and Penticton:
- (5) A uniform licence-year was established:
- (6) Property was purchased near Gerrard to further protect the spawning-ground of the large rainbow of Kootenay Lake:
- (7) 180.2 acres was purchased at Duck Lake to complete this section of the waterfowl unit.

Two new Acts, establishment of the regional administrative offices, and modifications to the licensing system, all give opportunity to improve the levels of fish and wildlife management. The emphasis under the new *Wildlife Act* is flexibility to meet the varying conditions faced by the wildlife resource throughout the Province. Similarly, the establishment of regional headquarters enables local conditions to modify the Branch programme to meet the specific needs of each sector of the Province. Property purchases this year were made possible for the first time under the terms of the new *Wildlife Act*.

"Wildlife Review" magazine continued to expand its circulation. At last count it had a distribution in excess of 45,000.

Regional Protection Officer W. A. H. Gill and Conservation Officers A. J. Butler and J. M. Hicks retired during the year. The retirement of individuals with long service always make a considerable gap in the Branch, and they will be sorely missed.

The Fish and Wildlife Branch wishes to thank other Provincial and Federal departments for their valued assistance and co-operation. We are especially grateful to the contribution received from the British Columbia Wildlife Federation; the Royal Canadian Mounted Police gave much assistance on many occasions, and this is gratefully recorded; and the British Columbia Hydro and Power Authority continued to provide valuable assistance with such projects as the kokanee spawning channel near the Duncan Dam site.

WILDLIFE MANAGEMENT

In 1966 wildlife management activities were intensified in several areas. Population counts, game checks, and harvest estimating methods were expanded to meet the growing need for more precise management information. Habitat inventory and related studies were continued actively during the year. Research activities, particularly relating to bighorn sheep, were increased.

A relatively poor hunting season in 1965, caused by unfavourable weather conditions, resulted in much public concern for the welfare of wildlife populations, and created the need for increased level of public relations work by wildlife management staff. Public concern for wildlife management policies effected more conservative game seasons in several areas of the Province in 1966.

The resident hunter population in the Province showed a modest increase of 2,826 in 1966, maintaining the upward trend illustrated in Table 1.

Table 1.—*Hunting Licences*

	1961	1962	1963	1964	1965
Residents.....	115,796	122,859	124,245	131,595	134,023
Non-residents.....	3,840	4,377	5,224	5,263	5,661

GAME REGULATIONS AND SEASONS, 1966

Classified game counts indicated improved winter survival and recruitment to game populations in 1966 following losses in some areas of the Province during the 1964/65 winter. Where possible, seasons were designed to allow public use of increased game production.

Game regulations for the 1966 season contained several innovations. White-tailed and mule deer were separated in the game regulations and given separate seasons in some regions. This measure was designed to allow more specific management of the two species. The moose season in the Mica Reservoir area of Game Management Area 11 was extended to allow public use of this population before it is partially displaced by the reservoir. A three-quarter curl regulation was imposed on Rocky Mountain bighorn sheep in Game Management Area 11 as a means to allow limited hunting opportunity despite the recent die-off of this species. An experimental archery season on deer was initiated on part of Vancouver Island and the Lower Mainland in 1966. Antlerless seasons on deer and elk were reduced in certain areas of the Province in 1966, in deference to public demands.

The Provincially published synopsis of Migratory Birds Regulations was discontinued in 1966, its place having been taken by a Federal Government synopsis.

GAME HARVESTS

Game harvests provide some appreciation of the magnitude of the Provincial wildlife resource, and although harvest figures for the 1966 season will not be available until early in 1967, Table 2, based on hunter sample estimates, illustrates the size of the Provincial game harvest for the past five years.

Table 2.—*Hunter Sample Estimates, 1961-65*

	1961	1962	1963	1964	1965
Grouse.....	413,600	360,500	245,470	522,064	621,150
Ducks.....	377,200	460,500	368,570	383,961	474,670
Pheasants.....	57,100	64,700	54,940	48,884	39,223
Moose.....	15,200	16,675	16,510	17,853	15,190
Elk.....	3,500	2,300	3,950	3,230	1,800
Deer.....	67,000	69,500	71,520	78,435	56,877
Goats.....	-----	-----	1,625	1,567	1,967
Sheep.....	-----	-----	-----	295	242
Caribou.....	-----	-----	-----	465	523

Game checks held throughout the Province during the 1966 season indicated a higher than normal level of success on most big-game species in most areas of the Province. It is expected, therefore, that the Provincial moose kill will reach record proportions in 1966, and that caribou, goat, and sheep harvests in the north will attain a high level. Deer success in most areas of the Province appears normal

or above normal, and the 1966 harvests should reach a high average in most regions. Hunter success on birds is expected to be higher in 1966 than normal.

The Cache Creek game check provides the best measure of harvest trends in the absence of hunter sample data, the 1966 results of which are included in Table 3.

Table 3.—Cache Creek Game Check, 1962–66

	1962	1963	1964	1965	1966
Deer.....	3,690	3,656	3,765	2,241	3,008
Moose.....	4,833	5,418	5,446	5,908	7,250
Black bear.....	158	96	116	146	138
Caribou.....	142	156	200	213	414
Elk.....	39	26	35	13	22
Mountain sheep.....	44	70	48	54	74
Mountain goat.....	122	169	136	137	197
Waterfowl.....	8,424	7,283	6,864	6,908	7,021
Grouse.....	6,188	3,215	4,065	5,928	6,495
Number of hunters.....	23,291	22,779	21,533	20,808	23,216

HUNTER SAMPLE

British Columbia residents who hunted in the 1965/66 season were sampled by mail questionnaires in 1966. A total of 67,297 big-game harvest questionnaires was mailed to hunters who purchased 247,793 tag licences. The number of questionnaires returned was 28,940, or 44.5 per cent of those mailed. The number of bird-hunters questioned was 29,934, of whom 8,524 or 28.5 per cent replied.

The data provided by hunters were analysed, then organized into the 1965 Game Harvest Questionnaire Analysis compiled by Mr. R. P. Finegan and published by the Fish and Wildlife Branch.

Table 4 contains regional estimates derived from the questionnaire analysis.

Table 4.—Estimated Game Harvests by British Columbia Resident Hunters in 1965

Area Hunted	Caribou	Deer	Elk	Moose	Goat	Sheep	Grouse	Ducks
Vancouver Island (G.M.A. 1)—								
Hunters ¹	-----	21,220	1,205	-----	-----	-----	11,559	6,776
Harvest.....	-----	19,986	50	-----	-----	-----	93,093	73,347
Lower Mainland (G.M.A. 2 and 3)—								
Hunters ¹	-----	10,316	27	34	615	-----	15,816	14,619
Harvest.....	-----	3,832	2	4	329	-----	118,268	199,592
Interior (G.M.A. 6 to 9, 13 to 19)—								
Hunters ¹	283	59,771	673	13,127	817	329	16,424	11,640
Harvest.....	11	19,331	24	3,402	336	37	202,405	125,269
Northern British Columbia (G.M.A. 20)—								
Hunters ¹	508	12,547	105	17,306	969	4	7,398	2,890
Harvest.....	177	2,388	4	8,184	510	-----	89,747	31,184
Peace River (G.M.A. 21)—								
Hunters ¹	772	4,350	163	4,931	213	346	2,160	1,354
Harvest.....	279	1,635	11	2,814	107	133	13,649	12,778
Kootenay (G.M.A. 10, 11, and 12)—								
Hunters ¹	120	15,860	8,896	2,494	1,320	447	7,718	2,636
Harvest.....	29	7,480	1,686	527	518	70	83,850	21,847
Upper Coast (G.M.A. 4 and 5)—								
Hunters ¹	-----	2,103	13	354	222	-----	2,787	1,189
Harvest.....	-----	2,036	2	91	146	-----	20,138	10,157
Province—								
Hunters ¹	1,682	93,524	10,961	33,680	4,013	1,107	63,862	38,205
Harvest.....	523	36,877	1,800	15,190	1,967	242	621,150	474,670

¹ Many hunters hunt in more than one area. The Provincial totals are corrected for this.

REGIONAL ACTIVITIES

Regional staff are deployed throughout the Province to explore regional wildlife resource capabilities and to design management programmes suited to the resource. Activities include the collection and interpretation of management data, inventory of wildlife populations and habitat, and liaison with public and government agencies in situations where wildlife resources are involved. Some regional activities are reported as follows.

Northern Region

A staff vacancy for a regional wildlife biologist at Prince George was filled in October, 1966, when Mr. Kenneth Sumanik was employed for this position. An expanded programme of game population inventory is being undertaken in northern British Columbia.

Cariboo Region

Comprehensive studies of waterfowl populations and habitat were undertaken in the Cariboo region in co-operation with the Canadian Wildlife Service. Two California sheep trapping operations were conducted at Riske Creek in 1966, the first yielding two rams, seven ewes, and one lamb, which were sent to Idaho for the purpose of reintroducing this species on ranges from which it has been exterminated in the past. In the second trapping, two rams, five ewes, and four lambs were released on the Dewdrop range on the north side of Kamloops Lake.

Kamloops Region

An experimental burning project was initiated in Wells Gray Park in co-operation with the Forest Service and Parks Branch authorities. The feasibility of controlled burning as a means of managing big-game habitat is being tested by this project. Deer-tagging operations were conducted again in 1966 in the Kamloops region, and an expanded programme of waterfowl population studies conducted in co-operation with the Canadian Wildlife Service.

Okanagan-Boundary Region

The status and distribution of deer populations in the Okanagan and Similkameen areas came under intensive study during 1966. Biological research on the Vaseux Lake California bighorn population was continued during the year, and a programme of big-game habitat inventory was initiated.

Vancouver Island Region

The position of a regional wildlife biologist on Vancouver Island was vacated in 1965 by Mr. D. A. McCaughran, and in March of 1966 Mr. D. A. Blood was employed in this position. Activities included further research of Peale's falcons on the Queen Charlotte Islands, coastal waterfowl habitat inventory, and an expanded programme of game counts and hunter check operations on Vancouver Island.

Lower Mainland

An inventory of coastal big-game resources was commenced in 1966, revealing much new information on big-game populations in this region of the Province. A research project on released pheasants was conducted, revealing poor survival of released birds. Wetlands development studies were conducted with assistance from Ducks Unlimited. These studies are prerequisite to plans for the development of coastal wetlands for waterfowl management.

Kootenay Region

Regional staff co-operated with the Research Section in studies of bighorn sheep, including trapping operations, periodic classified counts, and assisting in range studies. Waterfowl habitat and population studies were conducted in co-operation with the Canadian Wildlife Service. An expanded programme of population counts was conducted to provide more sensitive measures of annual survival and production of big-game populations. Land-use conflicts commanded much attention, and an expanded programme of public relations involved staff participation.

Mr. Otto Horvath was employed in 1966 as a wildlife biologist, based at Creston, where he is engaged in waterfowl management work in the Duck Lake Waterfowl Management Area. This programme is being conducted in co-operation with the Canadian Wildlife Service, preparatory to the development of the area for waterfowl management purposes.

RESEARCH

General

Wildlife research during 1966 has been concentrated on problems arising from widespread and excessive mortalities of Rocky Mountain bighorn sheep in the East Kootenay. This research includes certain aspects of the disease syndrome, population studies, and the establishment of detailed ecological studies on a number of big-game winter ranges.

Rocky Mountain Bighorn Sheep

A study of the bacterial and parasitological agents involved in the bighorn sheep die-off was continued. The spread of the disease syndrome to all of the important low-altitude sheep winter ranges in the Rocky Mountain Trench provided more material for study.

Detailed observations of the winter distribution, movements, and ecological requirements of sheep will also result from this study. The effects of climate, plant succession, and wildlife and domestic live stock on ranges are components of the Rocky Mountain bighorn sheep research.

Parasite and Disease Studies of Captive Bighorn Sheep

Two ailing Rocky Mountain bighorn ewes were captured last winter and have been kept in captivity for clinical studies relating to the disease syndrome affecting sheep in the East Kootenay. Blood and faecal samples collected at intervals are being used to study the parasite loads involved. One of the two ewes produced a healthy lamb in June, which has provided useful information on growth and parasite levels.

Deer-food Production in Certain Seral Stages of the Coast Forest

A study designed to measure the effect of forest succession upon deer-food production is nearing completion. Changes in plant species composition, preferential used by deer of specific seral stages, seasonal food habits, chemical composition of deer foods, and estimates of annual productivity are included.

Edaphic and Climatic Factors Limiting California Bighorn Sheep Range Productivity

Studies previously carried out on the Ashnola bighorn sheep ranges were extended, with emphasis being placed upon the assessment of soil and climatic characteristics limiting productivity. Fertilizer and reseeding trials are included in

the study to determine the degrees of limitation imposed by soil factors. Large permanent enclosures have been constructed to provide information upon community productivity without the influence of heavy grazing by domestic stock.

The Reproductive Biology of Female Blacktailed Deer

This research programme entails a long-term study of cellular changes in certain parts of the reproductive system of deer. In addition to descriptions of these changes, this study will provide a more detailed insight into many aspects of reproduction which are of importance in wildlife management.

Age Determination of Hunter-killed Deer

Methods currently used to age deer are limited by inaccuracies resulting from differences in tooth eruption and the necessarily subjective appraisal of tooth wear. Determination of age by sectioning and staining teeth to show annular growth rings was found to be a practical and accurate method.

The Ecology and Distribution of Land Snails Implicated in the Lungworm Infections of Rocky Mountain Bighorn Sheep

This project is designed to provide more definitive information concerning the distribution, abundance, and ecology of terrestrial snails, thought to be the intermediate hosts of Protostrongyline lungworms. Laboratory experiments designed to measure the effects of temperature and humidity on snail and lungworm larval activity will be combined with work in the field.

The Effects of Weather, Seral Succession, and Exploitation upon Deer Populations

A large body of deer harvest data, collected over a number of years, is being intensively studied. Changes in numbers harvested, hunter success, sex ratios, age-class distribution, and growth parameters will be established and related to the effects of weather, seral succession, and exploitation.

The Parasites and Diseases of Wildlife

The identification of diseases and parasites affecting wildlife and their pathological effects has been continued. Specimens collected by Fish and Wildlife Branch staff, as well as those sent in by members of the public, have contributed to this field investigation.

Publications and Reports

- Bandy, P. J. 1966. Rocky Mountain Bighorn Sheep Mortality in British Columbia. (Presented to N.W. Section, Wildlife Society, March 25 and 26, 1966.) Fish and Wildlife Branch (mimeo).
- Bandy, P. J. 1966. Bighorn Sheep Die-off in British Columbia: A Complex of Environmental Factors. (Presented to 1966 annual meeting of the Canadian Society of Wildlife and Fishery Biologists, Ottawa, 1966.) Fish and Wildlife Branch (mimeo).
- Bandy, P. J. 1966. A Conceptual Approach to ARDA and Its Implications in British Columbia. (Presented to the third annual meeting of the Fish and Wildlife Branch, Penticton, 1966.) Fish and Wildlife Branch (mimeo).
- Gates, B. R. 1966. Rocky Mountain Bighorn Sheep Disease Study: A Summary of Field Research. (Presented to the third annual meeting of the Fish and Wildlife Branch, Penticton, 1966.) Fish and Wildlife Branch (mimeo).

FUR MANAGEMENT

The composition of the 1965/66 Provincial wild fur yield is shown in the accompanying table. Some 3,200 registered trap-line holders and some 600 private-property trappers produced the harvest. Beaver continued to provide the bulk of the yield (52.3 per cent) in terms of value. Lynx, muskrat, and mink together comprised 26.9 per cent of the total wild-fur values produced.

Fur management for the year included the setting of fur-harvesting seasons, some revision of the status of fur-bearing animals under the *Wildlife Act*, and promotion of the wild-fur product locally and abroad. Samples of British Columbia beaver products were displayed at Victoria and Vancouver tourist centres, and a selection of British Columbia wild fur formed a part of the Canadian Department of Trade and Commerce exhibit at the Frankfurt Fur Fair.

Composition of the 1965/66 British Columbia Wild Fur Yield

Species	Species Yield	Percentage of Total Fur Yield	Average Value	Total Value	Percentage of Total Value
Beaver.....	28,751	18.2	\$16.17	\$464,903.67	52.3
Lynx.....	2,705	1.7	37.81	102,276.05	11.6
Muskrat.....	37,300	23.5	1.90	70,870.00	8.0
Mink.....	5,936	3.7	10.84	64,346.24	7.3
Marten.....	5,271	3.3	10.36	54,607.50	6.2
Squirrel.....	63,103	39.9	.59	37,230.77	4.3
Otter.....	1,094	0.7	33.22	36,342.68	4.2
Weasel.....	11,807	7.5	1.51	17,828.57	2.0
Fisher.....	868	0.5	13.59	11,796.12	1.5
Wolf.....	94	0.2	{ 26.03	2,446.82	} 1.0
Bobcat.....	394				
Wolverine.....	250	0.1	29.92	7,480.00	0.8
Coyote.....	420	0.2	10.07	4,229.40	0.3
Fox, red.....	289	0.2	{ 13.04	3,768.56	} 0.3
Fox, cross.....	63				
Fox, silver.....	15				
Raccoon.....	548	0.3	3.38	1,852.24	0.2
Totals.....	-----	100.0	-----	\$889,332.40	100.0

LAND USE—CANADA LAND INVENTORY

The classification of land as to its capability to support ungulates was continued on an expanded scale as part of the ARDA Canada land inventory programme. From pilot projects in the Prince George and East Kootenay areas, the study has developed into an extensive wildlife land inventory scheduled to cover most of the Province by 1970. At present five persons, under the supervision of Mr. D. Blower, are employed full time on the project. At the end of this year approximately 60,000 square miles have been classified in the East Kootenay, Prince George, Burns Lake, and Peace River regions. For these areas a total of approximately 300 base maps (1:50,000 maps) and 10 map reports have been completed. Publishing of the first 1:250,000 map, covering the Fernie map-sheet area, is expected shortly. The inventory areas planned for next year are the Vancouver Island and Chilcotin regions, a total of approximately 38,000 square miles.

HABITAT MANAGEMENT

Several areas of wildlife habitat were surveyed in 1966, and with the co-operation of the Lands Branch were placed under reserve. Situations of conflict between wildlife needs and other forms of land use occurred frequently during the

year, and members of the wildlife management staff frequently co-operated with other departments of Government in resolving such conflicts.

FISHERIES MANAGEMENT

The popularity of sport fishing in the non-tidal waters of British Columbia continues to increase, as evidenced by angling licence sales during 1966. The institution of a new system of licensing during the past year makes exact comparisons of licence sales with previous years impossible. However, total angling licence sales in the first seven months of 1966 exceeded total 1965 sales by almost 17,000.

New features of the Provincial angler's licence system introduced in 1966 include:—

- (a) A short-term (three-day) angling licence for non-residents:
- (b) Resident steelhead angler's licence for a fee of 25 cents:
- (c) Non-resident steelhead angler's licence for a fee of \$5:
- (d) Non-resident alien licences were increased from \$7 to \$10.

Fisheries management activities during the year continued to be directly mainly toward the protection and maintenance of the aquatic habitat, hatchery fish production for the maintenance of angling in hundreds of small lakes in the Province, and research into the requirements of sport fish in lakes and streams.

MANAGEMENT ACTIVITIES

Sheridan Lake, near 100 Mile House, was treated with a fish toxicant in 1961 to remove the existing population of coarse fish and trout. Testing of the lake with live fish since that time has shown that detoxification proceeded very slowly but was complete by the fall of 1965. Early in 1966, 1,615,000 young trout were introduced to Sheridan Lake. These fish grew rapidly and by September were 8 inches in length. The lake will open to angling early in 1967.

Salmon Lake, south of Westwold, has for many years supported an excellent rainbow-trout fishery but has suffered occasional partial winter kill. The main branch of the Salmon River previously joined the outlet of Salmon Lake a few hundred yards downstream of the lake and thus did not actually flow into the lake. To alleviate winter-kill problems and improve access of fish to spawning-grounds in the upper Salmon River, a 1,500-foot channel was constructed in May, 1966, to divert the river through the lake. Stream-control works and fish-trapping facilities will be added in 1967 to facilitate a spawn-taking operation.

A new concrete fish ladder was constructed at the Smithson-Alphonse Dam on Mission Creek near Kelowna. The original ladder was severely damaged during periods of high water over the past few years. The structure is vital to the successful migration of rainbow trout and kokanee from Okanagan Lake to their spawning-grounds in the upper reaches of Mission Creek.

Studies of angler success and steelhead migration patterns were continued on the Big Qualicum River, Vancouver Island, in co-operation with the Canada Department of Fisheries. Results during 1965 indicate that approximately 20 per cent of the steelhead in the river were taken by anglers, and that catch success approximated 0.04 fish per angler-hour and 0.2 fish per angler.

To improve sport fishing in the relatively unproductive waters of Alouette Lake, a twofold management programme has been undertaken. *Neomysis*, a fresh-water shrimp native to other waters of the area, is to be introduced to the lake in an attempt to establish a food source for sport fish. As stream spawning facilities are extremely limited, a lake-spawning fish may be more successful than the native trout,

and therefore introduction of lake trout will commence in 1967. If favourable results are obtained, introductions to Alouette Lake will continue until a self-supporting population of this species is established.

A preliminary survey of the fishery potential of the Pemberton district, north of Vancouver, was undertaken during the year. It was found that in this area, which has only recently become easily accessible to sportsmen in the Lower Mainland, five lakes and two major river systems will provide most of the angling opportunity.

Interest in the establishment of private and commercial fish-farms continued to increase during the year. Some 126 private fish-ponds and 31 commercial fish-farms are now licensed for operation in the Province.

Eastern brook trout have been successfully introduced to a number of small marginal lakes in the Cariboo District and are providing excellent year-round fishing for family groups. In most cases, fish grow to 1 pound in weight within 12 months of planting and provide excellent fly fishing during the open-water period. During the winter months, catch success remains high for the rapidly growing numbers of ice fishermen.

During the autumn of 1966, large numbers of *Mysis relicta* (opossum shrimp) were again transferred from Kootenay Lake to several Interior lakes in an effort to establish these organisms in the lakes and subsequently evaluate their effect on the growth and production of sport fish. Although it appears that the establishment of mysid populations in certain lakes could increase sport-fish production considerably careful evaluation and study of their requirements and their effects on sport fish are necessary before further introductions are considered.

HABITAT PROTECTION

Pollution Control

All members of the field staff directed much of their effort to prevention of fish-habitat destruction by logging, mining, agriculture, and various industrial operations throughout the Province. Emphasis was placed on advising and informing other resource users and other government agencies of the various adverse effects on fish populations of unwise use of the aquatic environment.

A pamphlet entitled "Prevent Logging Damage to Streams" was prepared and distributed to each logging operator in the Province. This booklet describes the ecological and legal consequences of stream siltation and debris pollution. Legislation to protect fish and game from the harmful effects of petroleum-product spillage during pipe-line transport has been drafted for inclusion by the Department of Commercial Transport in the *Pipe-lines Act*. A tentative agreement has been reached with the Department of Mines and Petroleum Resources on disposal methods for salt-brine wastes from producing gas and oil wells. Generally, wells in fully developed fields will be required to use deep-well disposal of wastes, while wells in incompletely explored fields will be allowed to dispose of wastes in streams unless harm to a fish population can be shown.

An 80-page booklet entitled "A Field Manual of Habitat Protection" has been distributed to all fisheries field staff and Conservation Officers to aid in the investigation and correction of many of the pollution and obstruction problems which they encounter. This booklet provides guidelines for dealing with fishery problems associated with logging, mining, chemical spraying, culverts, irrigation dams, gravel removal, and other activities.

Major mining developments which required special investigation to avert damage to fisheries were Western Mines at Buttle Lake, Noranda Mining Company at Babine Lake, and Brenda Mines at Pennask Lake. Several other companies in various stages of exploration were provided with information on requirements for fisheries protection. Pollutions affecting fish or their habitat occur each year from a variety of unforeseen sources. Among these unforeseen pollutions reported this year were discharges of plating wastes (Sandhill Creek, Vancouver Island), chemical sprays (Mission Creek, Okanagan), coal-mining wastes (Michel Creek, Kootenay), and silt (Coquihalla River, Lower Mainland).

Numerous applications for use of other resources were reviewed by the staff; these included water-licence, timber-sale, placer-mining, and chemical-spray applications. Approximately 40 applications to the Pollution-control Board for discharge of domestic and industrial wastes were also reviewed for possible adverse effects on sport fish.

PROBLEMS ASSOCIATED WITH STREAM OBSTRUCTIONS

Duncan Dam

During 1966 the investigation of fishery problems associated with the Duncan Dam in the Kootenay area, supported by funds provided by the British Columbia Hydro and Power Authority was concentrated on acquiring a maximum of field information on physical and biological features of the lake and river system before the dam becomes operational in 1967. This background of descriptive information on the sport fishery, the fish populations upon which it depends, and the environment of these populations will be invaluable in detecting and understanding any changes brought about by the physical presence of the dam and by the manipulation of water flows at the dam. Because of the short time available before completion of the dam, it was necessary to concentrate on the acquisition of field data, much of which must yet be analysed and reported on.

The condition of the sport fishery in Kootenay Lake has been monitored on a weekly basis throughout the year in a continuing programme of creel census. Sport-fish catches have also been sampled to provide data on growth rates and age structure of the populations. Although data tabulations have not been completed for comparison with previous years, in general it may be stated that sport fishing for both trout and kokanee was extremely intensive and successful during 1966.

Throughout the year monthly observations of vertical temperature distribution were made at stations in all sub-basins of Kootenay Lake. These data provide important environmental information in themselves and also enable inferences to be made regarding the distribution of currents and water masses within the lake. Concurrent with these observations, water transparency was measured and zooplankton was sampled so that the varying abundance of this principal food of young fish could be determined. To supplement the monthly observations, two detailed synoptic surveys of these properties were conducted to provide additional information on winter and summer conditions in Kootenay Lake. In addition to these routine limnological observations and collections, a fundamental study of the abundance and distribution of the macrozooplankters is in its concluding phase. A study of the changes in the diet and growth rates of sport fish in recent years is also nearing completion. Support has also been given to research (nearing completion) on the primary productivity of Kootenay Lake waters.

In addition to the continuing investigations of Kootenay Lake itself, extensive programmes of enumeration and study were conducted on the trout and kokanee populations as they ascended and spawned in the Lardeau River system. A total of

650 large Kootenay Lake rainbow spawned in the upper reaches of the Lardeau River at Gerrard. Studies were made of the spawning behaviour of these fish in the event that additional spawning area should be required for this unique trout population. The contribution of young kokanee to Kootenay Lake from the Lardeau River system (progeny of the 1,080,000 spawners in 1965) was estimated to be 15,000,000 fry—an over-all survival of 24 per cent from the 62.2 million eggs deposited in the gravel. In the fall of 1966, adult kokanee entering the Lardeau River system were again enumerated and found to total 1,260,000. This compared favourably with the 1,080,000 of the previous year, but it was considerably less than the 4,530,000 spawners of 1964.

To offset the loss of spawning area for kokanee above Duncan Dam, construction was begun on 10,000 feet of spawning-channel in Meadow Creek, tributary to Duncan River. To be completed in time for the 1967 kokanee run, this channel will accommodate some 300,000 spawners. The design characteristics of this channel were based on observations of egg survival, velocities, depths, gradients, and gravel composition on natural kokanee spawning-sites in the Meadow Creek-Lardeau River system. The channel incorporates several new features designed to reduce the requirements for annual maintenance and to ensure continued high production.

To support the various phases of the Kootenay Lake programme, a small well-equipped laboratory was completed at the old hatchery-site in Nelson, and the main hatchery building was converted into a workshop and equipment-storage and maintenance centre.

Miscellaneous

Much less complex problems of obstructed fish passage were caused by road culverts at John Brown Creek, Kispiox River (northern district), and Somenos Creek (Vancouver Island), and by river-bed channelling at Cowichan River and Idsardi Creek (Vancouver Island).

At Mission Creek, near Kelowna, a fishway over a low irrigation dam was constructed by the Branch. Partial removal of a large log jam in Chilliwack River was permitted. An observer from this Branch was on site during a log-driving operation on Stellako River near Fort Fraser.

TROUT HATCHERIES

The Fish and Wildlife Branch administers the lake stocking programme in British Columbia and operates three year-round hatcheries, and various supporting egg-collecting operations, which supply trout for this programme. The permanent hatcheries are located in Abbotsford, Summerland, and Wardner (East Kootenay District); the egg-collecting sites are in the Okanagan-Kamloops and East Kootenay regions. Hatcheries are run by a 12-man staff and a superintendent at Victoria.

Species raised and planted in 1966 were cutthroat, eastern brook trout, kokanee, and rainbow. The 1966 programme was considerably more extensive than the one of the preceding year, and it is anticipated this upward trend will continue in 1967.

New Hatchery Facilities

Production Stations.—The hatchery at Wardner opened on June 21st. Staffed by four people, Kootenay Hatchery will be used to culture the four species of fish mentioned above. Property (187 acres) was purchased in 1960, and preliminary construction was started in late 1963.

At Fraser Valley Hatchery in Abbotsford, preliminary hydrological work preparatory to expansion of the present limited rearing facilities was undertaken late in

the year. Water is now provided by springs, and this source, together with wells, must be fully assessed before the hatchery rearing facilities can be increased. This property, purchased in 1964, consists of about 32 acres.

In anticipation of future expansion, land adjoining Summerland Hatchery was purchased in 1961, and when fully developed, production at this hatchery can be increased about 400 per cent. However, prior to construction of additional rearing-ponds, the water source and supply must be assured. The amount of water available is adequate for the current production potential, but expansion of future production depends on increasing the water supply presently shared with the Municipality of West Summerland. Tentative negotiations were carried on with the municipality, and it appears probable that arrangements can be completed in 1967 to draw the whole spring supply on a long-term basis.

Egg-collecting Stations.—The rainbow trout egg supply was again inadequate in 1966, and collection facilities were increased during the latter half of the year. New fences were added to existing facilities at Pennask and Beaver Lakes. At Salmon Lake (Westwold) a fence and trap were built on the main inlet stream to provide an entirely new egg-collection station in 1967.

The perennial source of kokanee eggs, Meadow Creek at the north end of Kootenay Lake, will be closed in 1967, and eggs will be collected instead from the spawning run in Eagle River (Shuswap area). The necessary fence and traps will be built in July.

Dugan Lake, near 150 Mile House, was investigated for possible future use as an egg-collecting site. This very productive lake has a large eastern brook trout population, which apparently could support both a fishery and an egg collection.

Equipment

The two 1,000-gallon fish transport tanks mentioned in the preceding Annual Report were delivered in early 1966, and two 500-gallon units were ordered later in the year. It is planned to order two more of the latter in 1967, thus replacing all the old transporting units. The new units are equipped with aerating systems which release pure oxygen through perforated tubing on the bottom of the tanks. The trucks used to haul these tanks are all new and were purchased in 1965 and 1966.

Egg Collecting (All Species)

Rainbow trout eggs were collected at the following lakes: Beaver (near Kelowna), Niskonlith (near Chase), Pennask west of Peachland), Premier (Cranbrook region), and Stump Lake (south of Kamloops). Of a total collection of slightly over 7,000,000 eggs, most were taken from Beaver and Pennask Lakes traps. As mentioned earlier, the egg supply was inadequate, and preparations have been made to increase the collection in 1967. Because of an anticipated low spawning population, no attempt will be made to collect eggs at Stump Lake in the coming year. However, as detailed under "Egg-collecting Stations," fairly extensive additions have been made to the egg-collecting facilities.

Cutthroat eggs were collected as usual at Kiakho Lake (Cranbrook), although the full quota of 400,000 was not realized because of a partial failure of the spawning run.

The kokanee egg collection at Meadow Creek was down somewhat from the preceding year, but the 4,200,000 eggs collected were sufficient to meet requirements. Kokanee eggs in the past have been exchanged for cutthroat, eastern brook, and rainbow trout eggs, but this year about 1,500,000 were hatched in Kootenay Hatchery. These will be introduced in Green Lake (70 Mile House) next May, marking the first time for many years that kokanee have been planted.

The eastern brook trout eggs have been imported from Oregon for several years in exchange for kokanee eggs. In 1966, however, the 2,000,000 eggs required for the stocking programme were obtained from Ontario in exchange for kokanee eggs that were collected here in British Columbia by Ontario fisheries-management staff. These kokanee are being introduced into the Great Lakes in an attempt to improve a fishery ruined by lamprey infestation.

Liberations and Production

Despite fairly heavy losses in the rainbow stock in July as a result of (1) a flood at Loon Creek Hatchery and (2) gill disease at Kootenay Hatchery, total production was about 40 per cent over 1965 (24,000 pounds). Similarly, distributions (all species) were up from 3,900,000 to 6,780,000, and the number of lakes stocked increased from 265 to 320, still less, however, than the 1964 total of 330 lakes. Aside from about 1,000,000 eastern brook trout, almost all of the liberations were rainbow trout in 1966. About 1,000,000 of the rainbow were planted by aircraft into 99 lakes (68 in 1965).

Research

Dr. Edgar Black, of the University of British Columbia Medical Faculty, has carried on physiological studies for many years at Summerland Hatchery during the summer months, and this work was continued in 1966. In March, 1966, one of the papers which resulted from his work, "Further Studies on Live Transportation of Rainbow Trout (*Salmo gairdneri*)," by Edgar C. Black, N. W. Green, and R. R. Morgan, was submitted to the Canadian Fish Culturist for publication. He will continue his research in 1967.

Personnel Training

The second hatchery-staff school was held at Summerland in July. The course lasted nine days and dealt with subjects ranging from fish diseases to lake limnology. Instructors included Branch personnel, two faculty members from the University of British Columbia, and a specialist in fish diseases from the Federal fish laboratory in Seattle.

Public Relations

Our trout hatcheries have always drawn thousands of visitors every year and, in consideration of this, generous display facilities were built into the new Kootenay Hatchery. The displays, naturally of a fish theme, have proven tremendously successful, and during July and August about 17,000 people visited the hatchery. The other two hatcheries do not have any special tourist accommodation but are situated near main tourist routes, and thousands of people, including many organized school and community groups, came to see the fish-production process. When these two hatcheries are enlarged, adequate public display facilities will be provided. In 1966 over 30,000 people visited hatcheries.

General

Although more trout were planted in 1966 than in any of the last 10 years, these were still inadequate for the lake stocking programme. This shortage was due largely to the egg supply, and work that has been done in the last two years to improve the egg-collecting facilities is expected to materially increase the supply in 1967.

Apart from this weakness in the fish-culture programme, limited rearing facilities have also restricted production. The new Kootenay Hatchery has partially alleviated this particular problem, but a final solution will not be realized until facilities at the other two hatcheries are radically increased. Planning in regard to this is under way.

FISHERIES RESEARCH

A diversified programme of research on problems pertinent to sport-fishery management was continued in 1966 and included studies on the basic biology of trout, on the effects of man-induced changes in their environment, and on the effectiveness of hatchery stocking techniques in sport-fish production.

Reproductive Biology of Kootenay Lake Rainbow Trout

An intensive study on the reproductive behaviour of rainbow trout was conducted at Gerrard, at the outlet of Trout Lake, during May and June, 1966. The study had the following objectives:—

- (1) To estimate the size of the spawning run and relate it to daily counts of spawning fish made from the river bank:
- (2) To describe in more detail the spawning requirements of the trout:
- (3) To describe the distribution of spawners at different periods of the run and during different conditions of river flow:
- (4) To describe and analyse the spawning behaviour of the fish.

During 1966 about 650 fish were on the spawning area. The maximum daily count was 249 fish. Fish arriving early in the run stayed in the area an estimated 28 days, while those arriving late in the run remained about 6 to 8 days.

Preliminary evaluation of results suggests that while fish spawn over a 4,600- to 5,000-square-yard area, some regions of the spawning-grounds are much more heavily used than others. Reddigging of redds occurred in some areas. As the river-level rose, spawner distribution expanded into areas not previously utilized. Reddigging sounds were monitored on a hydrophone, and it was found that reddigging activity occurred throughout 24 hours of the day, with peaks of activity once in the afternoon and once during the night. Females dug several nests and deposited several pockets of eggs (four or five observed in one case).

A movie showing spawning behaviour was made. Detailed statistical analysis of behaviour is under way.

Migratory Behaviour of Juvenile Kootenay Lake Rainbow Trout

The migratory behaviour of young rainbow trout emerging from the Gerrard spawning area was studied in July and August. Evidence for movement of some young trout into Trout Lake was obtained by operation of two-way traps in the outlet, by direct observation, and by seining at a number of sites in the lake. Experiments conducted in artificial stream channels indicated that water temperature may be an important factor regulating direction of movement, as had been suggested previously.

Distribution of Juvenile Steelhead and Cutthroat Trout in Coastal Streams

A study has been made of the species composition of fish in 65 streams on Vancouver Island and the Lower Coastal Mainland of British Columbia. Fish have been sampled in 1 to 10 stations in each stream, and data on stream volume, pH, and conductivity were obtained.

The pH characteristics of streams with populations of steelhead and cutthroat living separately and of streams with the species mixed were similar during summer periods. Slight differences in pH during the winter period were probably not significant.

Species composition (steelhead and cutthroat) bore no apparent relationship to stream conductivity (an index of total dissolved solid content of the water). Streams running through farm land in their lower reaches tended to have high total dissolved solids in these areas.

Principal differences in species composition were related to stream size and profile. Main stems of large streams, with few exceptions, supported young steelhead. Very small streams, with drainage areas of only 1 or 2 square miles, usually supported cutthroat. Among streams with drainage areas of 3 to 25 square miles, steelhead were usually found in those which ran steeply down into a large river or the sea. Cutthroat were found in systems which dropped steeply and then ran through wide areas of meadow land or slough.

In those cases where both species occurred together, steelhead were usually dominant in the lower main stem of the stream, while cutthroat were most numerous in the upper reaches and small tributaries.

The results indicate that differences in distribution of these young fish may be controlled in large part by parental choice of spawning areas. The data are insufficient to show if or how water chemistry might affect such habits.

Headwater Stream-Reservoir Studies

Factors controlling movement and growth of trout population living above and below waterfalls are being investigated. This project, initially focused on Bjerkness Creek near Kaslo, was broadened to include other streams on Kootenay and Arrow Lakes when the creek became unsuitable largely due to logging in the drainage basin. Although results had not been fully analysed, it appears that very few young trout (1965 and 1966 year classes) have survived in Bjerkness Creek this year compared to numbers produced there last year or to 1966 production in nearby creeks which were not subjected to headwater damage. The seasonal pattern and extent of downstream movement of juveniles is being studied by regular fyke-net sampling on several streams. The study should indicate the importance to lake sport-fish production of headwater trout populations in streams tributary to impoundments such as the Arrow Lakes, where alterations in water level seriously reduce spawning areas below falls.

An experimental plot has been set up on Duncan Lake to study the effect of several different clearing treatments on bottom fauna production after flooding.

Primary Production Studies in Kootenay Lake

Field studies (supported in part by the Division) on primary production in relation to turbidity and nutrient enrichment in Kootenay Lake are nearing completion. Effects of water from various regions of the lake and of specific nutrient additions on growth of single algal species and of mixed lake cultures have been examined by incubation experiments conducted monthly from spring to late autumn. Analysis of results is under way.

Shrimp (Mysis relicta) Utilization by Kootenay Lake Fishes

Analysis of feeding habits of kokanee taken from 1963 to 1965 indicate that these fish, particularly West Arm populations, feed heavily upon the recently introduced mysid. Although shrimp were eaten during all months of the year, they were especially important in the winter diet. Changes in kokanee growth rate, possibly associated with mysid utilization, are being examined further.

Kokanee-spawning Channel Requirements

Information on artificial spawning-channels was assembled from the literature, from discussions with other fisheries agencies, and from field surveys. In conjunction with British Columbia Hydro and Power Authority engineers and the Kootenay Lake Research Station, a set of recommendations on the spawning requirements of

kokanee was drawn up to be incorporated in the Meadow Creek artificial spawning-channel.

Hatchery Evaluation Programme

The programme was designed to evaluate effectiveness of planting hatchery-reared young rainbow trout of native stock. Three size classes of young will be tested in three different situations—lakes with no fish present, lakes with rainbow trout only, and lakes with rainbow trout plus a competitive fish species.

The 13 lakes chosen for evaluation were surveyed to determine their physical and biological characteristics. The plankton populations were greatly reduced in June but appeared to have returned to normal in August in three of the lakes that were treated with rotenone in the autumn of 1965 to remove previous fish populations. Experimental introductions of fry were made in all lakes during August, and the second size group was planted in October. In several cases these fry were appreciably smaller than those which had spent the intervening time in the lake.

Meetings

The meeting of the Canadian Committee on Freshwater Fisheries Research was attended in Ottawa in January of 1966, and at the same time a paper on hatchery evaluation and survival of domestic rainbow trout was presented to the national meeting of the Canadian Society of Wildlife and Fisheries Biologists.

Lectures and laboratory exercises were given at the hatchery school held at Summerland in August.

A paper was presented at the International Biological Programme symposium on the biological basis of fresh-water fish production held in Reading, England, in September.

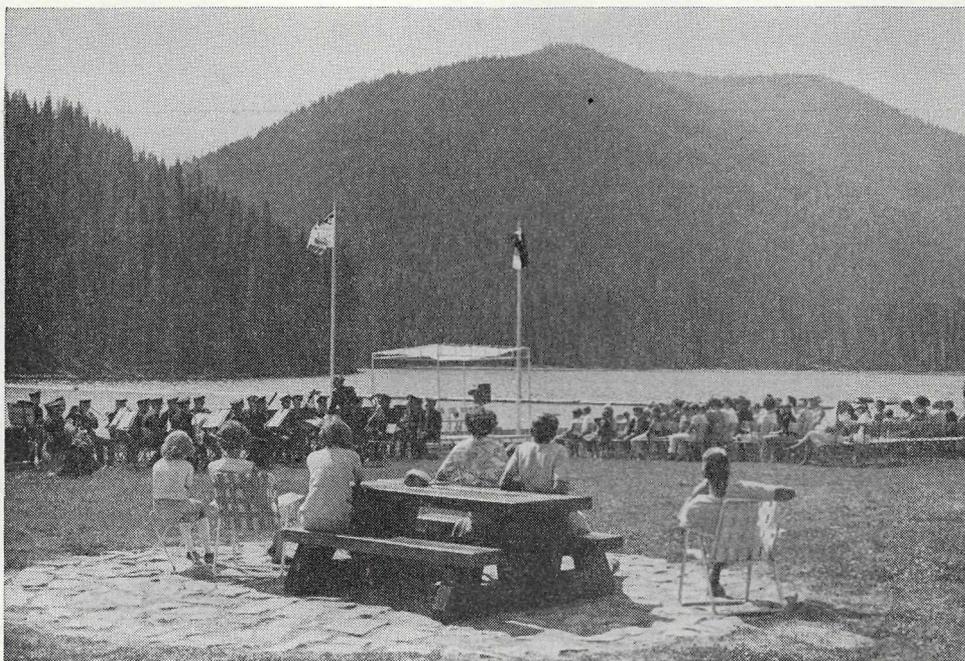
The film on spawning behaviour of rainbow trout was shown at several sportsmen's meetings throughout the Province.

Publications

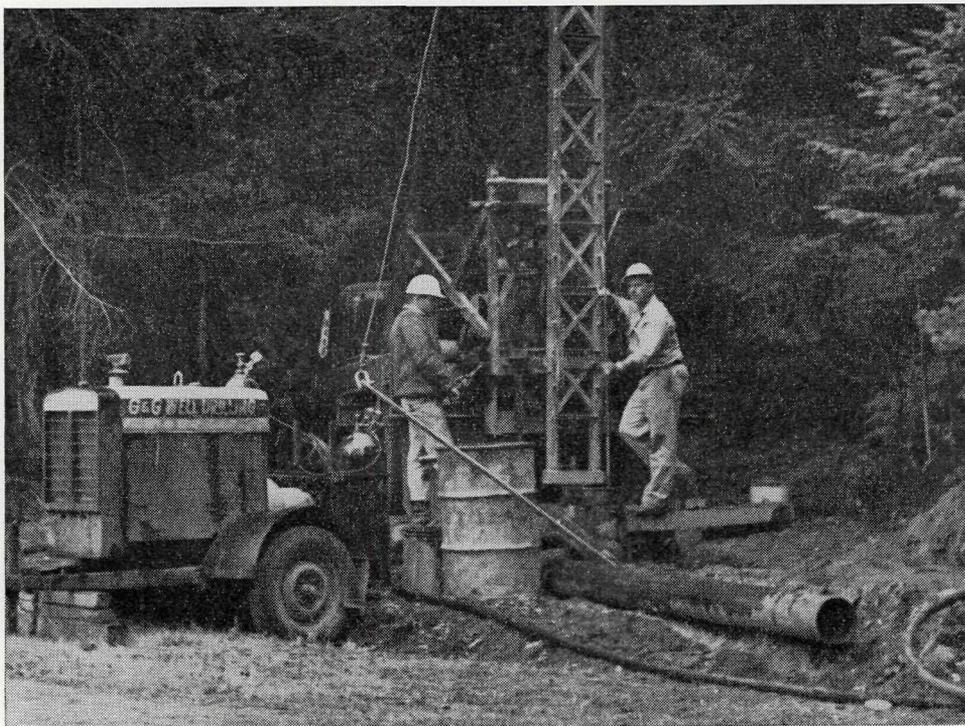
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**PROVINCIAL
PARKS
BRANCH**





The Lightning Lakes Recreational Area in Manning Park was officially opened on September 3, 1966, by the Honourable W. K. Kiernan, Minister of Recreation and Conservation.



Drilling for water at Montague Harbour Marine Park. Nearly 40 wells have been drilled in Provincial parks in the last three years.

PROVINCIAL PARKS BRANCH

H. G. McWILLIAMS, DIRECTOR

The highlight of the year was the official opening of Manning Park Lightning Lake Recreational Area, which will provide excellent fishing, boating, and swimming for summer visitors.

Purchase of two very desirable sites—Pirates Cove on De Courcy Island and Smugglers Cove on Sechelt Peninsula—increased the number of marine parks from 8 to 10. A generous donation from the British Columbia Council of Yacht Clubs assisted in these acquisitions.

Fourteen wells drilled during 1966, as part of a major undertaking during the past three years, bring us very close to having potable water in all developed parks.

Park use varied greatly throughout the Province, but showed an over-all increase of more than 200,000 visits to put the total over 5,000,000.

MANAGEMENT

Total park use increased only 6 per cent during 1966, but uneven distribution of the increase complicated management and maintenance. In some regions, notably those centred on Cultus Lake, Manning, and Mount Seymour Parks, use declined for the first time in many years, while in the nearby region centred on Alouette Lake it increased more than 40 per cent.

Total visits in the Shuswap region dropped 4 per cent, while camping in the same area increased from 192,000 to 198,500. In the Vancouver Island region, day use declined slightly from 742,192 to 739,105 visits, while camper nights increased by more than 18,000. Similar reductions in day use and increases in overnight camping occurred in Manning, Garibaldi, Lakelse, and Shuswap regions.

In addition to this noticeable trend toward increased camping activity in most regions, total park visits increased more than 30 per cent in Wasa and Kokanee regions, in the Kootenays, and in the Crooked River region north of Prince George.

Visits to Barkerville Historic Park increased more than 40 per cent to 174,004, and those to Fort Steele were more than quadrupled.

These changing patterns subjected many parks to severe overuse and strained maintenance staffs and facilities. Extensive reconstruction was carried out at Lac la Hache Park, and a start was made on the conversion to flush-toilets at Wasa Lake Park.

Management personnel continued to co-operate with R.C.M.P. detachments throughout the Province. Radio-equipped night patrols were increased, and additional auxiliary police officers were again employed to reduce disorderly behaviour in parks and camp-sites.

The Division processed a large volume of applications for park use permits, and more than 400 permits of all kinds were issued or renewed.

PUBLIC INFORMATION AND EDUCATION

During 1966 the public demand for information and education material was greater than ever. The Public Information and Education Office attempted to keep pace with demands by disseminating information through the press, radio, television, illustrated talks, special courses, a variety of Parks Branch and other publications, and by replying to a heavy flow of correspondence.

Close liaison was maintained with several service clubs and youth organizations. Special co-operation was requested by and granted to the Alpine Garden Club of British Columbia, which was given a guided tour of Provincial parks near Victoria and later an illustrated talk in Vancouver.

Several Girl Guide and Boy Scout groups were given illustrated talks and short courses on subjects pertaining to woodcraft, nature study, conservation, hiking, etc. During August the Public Information Officer spent a day at the Girl Guide Provincial camp "Tsoona," when 100 Girl Guides from all parts of Canada were attending their annual "Heritage Camp."

The Boy Scouts, in addition to being helped with outdoor recreation and conservation activities, were given assistance with the organization and operation of a one-day public relations and communications workshop early in December, which was attended by about 100 adults of the Boy Scout, Girl Guide, and other organizations devoted to working with youngsters.

The Canadian Forestry Association and F.A.E. (Films for Adult Education) were assisted with their programmes of adult education, designed to increase public awareness of outdoor recreation and conservation potential of British Columbia.

One new publication, "British Columbia Marine Parks," was prepared for printing and will be issued in map-folder form early in 1967. Two other maps, "Provincial Parks on Vancouver Island" and "Fraser Canyon-Okanagan Parks," and the "stop of interest" plaque pamphlet "Let's Stop, Look and Learn," and other minor publications were revised.

A large number of black-and-white photographs were supplied to various publications and organizations in Canada and the United States, including the British Columbia Department of Education Elementary Correspondence Section and the National-Provincial Parks Association of Canada. Colour and black-and-white photographs and colour transparencies were also supplied to other branches and departments in addition to the extensive use made of them for displays and interpretative work within the Parks Branch.

During the late summer several parks, including three marine parks, were visited for the purpose of taking and recording information for future use.

Throughout the year, 30 illustrated talks were given, using three sets of colour transparencies showing parks and their contents, natural history, and hiking. The average frequency of requests for lectures was a little above two per month, but individually the monthly demand varied from one to five requests. Most of the lectures were given in the vicinity of Victoria, a few in Vancouver, and a few farther afield.

INTERPRETATION AND RESEARCH

In 1966, park naturalists experienced increases in public use of all interpretation programmes that were greater than any previous year. Every phase of every programme in every park accumulated participation figures that were typically much greater than those of previous years. Some increases were well over 100 per cent. Walks, talks, and nature houses served 103,500 people; nature trails and outdoor exhibits were used by an estimated 70,000; and parks offering mainly natural visual attractions, such as MacMillan and Petroglyph Parks, received an estimated 65,000 people. Although numbers are not reliable indicators of our success in interpretation, they do indicate that about 240,000 people were associated with interpretation programmes.

Through the summer, park naturalists conducted interpretation programmes in nine parks. Nature houses in Manning, Miracle Beach, and Shuswap Lake Parks offered a total of 65 exhibits. Of these, 16 were new, having been made the pre-

vious winter in the interpretation shop. Attendances at each of two nature houses exceeded the previous record total of 28,000. Miracle Beach nature house set a new high mark of 32,000, or about 400 visitors per day.

Regular walks in nine parks (721 walks, 10,000 participants) showed people a wide assortment of natural features, from nesting gulls to scorpions, and from boa constrictors to giant forest trees.

Regular evening talks, often around a campfire (307 talks to 18,000 people), were given in nine parks. Two programmes were new, those in Miracle Beach and Mitlenatch Island Parks. A new permanent amphitheatre was constructed in Shuswap Lake Park. Talks in other parks were in informal and often makeshift settings, except in Manning Park, where slide shows in an amphitheatre were a daily feature.

Nine nature trails operated in seven parks. These offered numerous small signs describing trailside features, using approved texts from a collection now numbering 365 different messages. A new nature trail was built and used in Mitlenatch Island Nature Park. In Manning Park, Mule Deer Nature Trail was constructed, complete with a bridge across the Similkameen River, and will be in operation in 1967. Also to be open next year, in Spahats Creek Park, is a short nature trail through beautiful old timber. This trail was located and inventoried this year. In Manning Park the popular highway-side red rhododendron stand was made more accessible with a parking area and an outdoor display from which a loop trail leads through the stand.

Inventory of natural features in parks is essential for interpretation. In selected parks this work continues whenever possible, consisting mainly of listing species present and noting their abundance. Nine parks are involved, ranging ecologically from alpine areas to bunchgrass slopes, a marine island and an alkaline pond in grassland.

Interpretation programmes can be no better than the people involved. Our interpretation success to date is the result of highly qualified and enthusiastic staff being attracted to this work.

PARK SYSTEM PLANNING

The major field-work project assumed this year was the continuation of a detailed examination of recreational resources in the north-western portion of this Province—a programme initiated last year. Because of the immense area involved, our approach to this project was to use aircraft last year to obtain an initial extensive impression of the region. This work was followed up in 1966 by detailed land examinations, particularly in the vicinity of Atlin and Teslin Lakes, as well as further aerial reconnaissance in the areas of Jennings, Dease, Cry, and Kinaskan Lakes. Additional field reconnaissance was carried out in the Squamish and Cheakamus Valleys, where there is a critical need for parks and other outdoor recreation outlets, and where continued attempts are being made to acquire suitable land for this purpose. Field work was also undertaken near Cape Scott and Ahousat on Vancouver Island's west coast. Further examinations were made of two rather unique features—the Nass River lava flow and an alpine fossil bed east of Wasa Lake.

Eight new Class A parks, containing 1,175 acres, and two new Class C parks, containing 225 acres, were created during 1966. An important addition to the parks system was the 367-acre Nairn Falls Park near Pemberton, which will help to alleviate the need for public recreational facilities on the new Squamish-Pemberton Highway. An agreement was negotiated which will lead to acquisition of

the second portion of a major park at Rathrevor Beach near Parksville. Negotiations are now complete and properties are being purchased at Smugglers Cove, where there will be a 400-acre park with a sheltered boat harbour on the exposed western coast of Sechelt Peninsula, and at Porpoise Bay on Sechelt Inlet, where a 160-acre park will provide public boat access to these sheltered waters. As a result of successful negotiations, an attractive 60-acre parcel of land at Pirates Cove on De Courcy Island was purchased for marine park purposes. Member yacht clubs of the Council of British Columbia Yacht Clubs contributed toward the purchase of this property. With the creation of the Regional District of the Capital of British Columbia, administration of land purchased for park purposes at Island View Beach was turned over to this newly formed body. In co-operation with this Board, the Parks Branch acquired an important seashore property at Metchosin Lagoon.

The boundaries of four Class A parks were extended by a total of 666 acres. Three Class C parks were enlarged to include an additional 40 acres of land. Four acres were deleted from two Class A parks and 63 acres were deleted from one Class C park.

With the co-operation and assistance of other Government departments, it was possible to have 64 areas containing 5,882 acres reserved for public recreational use. In the same period, 10 reserved areas containing 5,332 acres were cancelled. To date approximately 2,238 sites containing a total of 341,544 acres have been reserved to meet future recreational-site requirements of the people of this Province.

The people of British Columbia are indebted to the following for their donations of land for park purposes involving 901 acres:—

Mr. Henry Dosch, an addition to Bright Angel Park near Duncan.

Mr. John Helliwell, a very attractive property on Hornby Island.

H.R.H. Princess Margaret, Portland Island for a marine park.

The British Columbia Hydro and Power Authority, a recreational area fronting on Buttle Lake.

PARK-USE PLANNING

The development plans office continued, as in 1965, to place major emphasis on improvement and expansion of existing facilities in many parks. During the last decade the demand for recreational facilities in Provincial parks has been insistent and widespread. Rapid expansion with very limited funds has resulted in numerous incomplete park developments. The aim, therefore, has been the improvement and refurbishing of existing developments.

In many parks this has meant simply the implementation of pre-existing master plans, but in others new patterns of traffic flow and public use have necessitated changes in the plans. The decisions for such revamping and redesigning have usually resulted from joint field studies by planning staff and district park officers. Typical details involve extra camp-sites, perhaps a change-house, a boat-launching site, a fence, landscaping, or an extension to a parking-lot. Parks subject to this type of planning in 1966 included Elk Falls (Quinsam Camp-site), Goldstream, Ellison, Roberts Creek, Princess Louisa, Beaumont, Champion Lakes, and many others.

Development of new sites was undertaken where pressures were greatest. Lower Mainland people are now flocking on week-ends into the scenic Squamish-

Pemberton area over the recently paved road. The only public camp-site is at Alice Lake Park, but it cannot accommodate many of these would-be campers. To meet this need, plans were drawn up and construction is under way on a camp-site at Nairn Falls Park. Another park being developed to include camping is at Paul Lake near Kamloops. The existing small development on this popular fishing lake has been completely inadequate for many years. Because there is an insufficient number of swimming areas in the vicinity of Victoria, a day-use area was planned and development initiated at Matheson Lake Park.

Of the large parks, Manning again came in for a major share of planning. Its two new attractions—a ski area and an artificial lake—are significantly increasing its popularity. Plans were made for a toboggan run and an upward extension of the recently created ski slopes in Gibson Pass. The extension accommodates a pomalift placed in tandem with the double rope tow. Parking-lots and a warming-shelter are now part of the facilities. Picnic-grounds were planned for Lightning Lake, and a trail survey was made as far as Buckhorn Camp. A map showing winter activities was prepared for display in front of Pine Woods Lodge.

In Bowron Lake Park, locations for primitive camp-sites were chosen on the northern portion of the lake quadrangle. Portage-improvement work has since been carried out by a youth crew. Action was initiated with Management Division toward new boating regulations on the navigable waterways.

Planning for Mount Robson Park has been particularly concerned with the new highway being built through the park. By close liaison with the Department of Highways, a number of excellent view points have been constructed, and damage to park values was kept to a minimum.

In Strathcona Park, highway-construction damage was also minimized by close liaison with the British Columbia Forest Service as well as the Department of Highways.

Staff have continued to gain background information for the master planning of Garibaldi Park. The Black Tusk Microwave Road was reconnoitred as a possible access route to the Black Tusk Meadows. Other areas reconnoitred were Naden Pass, Billygoat Creek valley, Wedge Pass, Brohm Ridge, and Alice Ridge. This work was undertaken to find a suitable route for a "Garibaldi Trail," which it is hoped will traverse the park from Diamond Head to Wedge Creek. A special study was made of the use pattern and the serious problem of erosion caused by human use of Black Tusk Meadows.

In 1966 the Varsity Outdoor Club built, on a voluntary basis, a trail to Cheakamus Lake in Garibaldi Park. The route was checked by a planner and an engineer. The work is under the surveillance of the district supervisor at Alice Lake Park.

Also, in co-operation with hikers of the Victoria district, a hiking-trail was laid out in Goldstream Park and a major section constructed through the leadership of the Victoria Outdoor Club. Similarly, a part of a continuing trail system in Strathcona Park was laid out and roughed in by the Vancouver Island Ramblers.

For the first time since 1944, planners made a reconnaissance of Tweedsmuir Park. Although the park contains a third of the total area of the Provincial park system, recreational use of this huge wilderness has been light because of inaccessibility. The immediate purpose of the reconnaissance was to select areas of the highest recreational and scenic value so that they could be recommended for "nature conservancy area" status. A more long-range purpose was to gather information for an over-all plan. The reconnaissance was mainly by air. Eight lengthy flights

were made over the park, with landings on many of the lakes. Detailed studies were carried out on Sigutlat Lake and Tesla Lake.

The main item in Mount Seymour Park was a start on the new lodge, which has been an essential part of the park plans for many years. Little Twin Ski Hill also became a fact during the year. The clearing considerably expanded the useable ski area on the lower ridge of the mountain. The hill is serviced by an electrically driven double rope tow.

Planning staff participated in the Federal-Provincial Park Conference, the in-service school, and in meetings with the Lower Mainland Regional Planning Board in connection with regional park plans for the Fraser Valley.

Mapping kept a small crew in the field from May until November. Areas mapped included park land on Hornby Island, at Green Lake, Kawkawa Lake, Charlie Lake, and Cody Caves near Ainsworth. Mapping was also carried out in Manning Park, Fort Steele Historic Park, and in Mount Robson Park.

Extension work included technical advice and assistance to local organizations in connection with recreational developments on Quamichan Lake and in Bright Angel Park near Duncan, Centennial Park near Victoria, and Beaver Creek Park near Port Alberni. On the Sechelt Peninsula, direction was given to a volunteer group building a canoe portage trail across the recreational reserve linking Ruby Lake and Sakinaw Lake.

HISTORIC PARKS AND SITES

BARKERVILLE HISTORIC PARK

Attendance figures continued to climb this year. Approximately 174,000 visitor-days were recorded. Registration in the museum's visitors' book totalled 59,589.

Funds made available through the Provincial Secretary's Department were expended toward projects approved by the Barkerville Restoration Advisory Committee. In the restoration area, reconstruction was begun on the Wesleyan Methodist Church and on the 1869 façade of the Masonic Lodge. Interior finishing was undertaken in the Government Assay Office Building and in the Post Office-Telegraph Office Building. Exhibits were completed in the Bowron House, Dr. Watts' sitting-room, J. P. Taylor Drugstore, Barkerville Hotel, miner's cabin, and Trapper Dan's cabin.

The final phase of the permanent water system has been completed, providing adequate fire protection and domestic service for present and future needs.

A number of placer leases and Crown-granted mineral claims within and adjacent to the park were purchased to protect the park from possible mining activity.

General revenue from the Theatre Royal, concessions, and staff-operated activities exceeded \$75,000.

FORT STEELE HISTORIC PARK

More than 56,000 people visited the small museum, established only last year, within the original North West Mounted Police Building of 1887.

Restoration, reconstruction, and repairs continue within the composite village toward the anticipated official opening of the project next year. The 33-foot-diameter Perry Creek water-wheel was moved to the park from its original location and restored. The Roosville Custom House was moved to the park from its original site and restored. Restoration was undertaken in Fort Steele Cemetery.

The North West Mounted Police Orderly Room-Jail Building of 1887 was reconstructed. The Telegraph-Telephone Office of the 1890's was reconstructed. A dentist's office was constructed, and work began on the construction of a period bandstand.

Displays were initiated in the Fort Steele Trading Company General Store, the shoe-store, the Windsor Hotel's lobby, dining-room, and bar, the Prospector newspaper office, and a wagon-shed.

Phase two of the new museum building—namely, completion of the main floor—was completed by the contractor. This will permit the installation next year of interpretive displays, provide modern public washroom facilities, and furnish office and work space for administrative personnel. A start was made in Victoria toward the construction of 12 display-cases and various displays and panels to be utilized in the new museum next year.

More than 100 individuals made generous donations of period pieces, material, and equipment to the project.

A start was made toward the installation of a new well and pump-house.

COLUMBIA VILLAGE

Planning continued toward a regional museum and outdoor village complex near Revelstoke. A large number of items relative to the proposed theme of the project have been collected from the flood basin south of Revelstoke and stored for future use.

"STOP OF INTEREST" PLAQUES

In conjunction with the British Columbia Centennial Committee, texts were written for 40 "stop of interest" plaques, which were widely distributed throughout the Province. This brings the total number of this type of marker in the Province to 91.

DEWDNEY TRAIL ROADSIDE MARKERS

Fifty roadside markers were made for this programme, and 25 of these were placed between Hope and Fort Steele adjacent to the Southern Trans-Canada Highway, near the route of the original Dewdney Trail.

ENGINEERING

VANCOUVER ISLAND REGION

In the Port Alberni area, a new road was constructed to China Creek Park on the east shore of Alberni Inlet. Near Victoria, a road was built to Matheson Lake Park and a picnic-site established on the shore of Matheson Lake. Deep wells were drilled and hand-pumps installed at Rebecca Spit Marine Park, in the picnic-site of Goldstream Park, and at Tent Island Marine Park. Sidney Spit Marine Park on Sidney Island and Pirates Cove Marine Park on De Courcy Island were improved. Park facilities were installed at Morton Lake with the use of Correctional Branch inmate labour.

GARIBALDI REGION

Construction of a camp-site was begun at Nairn Falls Park on Green River near Squamish. An access road was built to the commencement of the Black Tusk Meadows Trail in the northern portion of Garibaldi Park. In Alice Lake Park, the camp-site roads were gravelled and electricity was supplied to the service area.

BRITISH COLUMBIA

ALOUETTE REGION

At Alouette Lake the main road from the picnic-site to the camp-site (2.3 miles) was paved. Davis Lake Park through road was improved by Correctional Branch inmate labour.

CULTUS LAKE REGION

Sanitary facilities were improved in Cultus Lake Park, and Correctional Branch inmate labour was employed on miscellaneous maintenance tasks.

MOUNT SEYMOUR REGION

A water system and a service building were installed at Plumper Cove Marine Park on Keats Island, and a water system was installed at Saltery Bay Park, south of Powell River. Minor improvement work was carried out at Princess Louisa Inlet Marine Park in Princess Louisa Inlet, off Jervis Inlet. In Mount Seymour Park, 1 mile of road was reconstructed and 2 miles of road were paved to three-lane width. Also in Mount Seymour Park, a new cafeteria building was erected, a sewage-plant heating system was installed, ski hills were improved, the headquarters building was given a new foundation, and the water system was extended to the service area.

MANNING REGION

In Manning Park, in the Gibson Pass area, land was cleared for the installation of a pomalift and a unit for generating electricity was installed. In the concession area of Manning Park a new staff building was constructed, two new sewage-disposal fields were created, and numerous improvements were made to Pine Woods Lodge. Also in Manning Park, flush-toilets were installed to replace pit toilets in Muledeer Camp-site. Minor improvements were made to existing facilities in Kawkawa Lake, Silver Lake, Stemwinder, Bromley, and Emory Creek Parks.

SHUSWAP REGION

A permanent nature house was built in Shuswap Lake Park to replace the tent structure previously used, and an amphitheatre was made to facilitate the delivery of illustrated evening nature talks. A large entrance sign, carved from red cedar and featuring a squirrel typical of the area, was placed at Monck Park. Monte Lake Park campground was reconstructed, and in the same park a deep well was drilled and a hand-pump fitted. In Paul Lake Park, Correctional Branch inmate labour was employed to begin constructing a campground.

OKANAGAN REGION

Christie Memorial Park was landscaped and an irrigation system installed. Ellison Park water system was completed, and sanitation improved by changing the pit toilets to flush-toilets. Existing facilities in Hayes Point and Okanagan Parks were improved.

CARIBOO REGION

Roads in Lac la Hache Park were reconstructed or regravelled as required. Deep wells were drilled and hand-pumps installed in Loon Lake, Marble Canyon, and Canim Beach Parks.

WELLS GRAY REGION

In Wells Gray Park, minor road improvements were made, the camp-site at Bear Creek was completed, and work began on supplying the service area with water.

BOWRON LAKE REGION

Road and internal trail system improvement was carried out in Bowron Lake Park.

LAKELSE LAKE REGION

Work began on establishing a new campground in Lakelse Lake Park to replace that which was destroyed by a mudslide several years ago. At Seeley Lake Park a deep well was drilled and fitted with a hand-pump. Various facilities in several other parks were reconstructed and improved.

BEAR LAKE REGION

Work continued on the water systems in Beaumont and Ten Mile Lake Parks. Minor improvements were made to facilities in Kiskatinaw, Crooked River, and Whiskers Point Parks.

MOUNT ROBSON REGION

Kinney Lake access road and Berg Lake trail were improved in Mount Robson Park, and a water system was installed in the administration building.

WASA REGION

Camp-site establishment work continued in Moyie Lake Park, and reconstruction work was carried out in various other parks. Pit toilets were replaced by flush-toilets in Wasa Lake Park. A large carved entrance sign was placed at Wasa Lake Park. A deep well was drilled at Morrissey Picnic-site. The gravel-crushing operation, to supply material for Moyie Lake and Jimsmith Lake Parks, continued.

KOKANEE REGION

The campground in Kokanee Creek Park was reconstructed, and the second stage of Champion Lakes Park water system was completed. Deep wells were drilled and hand-pumps installed at Lockhart Beach, Erie Creek, and Rosebery Parks. Gravel was crushed to supply material for paving in Champion Lakes Park. Miscellaneous work was done at Beaver Creek and Cody Caves Park.

YOUTH CREW PROGRAMME

As during the previous 14 years, youth crews were employed during 1966. This year, crews worked in Alice Lake, Garibaldi, Nairn Falls, Manning, Moyie Lake, Mount Robson, Bowron Lake, Ten Mile Lake, and Champion Lakes Parks. The 140 boys employed in the youth crew programme were engaged in trail work, water-system installation, and general maintenance work.

PARKS BRANCH—ATTORNEY-GENERAL PROGRAMME

For several years the Attorney-General's Department has assisted the Parks Branch by permitting the Branch to employ inmate charges of the Corrections Branch on various parks improvement projects. This year they were employed as follows:—

On Vancouver Island they were building a campground at Morton Lake. In Miracle Beach and Elk Falls Parks they cut firewood and performed maintenance tasks.

On the Mainland they cut firewood and did maintenance work in Cultus Lake and Wells Gray Parks and southern Garibaldi Park. Other work performed by the inmates was landscaping, road improvement, and camp-site construction.

LANGFORD WORKSHOP

Workshop production continued to be the manufacturing of tables, fireplaces, signs, etc., with an increase in the manufacture of lifeboats, marker buoys, and other plastic products.

DESIGN AND CONTRACT PREPARATION

Tenders were called and contracts awarded for the construction of Mount Seymour Park cafeteria and a nature house in Shuswap Lake Park.

Designs were prepared for toilet-change houses for Rath Trevor Beach and Christie Memorial Parks.

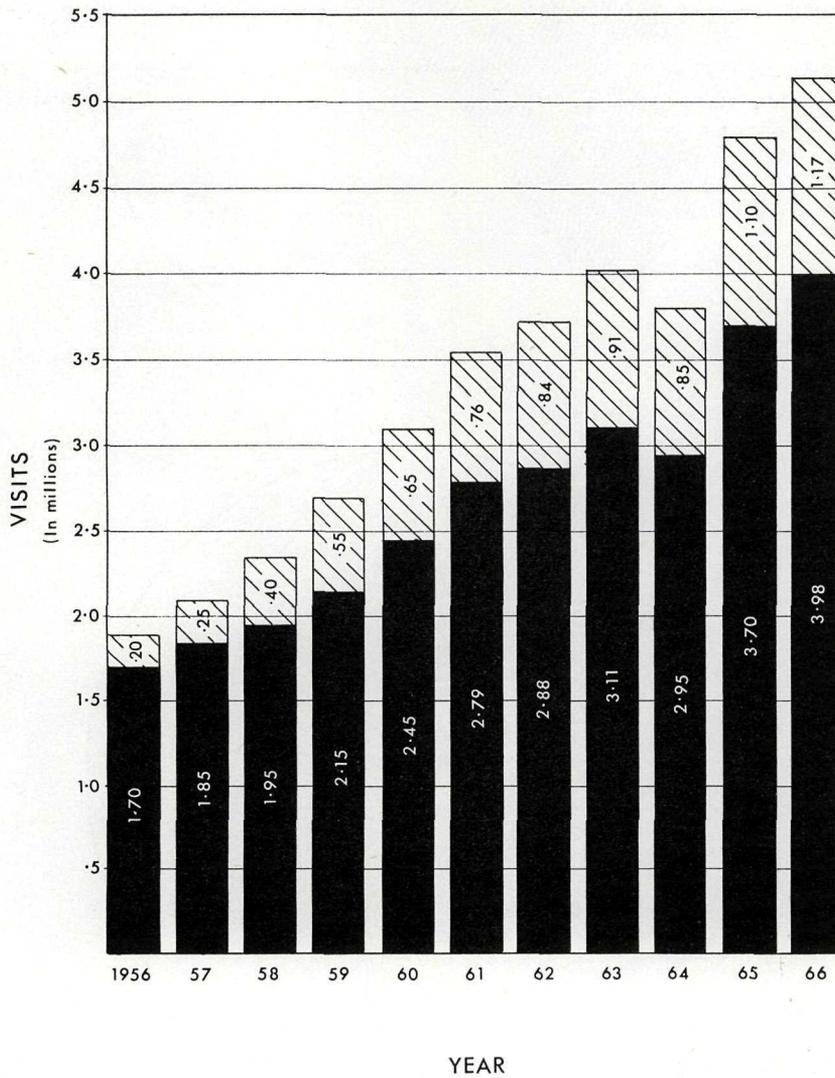
Eighteen well-drilling contracts were awarded, and design and specifications for nine water systems were sent to the field for development.

Specifications and design were prepared for a sewage-treatment plant in Mount Seymour Park.

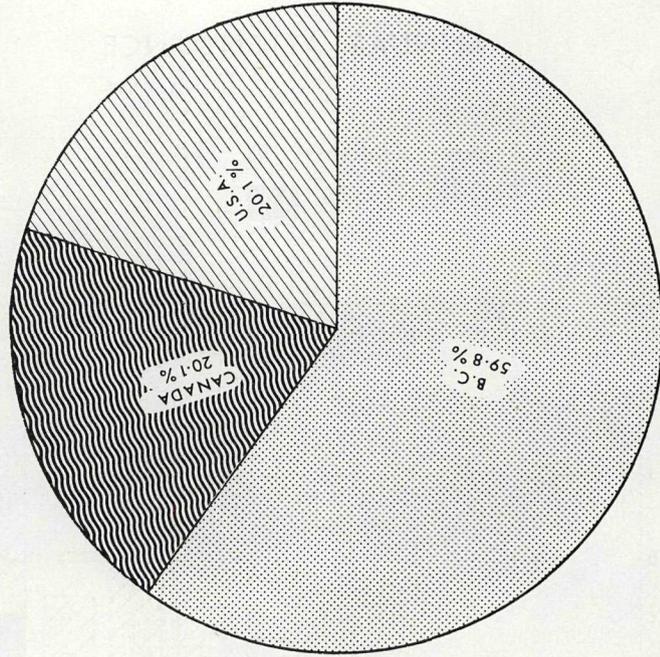
Contracts for two paving projects and numerous other minor works were prepared during the year. General survey work was carried on throughout the Province as required.

ANNUAL ATTENDANCE

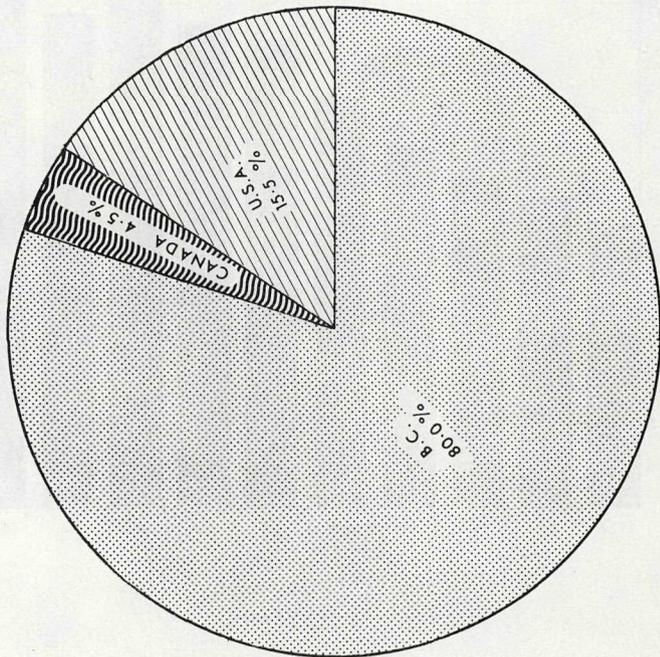
CAMPER NIGHTS 
 DAY VISITS 



WHERE CAMPERS CAME FROM



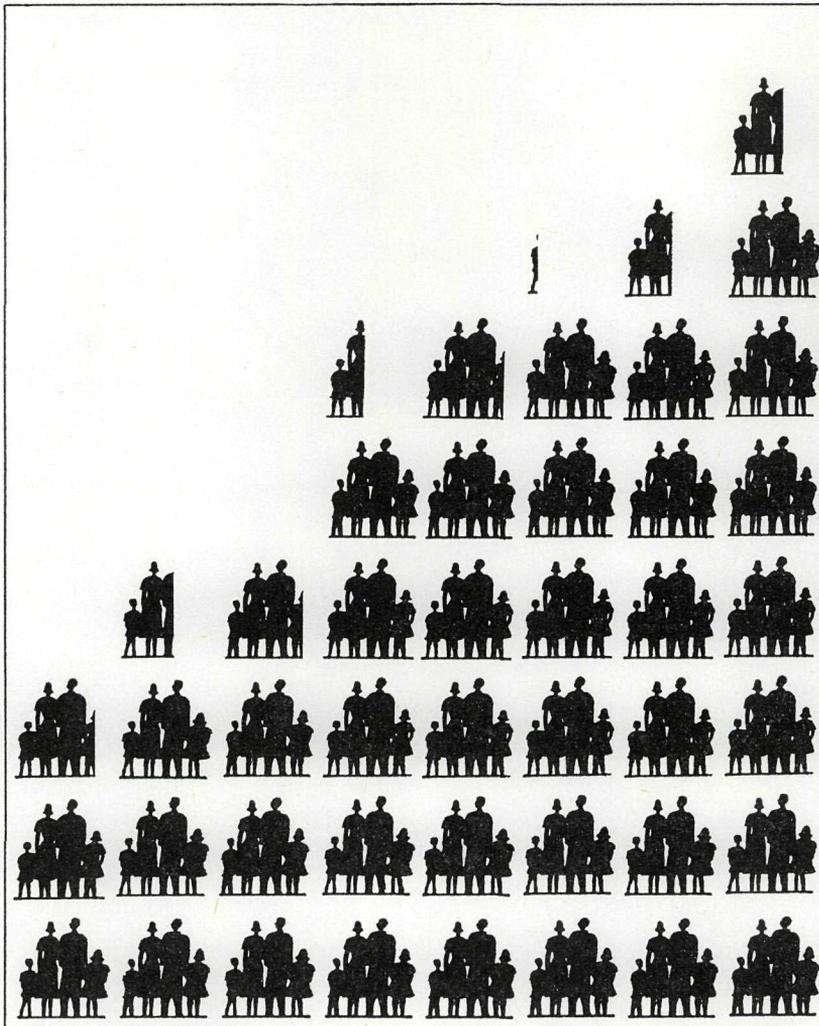
1966



1956

NATURE HOUSE ATTENDANCE

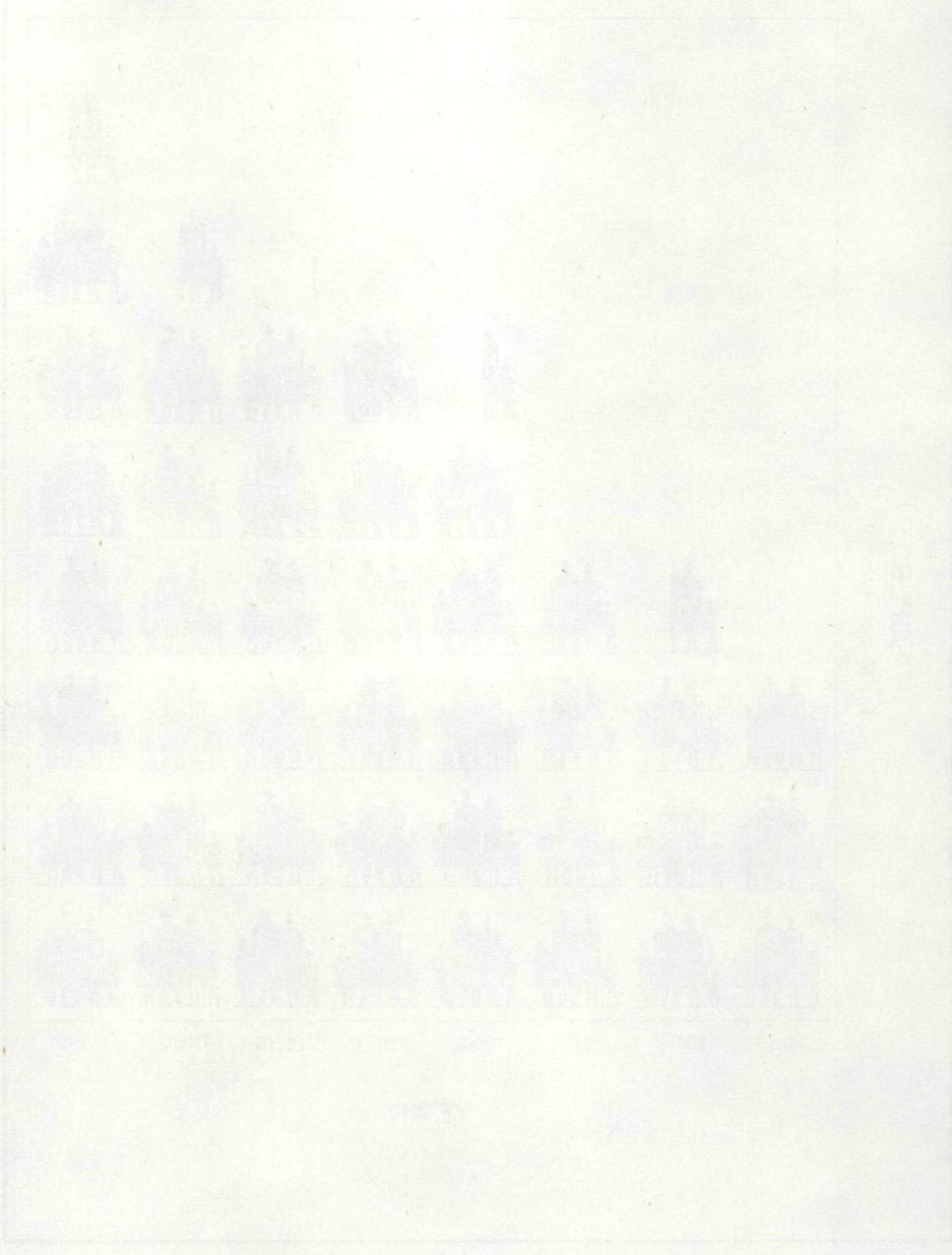
PEOPLE
10,000 per symbol.



1959 1960 1961 1962 1963 1964 1965 1966

YEAR

NATURE HOUSE ATTENDANCE

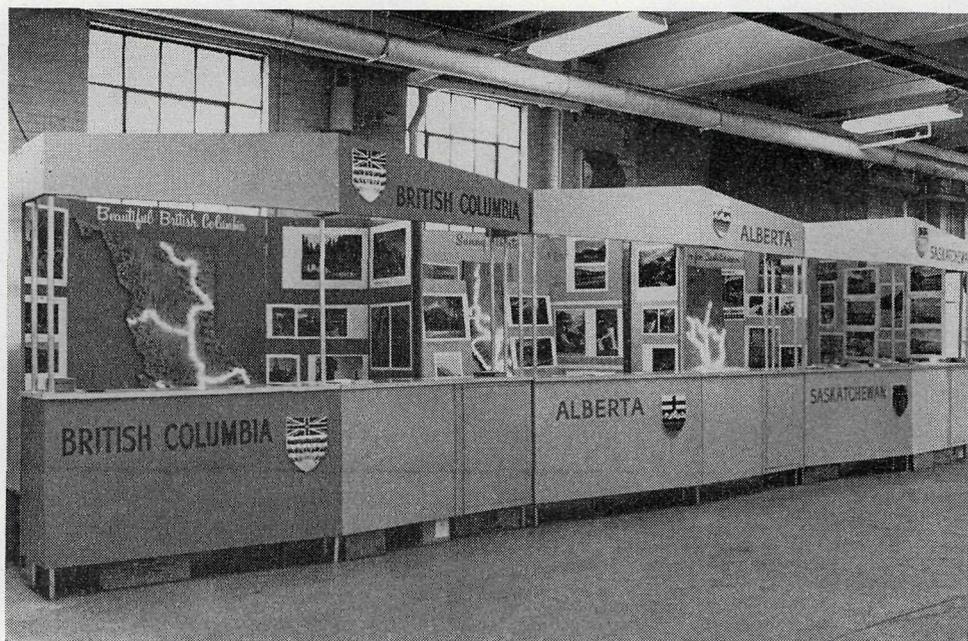


BRITISH COLUMBIA
GOVERNMENT
TRAVEL
BUREAU





New goals for Canada's travel industry were discussed at the Federal-Provincial Tourist Conference in Ottawa. Left to right: Dr. D. B. Turner, Deputy Minister, Department of Recreation and Conservation, British Columbia; the Honourable Robert H. Winters, Federal Minister of Trade and Commerce; and the Honourable W. S. K. Jones, Minister of Trade and Industry, Nova Scotia.



Display booths of British Columbia, Alberta, and Saskatchewan at the Toronto Sport Show.

BRITISH COLUMBIA GOVERNMENT TRAVEL BUREAU

R. L. COLBY, DIRECTOR

<i>Value of Tourism to British Columbia Since 1961</i>	
1961.....	\$115,000,000
1962.....	145,000,000
1963.....	150,485,480
1964.....	183,936,000
1965.....	201,133,300
1966.....	*267,203,500
	or *227,850,000
* See explanation in text.	

British Columbia's tourist-visits increased in 1966 by 11.8 per cent for car travel and approximately 30 per cent by public carriers compared with 1965.

Tourist traffic from outside the Province produced an estimated revenue of \$210,542,800. This amount is made up as follows: 2,307,617 Americans arriving by automobile across the British Columbia-United States Border produced \$92,304,700; 598,081 Americans arriving by automobile across the Alberta Border accounted for \$23,923,200; and Americans arriving via public carrier across the 49th parallel totalled 420,900, producing \$16,836,000. American travellers, therefore, made a total of 3,326,598 visits and produced an estimated revenue of \$133,063,900. Canadian visits by automobile totalled 1,936,973 and contributed \$77,478,900, making the total out-of-Province visits 5,263,571 with a revenue of \$210,542,800.

In addition, a survey conducted by the Bureau during the summer months of 1966 indicated that citizens of British Columbia contributed a far larger share toward the Province's tourist revenue than had been previously estimated. As a result, it can be safely assumed that they made 1,888,685 visits within the Province and spent \$56,660,700. This brings the total estimated tourist revenue to \$267,203,500.

Under the old formula, used before last summer's survey to estimate the revenue produced by British Columbians travelling in their own Province, the grand total would have been \$227,850,000, which is still a very sizeable increase over 1965.

PROMOTION

During 1966 the following promotions were planned and participated in by Travel Bureau staff:—

Chicago: Boat, Travel and Outdoor Show.

Toronto: Canadian Sportsman Show.

Seattle: Pacific Northwest Travel Show.

Edmonton: Northwest Travel Fair.

Calgary: Sportsman Show.

Seattle: Ski Fair.

Total attendance at these shows was more than 1,000,000 persons. Many personal contacts were made in all cities mentioned.

There were calls on auto clubs, travel agents, and other organizations. Bureau personnel participated in television shows, radio interviews, and press interviews to further the promotion of the Province. Bureau members also planned, organized, and executed a promotion in connection with the 36th World Travel Congress of the American Society of Travel Agents in Seattle. Elaborate details were arranged in the promotion of British Columbia at this important meeting, where the Bureau also staffed a British Columbia booth at the A.S.T.A. Trade Fair. The British Columbia Government Travel Bureau spearheaded this important promotion, and many representatives of the travel industry of British Columbia participated.

PUBLIC INFORMATION AND EDUCATION

A departure from former practice, all stories sent out in 1966 were specially prepared for editors' special needs. The 107 so written won 100 per cent acceptance and proved to be well worth the work involved. They were sent to Alaska, United States, Canada, Ireland, Czechoslovakia, Australia, Switzerland, and elsewhere.

The Information Officer co-operated with editors, staff writers, and free-lance writers in the preparation of staff-written stories. Copy was checked for publishing houses, automobile associations, and other organizations producing booklets, brochures, and folders. Considerable work was done for the Canadian Government Travel Bureau in this regard. Extensive research was undertaken for numerous sources, including the Canadian Broadcasting Corporation, Ottawa and Montreal; Radio KARI, Bellingham, Wash.; and Radio CKRD, Red Deer, Alta. Research was done for the Financial Post, Toronto, and numerous other publications in Canada, and for Canadian Government Travel Bureau Centennial book.

A new rock-hound folder was written, as was a new fall-winter-spring folder to be published in 1967. The Information Officer attended Centennial Committee meetings in Vancouver and Victoria regarding production of the Centennial Book. "Beautiful British Columbia" magazine was proofread, and material written for it. Press releases were prepared.

The Information Officer made a familiarization tour via Kelsey Bay-Prince Rupert ferry and thence across Highway No. 16. Other trips were made with several foreign writers, including Mr. Harry Forgeron, New York Times; Mrs. I. C. Kuhn, King Features columnist, New York; Mr. Tskeshi Kawai, Tokyo; Mrs. Ilse Janecke-Tubbesing, travel editor, Mannheimer Morgen, Germany; Mr. Vincent Mulchrone, Daily Mail, England; Mrs. Ilse Leitenberger, Die Presse, Vienna; Mrs. Guerrero-Nakpil, Philippines; Mr. Bernard Henry, Belgium; and Mr. Russ Leada-brand, Independent Star News, Pasadena, Calif. A day trip was made with internationally noted wildlife writer and photographer Mr. Karl Maslowski, Ohio.

The Information Officer was pleased to accept an invitation of Cooper Bros. Films, Montana, to attend a premiere showing in Seattle. A tour of "Queen of Prince Rupert" was made at Deas. He also judged the short stories of the Canadian Authors' Association (Victoria Branch) and presented prizes at its annual banquet. He attended the Departmental booth at the Pacific National Exhibition for two days, and was present at the formal luncheon sponsored by the British Columbia Centennial Committee to launch the new book "British Columbia: Challenge in Abundance."

A folder for British Columbia House, London, England, was revised. Work was also done on revision of other Bureau folders.

Eight issues of the British Columbia Government News were prepared and published. One issue was given to the Department of Lands, Forests, and Water

Resources, while other issues emphasized the work of the Parks Branch, Department of Mines and Petroleum Resources, and Department of Health Services and Hospital Insurance. Two special financial issues were prepared for the Department of Finance. This publication was also used to announce new maps of the Topographic Branch, and new booklets prepared by the Department of Industrial Development, Trade, and Commerce. A page was devoted to promoting the Centennial Committee book. Generous use was made of space celebrating British Columbia's Centennial Year. The mailing list of the British Columbia Government News has shown very significant increase in the past two or three years.

The year proved beyond doubt that the image of British Columbia continues to travel farther. Interest in the Province as a recreational area, a place to retire in, or as a site to establish new business is considerable. Hence, correspondence has increased many times in the past few years, a condition that has been favourably met with the addition of stenographic help.

ACCOMMODATION AND CONVENTION SECTION

ACCOMMODATION SECTION

While attending travel shows in the various cities throughout the United States and Canada, the Accommodation and Convention Section was able to contact press representatives, television and some radio personnel who assisted the Bureau in the promotion of our Province.

An important activity during 1966 coverage of tourist-accommodation facilities in the Province was the design and distribution of the British Columbia "Approved Tourist Accommodation" sign. Well over 2,000 of these signs are now displayed by tourist establishments throughout our Province. A complete coverage of every tourist establishment was effected during the 1966 period. This was done by accommodation counsellors, who inspected tourist accommodation and discussed operational problems, and in some cases advised the operator of more efficient methods of operation. As a result of this accurate coverage, our statistical and tourist-establishment information has been greatly improved.

CONVENTION SECTION

In liaison with Mr. Speaker's office of the Provincial Secretary's Department, the Section arranged a tour of portions of British Columbia for members of the Commonwealth Parliamentary Association. Delegates to this important meeting visited British Columbia from every country in the Commonwealth. Elaborate plans involving entertainment, transportation, and accommodation were set up for this party.

In liaison with the British Columbia Government Ferry Authority, the Bureau participated in the Los Angeles spring goodwill tour. On this five-day event in Southern California, more than 10,000 people in different groups were spoken to. In addition, many television and radio engagements covered a wide portion of the travel public of Southern California. Numerous convention organizers were contacted in 1966 in an endeavour to promote British Columbia as a convention Province.

To assist Chambers of Commerce in promoting their own conventions, the 1966 convention list was compiled. The 1966 conventions that visited British Columbia spent an estimated \$9,500,000. The number of conventions being held in British Columbia is definitely increasing. This phase of the travel industry is making a large contribution to the earnings of the travel industry.

COUNSELLING SECTION

Extraordinary mail inquiry increases from January onward made 1966 the busiest year ever for this segment of the British Columbia Government Travel Bureau. At the end of November, 175,624 inquiries had been received and answered, 37,806 more than the previous year.

The total of teacher-student inquiries was 11,170. Settlement inquiries totaling 727 were answered. In this latter respect, the Travel Bureau acknowledges the assistance and co-operation of other departments. In the former case, the Travel Bureau went to considerable lengths to process the requests, all of which were from potential visitors. The February insert in "Sunset" magazine resulted in 35 to 40 inquiries a day.

Publications produced were Ferry Information Sheet, Calendar of Events (Spring and Summer), Calendar of Events (Fall and Winter), and Ski B.C. This section co-operated with private firms and organizations in the production of non-Government folders and brochures. Calendars of events were prepared and research work done for "Beautiful British Columbia" magazine and the Canadian Government Travel Bureau.

Travel-counselling staff made a familiarization trip to Kelsey Bay. The senior travel counsellor attended the Air Canada Travel Fair, Toronto, and opening of the new Cleveland, Ohio, office of the Canadian Government Travel Bureau. This same staff member assisted in familiarization tours of several visiting journalists, photographers from Eastern Canada, United States, Europe, and Japan.

Notable among inquiries of 1966 was the increased interest in canoeing, assumed to have resulted from American and Canadian television showings of Bowron Lakes Provincial Park.

Two staff members resigned during 1966, one to take a position with the Federal Government. Otherwise, due to the addition of permanent- and temporary-staff members, all inquiries were serviced promptly. Most important, this extra help enabled the Counselling Section to avoid the backlog of inquiries awaiting attention that had been the case in 1965.

LITERATURE

Unprecedented requests for literature during the year were enough to create what sometimes almost amounted to crises. Stocks of folders and booklets were depleted rapidly.

To keep pace with the demand, 500,000 copies of the Accommodation Directory were printed and distributed. The popularity of this book continues unabated, thus proving its worth.

Road maps totalling 750,000 were printed, a figure that will be increased to 1,000,000 next year. This forthcoming edition of the road map will include the whole Province and north to Whitehorse and Dawson City in the Yukon and Fairbanks, Alaska. The current edition excludes detailed coverage of the territory north of the 56th parallel.

The general folder was reprinted. Plans have been made to up-date and modify other Bureau booklets.

In response to innumerable requests, a rock-hound folder was produced for the first time. This folder proved its worth immediately.

The Bureau continued to co-operate with Boards of Trade, Chambers of Commerce, and the whole accommodation industry by distribution of regional and individual folders.

"BEAUTIFUL BRITISH COLUMBIA" MAGAZINE

Reception of this popular publication continues to grow. Average circulation per issue climbed from 145,000 to 155,000 during 1966. Subscriptions rose to 80,000 from 58,000.

Improved format, still-better-quality photographs, and new-look text have contributed to the further success of the full-colour quarterly that is presently shipped to most countries of the world.

"Beautiful British Columbia" magazine has established itself as a worth-while promotional medium.

TOURIST INFORMATION CENTRES

All Mainland information centres established traffic records during 1966. This was particularly true at the Vancouver office, with a total of 45,280 in-person or telephone inquiries. This compares with a total of 33,206 for 1965. Every month showed an increase over the previous year, with May and August increases in excess of 60 per cent. Abbotsford centre recorded 57,798 visitors; Cache Creek, 6,646; Douglas, 57,304; Osoyoos, 19,381; Sicamous, 23,200; and Banff, 10,091 inquiries.

Spot studies of the type of traffic at the various centres, conducted during the summer months, indicated that as high as 52 per cent of parties travelled in trailers, campers, or similar vehicles, and that an average of 22 per cent used that type of vehicle.

PROMOTION

A great deal of time was spent by the Vancouver Public Information Officer assisting and advising travel agents, transportation officials, writers, broadcasters, and others who had planned tours or other activities in this Province. Visitors to the Vancouver office included newspaper and magazine writers from the Orient and government officials from other Provinces and foreign countries. A number of television stations sent crews into the area, and interest in British Columbia as subject-matter for Centennial film productions was very high. Auspicious occasions bringing influential visitors to British Columbia were the inaugural flight of Air Canada direct from London, the visit of Agents-General in London for Alberta, British Columbia, Victoria State (Australia), and the former Lord Mayor of London, Sir Denys Lawson. The Public Information Officer accompanied several visiting writers and broadcasters on tours.

FIELD WORK

A considerable increase in direct foreign travel to Vancouver led to closer co-operation with immigration officials at the Vancouver International Airport, where the décor of the reception area is now distinctly British Columbian. Contact work was resumed in the Eastern Washington area. A very warm reception given the Public Information Officer during a spring tour of this area resulted in renewed interest in British Columbia.

PUBLICITY

Increased interest in Government publications was noted, particularly among visiting businessmen. Every effort was made to make sure these dual-purpose visitors were given the required information quickly at the Vancouver centre. There was also a high level of interest in British Columbia Centennial materials, with many requests to mail Centennial publications to foreign countries.

LIAISON

Extensive work was done on the Tourist Counsellors' Manual, reference book for the annual course conducted by the Vancouver Information Officer at the British Columbia Vocational Institute. A draft copy was used for the 1966 course, and its acceptance by students and, later, by teachers and other interested parties led to a complete finalization by revision.

This book covers British Columbia history, geography, and contains a wealth of material valuable to the tourist counsellor. At the end of the year it was ready for final printing, and it will be the basis of future tourist counsellor courses. It will also be part of a tourist counselling kit to be used for instruction purposes in any area of British Columbia where this type of course is required. The Department of Highways showed keen interest in the activities of the Travel Bureau during the year, and made every effort to provide adequate accommodation for information offices wherever required.

Staffs at all information centres are to be commended for their excellent handling of the heavy traffic during the summer months. Letters continue to praise our travel counsellors for their courtesy and knowledge of British Columbia.

MATCHING GRANTS

As formerly, the Matching Grants Plan continued to play a significant role in the development and promotion of the tourist industry in the Province.

The 1965 allotment of \$175,000 remained the same for 1966. However, in 1966 the Department increased its obligations to approved tourist promotions. The cost-sharing basis, which had been shared equally between the Department and regional organizations, was changed so that the Department assumed 60 per cent of the costs and the regional organizations assumed the balance of 40 per cent.

FIELD WORK AND LIAISON

The Bureau was represented at a number of important meetings and conventions. Included were the annual meeting of the Pacific Northwest Travel Association at Butte, Mont., and several meetings of the Travel Editor Tour Committee, Vancouver.

Representatives attended the annual meetings of the Sicamous Chamber of Commerce, Cariboo Tourist Association, and the Alberta Tourist Association. Travel bureau directors from the Western Provinces met to discuss mutual problems and exchange new ideas.

Hospitality conferences were organized in conjunction with the Department of Education in Prince Rupert, Terrace, Smithers, Prince George, Quesnel, and Williams Lake. Additional seminars were held in Nelson and Vernon in conjunction with the Canadian Tourist Association.

The Bureau was regularly represented on the Advisory Council to the Food Trade and Accommodation Industry.

Meetings of the Provincial Tourist Advisory Council were held in March and November in Victoria and Vernon respectively.

The Bureau joined with Western Airlines, Air Canada, and Scandinavian Airlines in hosting several groups of travel agents visiting British Columbia for the first time.

Meetings and conventions of the Pacific Northwest Ski Association, Alaska Travel Promotion Association, and the Canadian Tourist Association were attended, in addition to the Federal-Provincial conference in Ottawa.

The Bureau also participated in a bus tour of American Automobile Association branch managers who crossed British Columbia under the auspices of the Canadian Government Travel Bureau en route to Expo 67.

BRITISH COLUMBIA HOUSE, SAN FRANCISCO

The work in 1966 showed a tremendous increase over previous years. This reflects the increasing interests of potential tourists. Travel agents, transportation companies, clubs, travel groups, church travel groups, lodges, and many other sources add to the growing requests.

British Columbia House was pleased with the opportunity to render greater service to the British Columbia Ferries and the tourists who desire to travel to Prince Rupert, Central British Columbia, and Alaska by making reservations in San Francisco through the British Columbia Ferries office in Victoria.

During 1966, British Columbia House placed booths in the following shows, where our representatives were exposed to approximately 2½ million people:—

Attendance at the Cow Palace Sport and Boat Show in San Francisco	390,000
The Boat and Sportsmen Show (Shrine Auditorium in Los Angeles)	275,000
Southern California Exhibition in San Diego	395,000
Los Angeles County Fair (Pomona)	1,125,000
Portland Boat and Sportsmen Show	175,000
Total	2,236,000

In the future it should be considered and discussed that when any of the branches of the Government of British Columbia plan to enter any of the California exhibitions in the interest of the development of tourism, British Columbia House should be included so that, through a joint effort, a complete coverage of the entire Province will be carried out to allow a follow-up in the areas where the shows are held. This will reduce operating costs, eliminate duplication, and render a service to every part of the Province.

Our Tourist Representative gives Southern and Central California excellent service by alternating every other month in his work. He checks supplies of literature, holds staff meetings giving up-to-date information on British Columbia, and sends orders to British Columbia House to replenish stock. British Columbia House ships four mailings a year to the 3,000 agencies throughout the United States. When new and important literature is received, a supplementary mailing is sent out to California and special travel offices.

Automobile clubs are given special attention. They are kept informed and draw supplies of literature from British Columbia House in San Francisco.

Newspaper sports and travel writers use the services of British Columbia House to double-check information they intend to use in articles regarding trips made to British Columbia.

Wholesalers and tour group promoters are given regular attention to help them develop tours.

At all fairs and sportsmen's shows, films such as "Tight Lines," "Big Game Camera Holiday," "Vancouver Island," and "Vancouver Honeymoon" are shown. In addition, requests for films to be shown at rod and gun clubs, travel groups, lodge groups, schools, and many other groups are handled.

In Southern California our Tourist Representative has contacts with senior citizen associations, automobile clubs, travel groups, industrial travel clubs, and retired citizen communities, where he arranges travel shows. There are more than 750,000 people in the senior citizen groups. Our tourist representative also arranges series of film showings with travel groups, where monthly meetings are held.

In California there are listed 1,019 travel agencies. The total number of travel agencies of value to us in California is 800. The total number in Los Angeles is 243, and in San Francisco 160. In California there are 27 listed wholesale travel agents, who are practically all sub-offices of national agencies, whom we contact in Chicago, Kansas, and other mid-west cities. There are four wholesale travel agencies in San Francisco and 23 in Los Angeles.

Our Tourist Representative estimates the number of viewers of "Big Game Holiday," "Vancouver Island," "Red Goat," and "Tight Lines" at little theatres in exhibition shows at five fairs to be 30,000. The number of viewers seeing the same films at the British Columbia booth at the fairs is 1,500,000, and the viewers at senior citizen travel clubs' shows and meetings, 12,000. The estimated viewers of the films lent from British Columbia House to clubs, meetings, and bus transportation companies in the Midwest, the South, and Pacific Coast States is 38,000. The viewers of the Rogers Pass film lent to Greyhound in Tampa, Florida, was 5,000. The estimated viewers of the films requested by mail and phone to rod and gun clubs, lodges, church groups, and travel clubs are 8,500.

With only one print of each film in our library during most of the year, we were handicapped by delays. However, we are now receiving films that will prevent this.

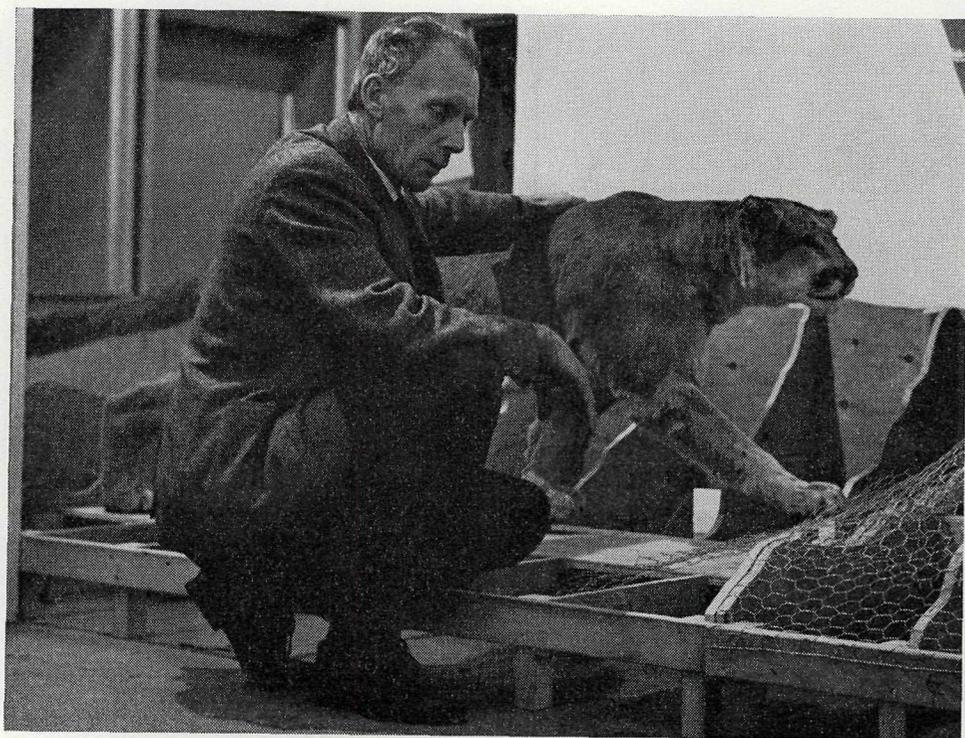
The Commissioner contacts agencies, transportation companies, newspaper writers in Oregon, Northern California, the Midwest, the southern and south-eastern States. Our Tourist Representative carries out the same work in Central and Southern California.

PROVINCIAL MUSEUM
OF NATURAL HISTORY
AND ANTHROPOLOGY





H.R.H. the Queen Mother at ceremonies during the laying of the cornerstone of the Museum-Archives complex, March 19, 1966. With her are the Honourable W. N. Chant, Minister of Public Works; the Honourable W. A. C. Bennett, Premier; and Lieutenant-Governor the Honourable George R. Pearkes.



Coastal diorama in preparation under the direction of Mr. F. L. Beebe, Museum technician.

PROVINCIAL MUSEUM OF NATURAL HISTORY AND ANTHROPOLOGY

G. CLIFFORD CARL, DIRECTOR

The year 1966 has been highlighted by many events marking the Centennial of the union of the Crown Colonies of Vancouver Island and British Columbia. It has also been a memorable one for the Museum, marked by periods of progress and optimism alternating with times of delay and frustration, mostly in connection with the building construction now underway. These events, coupled with the more or less routine activities connected with the operation of a museum, have resulted in a busy year.

FIELD WORK

Most work in the field in 1966 was concerned with gathering material required for exhibits planned or in preparation for the new building. Besides a number of local trips for birds and plants needed for displays, two sessions were spent in the Okanagan Valley, where study was concentrated on the locale selected for a diorama being prepared to show the life of the Dry Interior. The work consisted of making a cast of rock formations, gathering plant material, collecting birds and mammals, and taking photographs and tape recordings. Assisting Museum staff members were Mr. Karl Spreitz, of the Photographic Branch; Mrs. Grace M. Bell, of Victoria (making sound recordings); and Miss Enid Lemon, also of Victoria (photography).

In the early fall, Mr. C. J. Guiguet, Curator of Zoology; Mr. M. D. Miller, assistant in museum technique; and Mr. John Hermann-Blome, taxidermist, spent several days on Vancouver Island collecting a bull and two cow elk. These animals are to be mounted for display in a coastal forest habitat group planned for completion in 1969.

As part of a three-year botanical project, student-assistant Spring Harrison carried on an intensive programme of plant-collecting in Saanich Peninsula under the direction of Dr. A. F. Szczawinski, Curator of Botany. As the vegetative covering of this part of British Columbia is changing so rapidly, we feel it imperative to have a botanical inventory made at this time for future reference.

In early June Mr. Frank Beebe, illustrator and museum technician, spent several days with Fish and Wildlife Branch personnel in the Queen Charlotte Islands assessing the current population of peregrine falcons in that area, particularly in the vicinity of Langara Island.

In the human-history field, a number of trips were made to various parts of the Province to collect historic items and Indian artifacts. Areas visited included the East Kootenay District, and then Lillooet, Lytton, Shuswap, Fort Rupert, and Port Hardy.

In June Mr. D. M. Abbott, Curator of Anthropology, and Mr. P. L. Macnair, assistant in anthropology, attended the elaborate celebrations put on by the Kwakiutl people in connection with the official opening of a new dance house constructed at Alert Bay. Mr. Henry Hunt and Mr. Tony Hunt, carvers, took part in some of the ceremonies. On several occasions during the winter months Mr. Abbott and Mr. Macnair attended spirit dances and other ceremonies put on by local natives.

During the spring term, Museum staff members assisted a team of university students to carry out a "dig" at Cadboro Bay. The site proved most productive; a series of artifacts and stratigraphy showing successive cultural phases was revealed by the co-operative study. The materials gathered will eventually be added to the collections of the Provincial Museum.

CURATORIAL ACTIVITIES

In addition to the usual routine activities connected with the care of collections, the identification of submitted specimens, and dealing with the public in general, other chores were thrust upon some staff members as a result of several moves.

Early in the year it was necessary to shift our display studio and workshop from the old Mc and Mc Building, 1450 Government, where we settled in mid-1965, to other quarters provided for us at 845 Yates Street in Victoria. The new building provides a greater amount of floor space with the additional advantage of being completely within our control as far as access is concerned. Its central location with some inside parking is also a valuable asset. The move caused some delay in our programme of display planning and construction, and interfered with the work of restoring totem poles and other large carvings.

Later still, more work and storage space was unexpectedly made available to us on the top floor of the former warehouse of the British Columbia Liquor Control Board at Wharf and Fort Streets. This area is now being used as a sorting centre for the extensive anthropological collection, a place where objects can be safely laid out for inspection, cleaning, and eventual selection for display.

A minor move involved the taxidermy shop and an archæological office at 609 Superior Street; switching locations improved working conditions in each area and enabled the Curator of Archæology to organize his collections to better advantage.

THUNDERBIRD PARK

Carving of a replica of a 40-foot Haida pole, Weeping Woman of Tanu, which was commenced in 1965, was not completed until midsummer because of a number of other commitments. Work on this pole was also slowed while Mr. Tony Hunt spent several weeks repairing a number of canoes and totems being readied for display.

In late summer a contract was received to carve a 60-foot pole and a "welcome figure" for the Indians of Canada Pavilion in Expo 67 in Montreal. Logs for this purpose were generously donated by MacMillan Bloedel Limited and by British Columbia Forest Products, and a third carver, Mr. Simon Charlie, of Duncan, was engaged to assist in the project.

A number of poles which were temporarily stored at Thunderbird Park were moved to the Yates Street quarters for cleaning and repairs.

EXTENSION

As usual, various staff members presented illustrated lectures, took part in radio and television programmes, gave technical instruction, and were active in other types of educational activities as the opportunities arose. In February the Director presented a series of illustrated conservation lectures in California and Arizona under the combined auspices of the Canadian Audubon Society and the National Audubon Society.

A major step in providing extension services to other museums was taken with the appointment of a Museum Adviser to our staff. In this capacity, Mr. George Moore has already compiled an up-to-date list of all museums of the Province and has contacted each institution by letter, by phone, or by personal call. Plans to provide various types of helpful services are being formulated.

As part of a conference held in British Columbia by members of the Canadian Botanical Association, Dr. Szczawinski conducted a group of confreres on field trips to several areas on Vancouver Island to study and photograph vegetation cover

typical of this coast. Dr. Szczawinski is also a member of the advisory board of the association.

On another occasion Dr. Szczawinski acted as guide and interpreter for a Polish team of television men making publicity films of British Columbia for world-wide use.

From time to time during the year the Museum has received publicity through a series of spot announcements from radio station CFAK as a free public service; we express here our gratitude for this generous contribution.

NEW BUILDING CONSTRUCTION

The erection of steel for the new buildings proceeded through the early months of the year and was completed well on schedule. The formal laying of the foundation-stone, located at the south entrance to the main building, took place on March 19th with Her Majesty the Queen Mother taking the leading part. The ceremony was witnessed by several hundred invited guests plus the general public. Despite poor weather, a large crowd had gathered. The affair was well covered by television, radio, and other news services.

For most of the ensuing months, construction slowed almost to a standstill while the Department of Public Works architects and engineers revised plans in order to reduce the total cost of the project. Following approval of the proposed changes, work progressed on the retaining-walls, underground passageways, and other sub-surface structures while revised plans concerning the exterior of the curatorial tower and other details were being completed.

The contract for the final phase of construction of the main building was let to Farmer Construction Limited, of Victoria, in early December and work commenced almost immediately.

DISPLAY PREPARATION

A great deal of time and effort was spent on planning exhibits and on constructing some of them. This has involved drawing up an over-all floor plan for displays in both the Natural History Section and the Human History Section and in determining which sections are to be completed first.

Four large dioramas had already been selected for completion in the first phase of exhibit preparation, and work on these habitat groups progressed favourably. The artists engaged to produce these dioramas—namely, Mr. Frank Beebe, of the Museum staff; Mr. Clarence Tillenius, of Winnipeg, Man.; and Mr. Hugh Monahan, of North Vancouver—have individually completed miniature replicas of each project, and details as to composition have all been worked out. Mr. John Hermann-Blome, who is undertaking to prepare the mounted specimens to be used in the dioramas, has completed a cougar, two deer, and several smaller mammals; three bighorn sheep, a moose, and three elk are in various stages of preparation.

To make best use of exhibit space to be provided in the new building, a series of special display-cases has been designed by Mr. E. Thorn, Display Chief, and pilot cases of three different sizes have been constructed. With these as models, a number of displays have been produced, ready to be installed in cases as soon as they are manufactured. The first group of exhibits in this category is destined for a gallery to be devoted to life in the Dry Belt of British Columbia, which will include a large diorama featuring the bighorn sheep already mentioned.

An introductory gallery has also been planned to contain displays related to the geological history of the Province and some of its physical features. A consid-

erable amount of help in this project is being given by the Department of Mines and Petroleum Resources, for which we are most grateful, and other authorities have been consulted when required.

A variety of accessories for these displays have also been produced. These include numerous mounts of birds and small mammals, casts and models of various reptiles and amphibians, Indian houses in miniature, and several groups of plants, tree trunks, wild flowers, and miscellaneous bits of vegetation.

Early in the year the display programme was interrupted for some days during a move to more spacious quarters, as already noted. For a short period, also, the services of the staff were devoted to installing exhibits in the replica of S.S. "Beaver," constructed as part of British Columbia's Centennial celebration programme.

RESEARCH

Intensive collecting of display material precluded further work during 1966 in the study of small-mammal distribution. Various field activities also made inroads on time devoted to botanical research, but in spite of this, some progress was made on the study of the flora of the Province being made by Dr. Szczawinski in collaboration with Dr. T. M. C. Taylor, of the Department of Botany, University of British Columbia.

Archæological research was also carried on, but to a rather limited extent, during the year.

OUT-OF-PROVINCE TRAVEL

In May, Mr. Macnair was accepted as a candidate to attend a training session at Winnipeg sponsored by the Canadian Museums Association. Such attendance provides credits toward a diploma of competence in museology to be granted to successful candidates by the association.

Later the Director attended the annual meeting of the Canadian Museums Association, which was held in Winnipeg following the training period.

In June Mr. Thorn attended the annual meeting of the American Museums Association in Chicago, where he conferred with officials in the exhibit field and with technicians in the local museums. En route home he visited the Milwaukee Museum to study its latest display methods.

PUBLICATIONS

The following publications have appeared in 1966:—

G. Clifford Carl.

Guide to Marine Life of British Columbia. British Columbia Provincial Museum Handbook No. 21, pp. 1-135 (reissue).

George Austin Hardy, 1888-1966. Victoria Naturalist, Vol. 22, No. 9, pp. 102-103.

George Austin Hardy. Journal of the Entomological Society of British Columbia, Vol. 63, December, pp. 43-44.

C. J. Guiguet.

Let's Collect a Specimen for Exhibit. Victoria Naturalist, Vol. 23, No. 4, pp. 44-47.

A. F. Szczawinski.

The Case of the Poisoning Mushroom. Wildlife Review, Vol. 3, No. 10, pp. 12-13.

A. F. Szczawinski.

A World of Mushrooms. Beautiful British Columbia, Vol. 8, No. 2, pp. 26-29.

Weeds for Lunch. Wildlife Review, Vol. IV, No. 1, pp. 14-15.

Food for Survival. Wildlife Review, Vol. IV, No. 2, pp. 18-19.

T. M. C. Taylor.

The Lily Family (Liliaceae) of British Columbia. British Columbia Provincial Museum Handbook No. 25, pp. 1-109.

Thetis Park Nature Sanctuary Association.

Natural History of Thetis Lake Area near Victoria, British Columbia. Report of the Provincial Museum for 1965, pp. 21-54.

Erik Thorn.

Designing Exhibits for Small Museums. Museum Round-up, No. 24, October, pp. 42-43.

Two publications in addition to the above have been edited and submitted for publication early in 1967. These are "Intertidal Univales of British Columbia," by Lela M. Griffith, and "Mosquitoes of British Columbia," by L. C. Curtis. Other manuscripts in the fields of biology and anthropology are in preparation.

Handbooks No. 2, "Amphibians of British Columbia," and No. 21, "Guide to Marine Life," were reprinted in response to a continuing demand.

STAFF CHANGES

Two significant appointments to our permanent staff were made in 1966. In September Mr. George Moore was engaged as Museum Adviser, a post which will provide a number of services to the museums of British Columbia. Some of these are enumerated in another section of this Report.

Later in the year Mr. Philip R. Ward, formerly of the British Museum, joined our staff as Conservator. Mr. Ward's responsibilities will include the cleaning, repairing, restoring, and preserving of museum material already in collections, as well as of objects as they are acquired.

Mr. Ed Mullett and Mr. Tom Putnam have been engaged as technicians in the display laboratory, and Mrs. Beverly Sawchuk, Mr. John Sendey, Miss Linda Gusthart, and Mr. Spring Harrison were taken on for varying periods as student assistants. In September Mr. Simon Charlie joined the carving staff at Thunderbird Park, as noted elsewhere.

From time to time, as required, Mr. Gordon King, Mr. R. Pumfrey, and Mr. N. W. Milke acted as relief attendants.

One staff member retired on December 31st. After more than 20 years' service as a technical assistant, Miss Betty C. Newton left for reasons of health. During her long tenure Miss Newton carried out many different assignments, not only in the technical and artistic field, but also as instructor, docent, and general office worker as required. Special projects included the construction of certain plant and insect models presently on display, the colour scheme in the bird gallery, illustrations for "The Heather Family (Ericaceae) of British Columbia" (Handbook No. 19), and the arrangement of several displays in the invertebrate division. For some time also Miss Newton was in charge of a group of junior naturalists who used to meet in the Museum under the auspices of the Victoria Natural History Society. Fellow staff members join in wishing her well.

ATTENDANCE

The following attendance figures for 1966 are estimates based upon sample counts made at irregular intervals:—

January	4,100	August	62,000
February	11,000	September	30,000
March	7,900	October	10,700
April	8,500	November	7,100
May	10,000	December	2,000
June	16,000		
July	43,300	Total	212,600

According to these figures, the number of visitors in 1966 shows an increase of 22 per cent over the attendance for the previous year, a gratifying rise.

As has been the policy for several years, the Museum's hours were extended to 9 p.m. each evening except Sunday during the summer months. Many visitors took advantage of this extra service, especially when flag-raising ceremonies or other events took place on the grounds in front of the Legislative Buildings.

OBITUARIES

We pay tribute here to several persons who have passed on during 1966.

Mrs. Ellen Neel, renowned artist and totem-carver. (February 3rd.)

Dr. Peter Kelly, a Haida from Skidegate, prominent in Canadian Indian affairs and active in the ministry; receiver of the Coronation Medal in 1954. (March 2nd.)

Mr. George A. Hardy, former botanist and entomologist of the Museum staff and a well-loved all-round naturalist. (March 27th.)

Mr. Theo H. Scheffer, a former member of the old United States Biological Survey (now the Fish and Wildlife Service), author of many scientific papers in natural history, aged 99. (May 17th.)

Major Anthony (Tony) P. McLaughlin, British Columbia land surveyor and volunteer plant collector for the Provincial Museum. (May 23rd.)

Dr. George J. Spencer, entomologist, professor emeritus at the University of British Columbia, and inspirer of students in biology. (July 24th.)

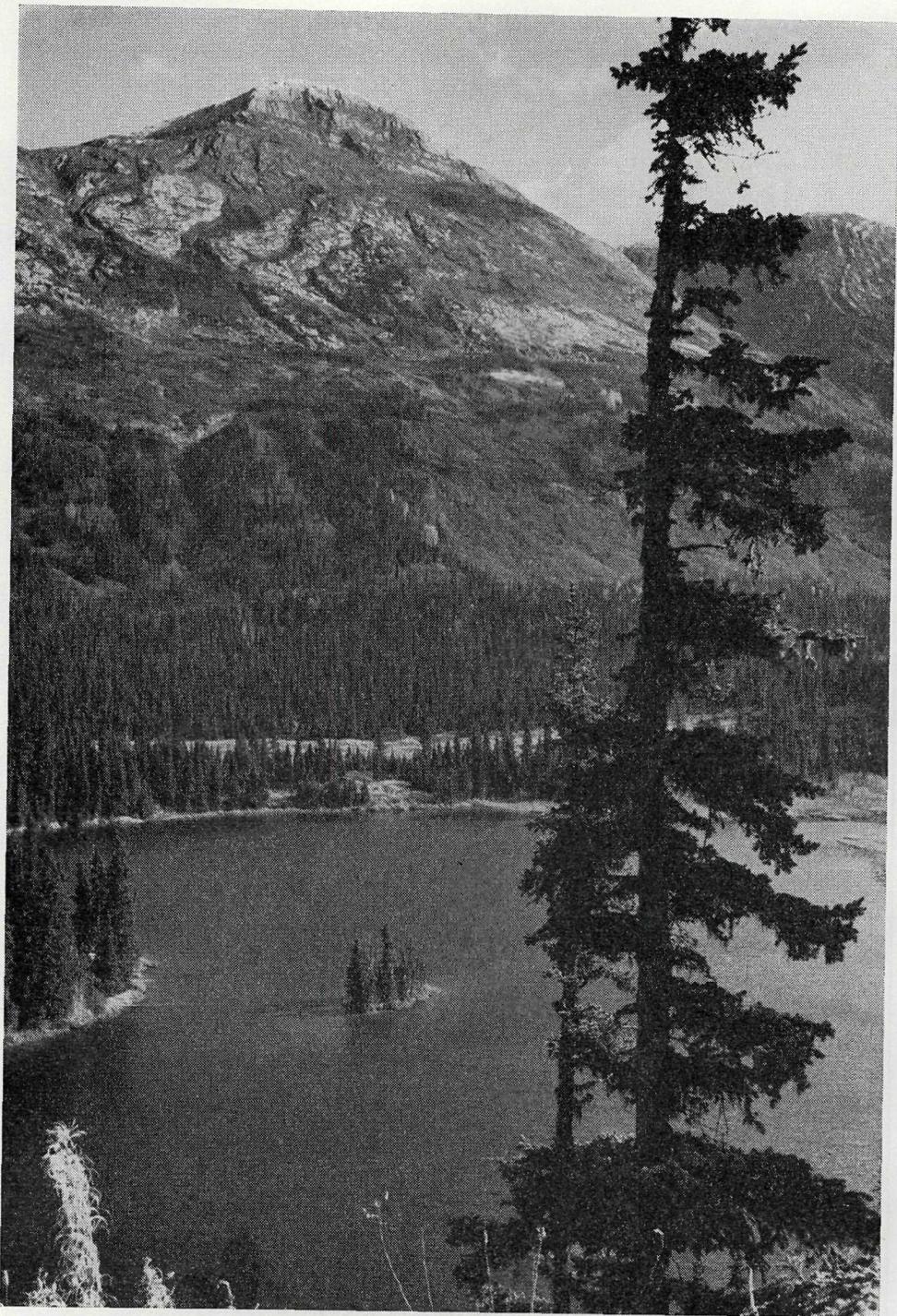
Mr. Thomas R. Ashlee, amateur botanist and active plant collector. (September 11th.)

Dr. John Hocking, of Kelowna, vice-president of the British Columbia Nature Council and ardent conservationist. (October 16th.)

Mr. Ted Greig, of Royston, outstanding grower of rhododendrons and an enthusiastic plant collector. (December 1st.)

PHOTOGRAPHIC BRANCH





A view of Azousetta Lake from the John Hart-Peace River Highway. More people saw films about British Columbia in 1966 than ever before.

PHOTOGRAPHIC BRANCH

F. W. E. ROUND, DIRECTOR

From the start, 1966 has been a year of action and productivity for the Photographic Branch. New methods have been explored and accepted or rejected according to their merit. New and better equipment has been purchased, greatly increasing the versatility and efficiency of the Branch.

As in past years, extra photographers were hired during the summer shooting season, resulting in some excellent prints and negatives being filed in the albums. Due partly to the excellent results obtained, an extra photographer has been hired on a temporary basis and is working directly out of Vancouver.

Staff photographers concentrated on picture stories for "Beautiful British Columbia" magazine. In addition, many special assignments were completed for other Government departments for promotion and recording purposes. Some of these were the Credit Union Convention, Civil Defence Classes, Press Gallery, Good Roads Association, Simon Fraser University, and the Canadian Tourist Association. Many Centennial projects were covered, including the visit of the Queen Mother, the Centennial Ball at Government House, and the celebrations in November at Langley and New Westminster attended by the Lord Mayor of London.

Activities of the Commonwealth Parliamentary Association were attended, both in Vancouver and Victoria. The 25-year awards presentations were also covered in both cities. A large amount of work was accomplished for the Department of Finance, and sequences were shot for the Department of Highways. Photography was also carried out for the Provincial Secretary, Department of Public Works, and the Department of Industrial Development, Trade, and Commerce.

As lectures enhanced by the projection of 35-mm. slides become increasingly popular, more and more requests are received for this medium, and the slide file is steadily building up to a workable level. Plans for 1967 include the taking of slides throughout most of the Province to enable the Branch to expand this service.

By air, land, and sea, our men have covered the length and breadth of British Columbia recording on film, the Province's scenery, sports, recreation facilities, historical events, and important achievements. Records show that more than 70,000 miles were travelled in search of this material.

MOTION PICTURES

The motion picture "East 1—West 1" portrays the Trans-Canada Highway from Banff, Alta., to Vancouver Island, showing the scenic attractions along the way. The film has been well received, and 145 prints of this production are in circulation in Canada, the United States, and the United Kingdom.

Recently completed, a new film titled "Breath of Spring" has just been released by the Branch. This is a nature-study film which shows birds, animals, and flowers awakening after the winter months. Some 20 prints are on order for immediate distribution, and initial showings indicate that this will be a very popular film.

The Barkerville Park production "Barkerville or Bust," released last year, will now also be released in a short version entitled "Echoes of Gold." This film will include highlights from the original film, plus some footage shot especially for this new approach.

Sequences for a new ferry film are in stock ready for editing. Footage is also on hand for a new ski-ing film, and further coverage will be obtained as the season reaches its peak.

Requests for the film "Valley of the Swans" continue to increase in frequency. This outstanding production is certainly the most popular film this Branch has produced.

Another of our very popular films is "Vancouver Island," which shows historical, geographical, and recreational aspects of this important part of British Columbia. Currently being prepared with narration in Japanese, Dutch, German, and French, this film will result in good public relations for some years to come.

MOTION-PICTURE DISTRIBUTION

Non-theatrical screenings of British Columbia Government motion-picture films show a steady increase in the United States, Great Britain, and other countries through the distribution facilities of the Canadian Government travel-film libraries. Screenings totalled more than 30,000 with an audience in excess of 2,000,000.

During the year, in answer to requests, the Branch ordered more than 400 prints of our 16-mm. colour-sound productions. These have been forwarded to various distribution centres in Canada, the United States, and abroad.

To facilitate the distribution of our films on the Mainland, the Photographic Branch film library has been relocated in Vancouver with the Audio-Visual Branch of the Department of Education at 1722 West Broadway. Approximately 90 per cent of our viewing audience in the Province is located on the Mainland, and for this reason moving the library to Vancouver was warranted. The Audio-Visual Branch is geared to handle films most efficiently and is expert in the care and servicing of the rather delicate material.

TELEVISION

Television screenings of our films in the United States increased over the 1965 figure, proving conclusively that our American friends are looking for us to provide them with a vacation area in a natural setting. With growing popularity of colour television, our films should enjoy a much greater exposure, especially in the United States, where potential visitors will see colour previews of our Province in their own homes.

DARKROOM PRODUCTION

While darkroom production figures only equalled those of 1965, there was one important difference. Formerly there were many prints returned as unusable for one reason or another, but during 1966 not one single print has been returned. Numerous letters are on file expressing appreciation for the excellent service and print quality. Almost 7,000 prints were processed through the darkroom in answer to the requests from writers and to fill orders for other branches of government.

A total of 3,192 negatives was produced in the darkroom, and the Branch studio handled 93 portrait sittings.

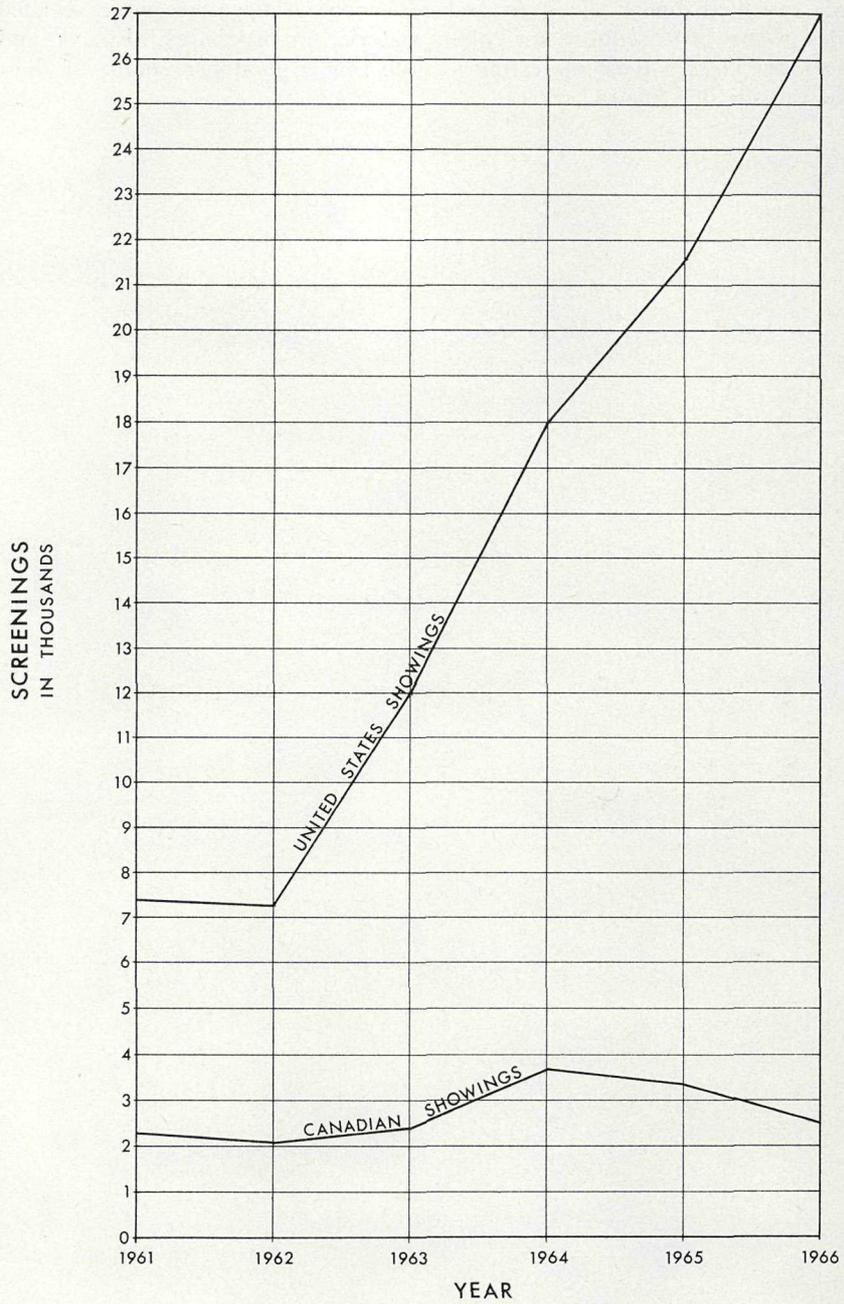
GENERAL

Letters directed from the Branch increased by 560 over the 1965 figure, indicating an awareness to our service. There were 41 showings in the Branch theatre to August, at which time the theatre was discontinued to make room for two offices needed for our expanding programme. The Branch projectionist handled 23 special evening showings at important functions sponsored by the Government during the year.

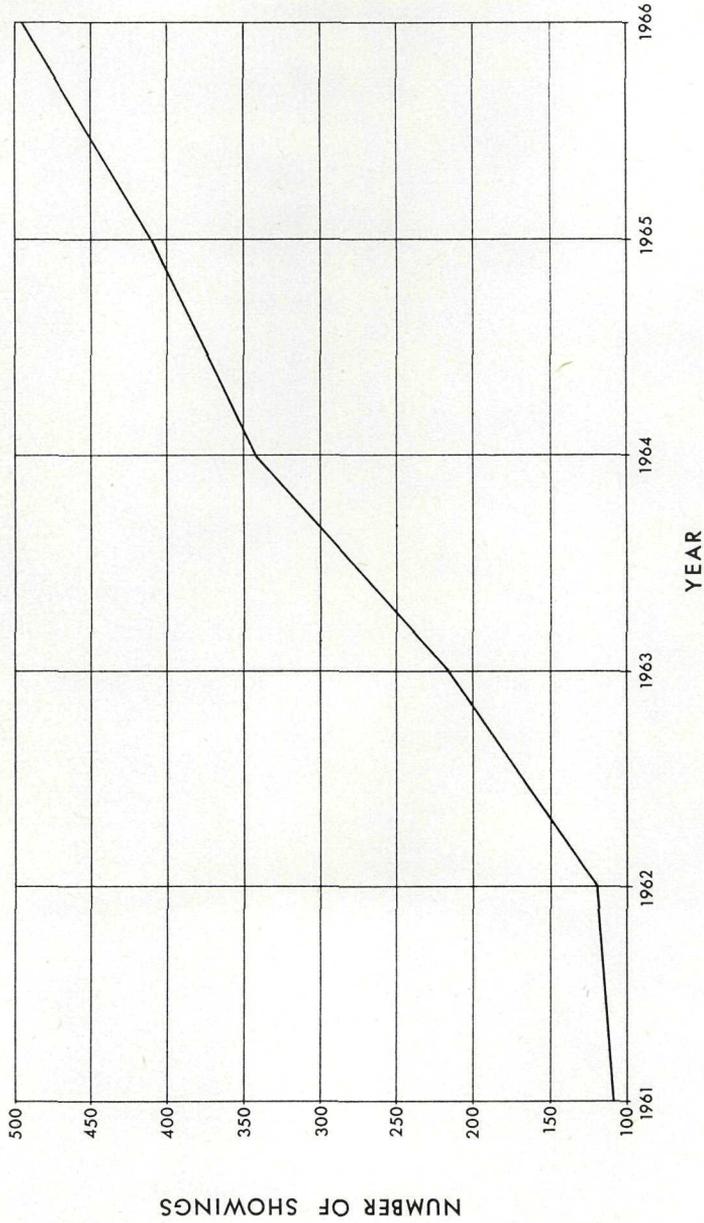
Further duties in the general operations of the Branch were the dispatching of motion-picture films, the total of which was 2,044 showings for an audience total

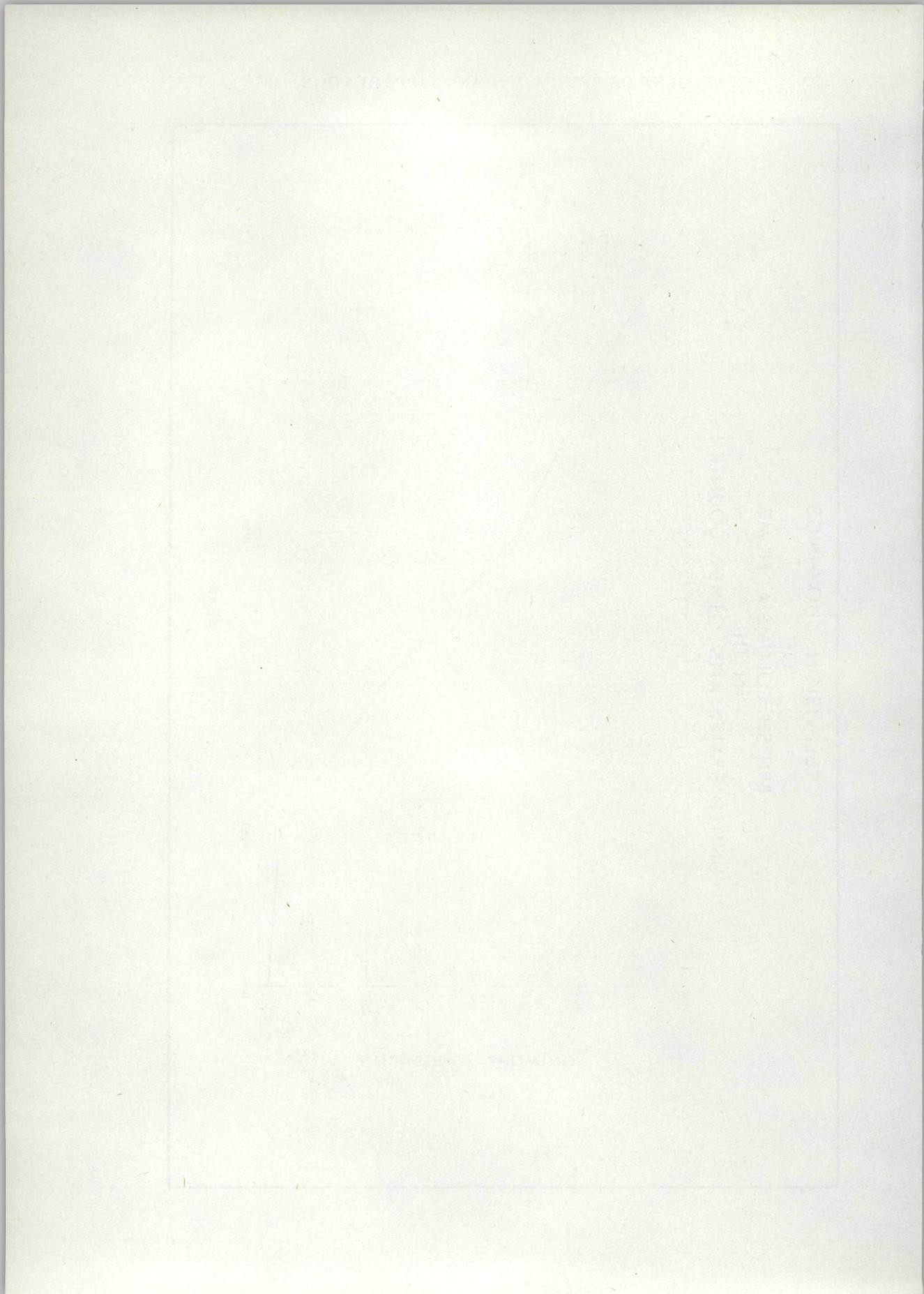
of 171,460 persons, up to the end of August. At that time the library was closed for a complete overhaul of the Branch films, and a number of outdated and worn films were withdrawn. All acceptable prints were then transferred to the Vancouver library and renumbered to meet the coding system of the Audio-Visual Branch. This transfer operation was completed by our staff.

Approximately 3,000 new colour negatives and prints were numbered, captioned, and filed during the year, and 3,219 colour negatives were selected from the files in answer to requests for colour material for brochures, displays, and other promotional ideas. It is interesting to note that a good percentage of these were for use outside of Canada.

PHOTOGRAPHIC BRANCH
DIRECT FILM SCREENINGS

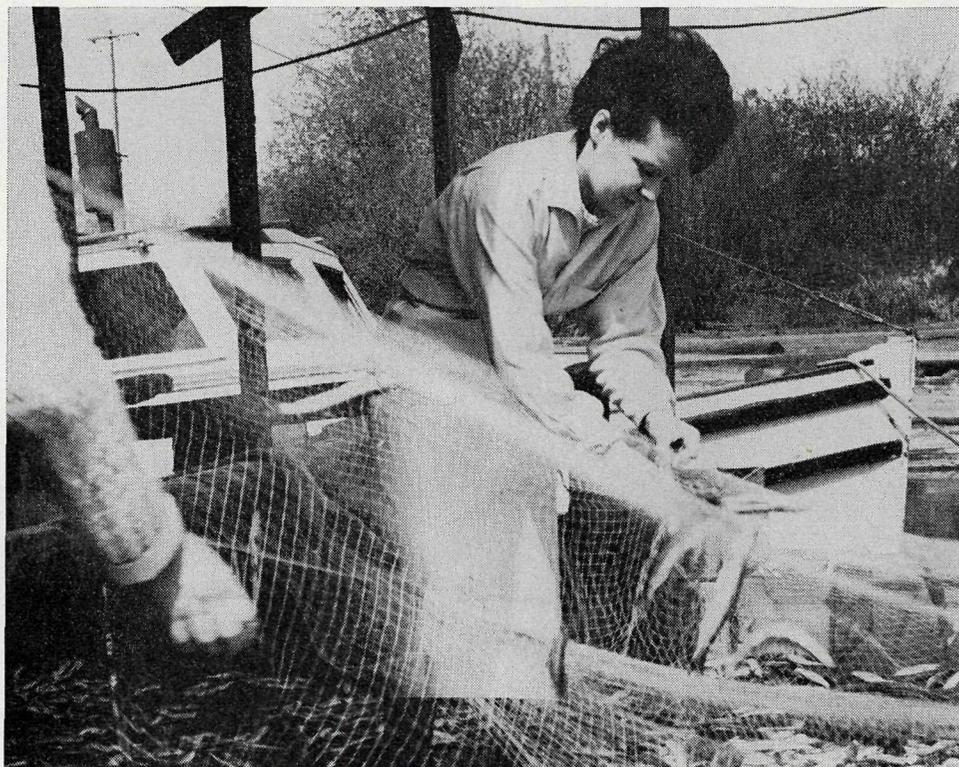
TELEVISION SHOWINGS
OF
BRITISH COLUMBIA FILMS
IN THE
UNITED STATES AND OTHER COUNTRIES





**COMMERCIAL
FISHERIES
BRANCH**





Picking eulachon net, Lower Fraser River.



Shucking oysters, Sooke.

COMMERCIAL FISHERIES BRANCH

R. G. McMYNN, DIRECTOR

GENERAL

During 1966 the Commercial Fisheries Branch implemented regulations which committed the Branch to considerable activity in the oyster and aquatic-plant industries. Due to the public health aspects involved with the harvesting of wild oysters, as well as growing public concern over the alleged commercial over-harvesting of oysters from certain readily accessible areas, Regulations Concerning the Taking of Oysters from Vacant Crown Foreshore were enacted. These regulations resulted from recommendations made by an interdepartmental committee (Department of Lands, Forests, and Water Resources, Department of Recreation and Conservation, and Department of Health Services and Hospital Insurance) and supported by the oyster industry. In essence the regulations control where oysters may or may not be harvested.

Several companies expressing interest in the establishment of an aquatic-plant industry in British Columbia were assisted in their long-term plans by the enactment of regulations which provide for long-term leases of desirable aquatic-plant areas. These leases provide for an assured supply of plants to the commercial aquatic-plant harvester but, at the same time, do not restrict the use of those areas for other activities.

Significant advances were made in 1966 in the important field of improving liaison and communication between the many Federal and Provincial agencies whose activities interact with commercial fishery interests.

<i>Wholesale Value of Fish and Fish Products</i>		<i>Number of Licensed Boats</i>	
1961.....	\$77,886,000	1960.....	8,623
1962.....	94,673,000	1961.....	8,856
1963.....	76,000,000	1962.....	9,143
1964.....	92,117,000	1963.....	9,745
1965.....	84,666,000	1964.....	9,343

<i>Number of Licensed Fishermen</i>		<i>Value of Gear</i>	
1959.....	14,463	1961.....	\$8,946,000
1960.....	14,191	1962.....	9,946,000
1961.....	15,660	1963.....	10,096,000
1962.....	15,060	1964.....	10,711,000
1963.....	15,370	1965.....	11,281,000

The canned-salmon pack for 1966 was 1,816,503 cases, 903,707 more than the 1965 pack of 912,796 cases. This was the best pack since 1962, and could possibly prove to be the largest since 1958 when the final revision of pack figures is made. This year's total includes 23,057 cases of sockeye, 65 cases of chinook, 857 cases of coho, 8,334 cases of pinks, and 966 cases of chums packed from salmon imported from the United States.

The value of all fish and fish products reached \$115,000,000 on the wholesale market, considerably more than the previous record of \$98,000,000 set in 1958.

Salmon catches were well distributed by species and gear along the coast, and although no poundage records were broken, they have been above average for most species. The sockeye pack was the second best pack for this species since 1956, only exceeded by the pack of 1,074,305 cases in 1958. Fraser River sockeye averaged about three-quarters of a pound more than normal, running 6.9 pounds per fish at the peak of that run. The pink-salmon fishery in the north was exceptional and, except for 1962, was the largest even-year fishery since 1930. Chum-salmon landings improved considerably over 1965's abnormally low year, but landings were still far below average. Chinook-salmon landing total was far ahead of 1965.

BRITISH COLUMBIA SALMON-CANNING INDUSTRY

Twenty-three salmon canneries were licensed to operate in the Province by this Branch. The locations were as follows: Queen Charlotte Islands, 1; Skeena River and Prince Rupert, 7; Central Area, 3; Vancouver Island, 2; Fraser River and Lower Mainland, 10. This year saw two new canneries in operation—one at Port Hardy on Vancouver Island, the other at Shearwater near Bella Bella on the Mainland.

COMPARATIVE PACK BY SPECIES (48-POUND CASES)

	1965	1966
Sockeye.....	245,794	407,067
Chinook.....	18,886	14,548
Steelhead.....	843	2,478
Blueback.....	21,188	21,143
Coho.....	273,219	260,276
Pink.....	287,662	950,555
Chum.....	65,206	160,436

HERRING FISHERY

In 1966, during most of November, herring-fishermen were on strike, finally returning to work December 6th. Although the fishermen had demanded \$20.48 a ton, they finally voted to accept \$17.40, the same rate as last year. The fishermen, however, won an unpaid annual two-week holiday, extended health benefits, and a new system of weighing herring.

Last available reports for 1966 show herring-meal production of 16,036 tons and herring-oil production of 2,284,009 imperial gallons.

DOGFISH SUBSIDY

In order to help control the dogfish population, the Federal Government once again sponsored a marketing assistance programme, starting in late autumn of 1966. The Department of Fisheries is paying fish companies 11 cents per pound on the production of up to 225,000 pounds of skinned dogfish flaps. This production represents approximately 1,100 tons of whole dogfish.

The hope is that this programme will encourage new markets, which could possibly develop into an operation eventually sustaining a dogfish fishery without Government assistance.

During November, despite inclement weather in the Strait of Georgia, four companies in Vancouver and Victoria produced a total of 47,000 pounds of skinned dogfish flaps, equivalent to 235 tons of round dogfish. The fish was delivered by trawlers and long-liners as round fish or unskinned flaps.

HALIBUT FISHERY

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 regulations, the Pacific Coast is divided into a number of areas. The 1966 regulatory 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—Shumagin Islands to Atka Island, not including Bering Sea.

Area 3C—West of Atka Island, not including Bering Sea.

Area 4A—The edge between Unimak Pass and the Pribilof Islands in Bering Sea.

Area 4B—Fox Islands in the Bering Sea.

Area 4C—South of a line between Cape Sarichef and Cape Naravin.

Area 4D—West of 175° W. and the north-eastern flats in Bering Sea.

Area 4E—South-eastern flats in Bering Sea.

Halibuting opened in the Bering Sea on March 25th and off the British Columbia Coast on May 9th. The season started with good landings bringing near-record prices.

Landings by Canadian fishermen at British Columbia and United States ports totalled 31,461,000 pounds, valued at \$11,299,000 (as of October 29, 1966). Halibut-fishing in British Columbia coastal waters closed August 25th.

PACIFIC OYSTER BREEDING, 1966

PENDRELL SOUND

Despite favourable temperatures, breeding of the Pacific oyster in Pendrell Sound in 1966 was only moderately successful. Three separate spawnings were evident near the head of the sound during the period of study. The first brood of straight-hinged larvæ appeared during the second week in July, when temperatures ranged from 19° C. to 22.5° C. (average, 21.2° C.); counts of up to 53 per gallon were made on July 13th. However, by August 1st, when setting began, there were no more than 1.5 larvæ per gallon. Setting was virtually over by August 5th; strings put out after this date caught very few spat despite the fact that at least two more spawnings occurred in the area during the last week of July. On August 3rd counts of 33–123 straight-hinged larvæ per gallon were made, but by August 9th there were only 8 per gallon in this stage; umboned forms from these broods never rose above 1 per gallon. Yet temperatures at the 3-foot level remained above 20° C. during this period.

Commercial floating strings counted on August 13th yielded average counts of between 6 and 154 spat per shell with a mean of about 60 per shell. As setting was over by this time, this figure may be regarded as final.

The two companies operating in the sound put out considerable amounts of shore cultch, most of it too late for a catch; however, some of the earlier shells gave final counts of 13 per shell.

LADYSMITH HARBOUR

Spawning was good, particularly during the first week in August, and on August 10th very large numbers of umboned larvæ were taken in plankton tows. However,

over the weekend of August 13th and 14th bad weather caused a drastic reduction in temperature and a consequent drop in the number of larvæ. Large numbers of straight-hinged Pacific larvæ again appeared on August 22nd, but by September 9th the water was virtually devoid of oyster larvæ. Commercial floating cultch from the centre of the harbour gave final counts of 15 per shell.

CUSTOM CANNERIES

Three canneries designed to custom-can sport-caught salmon operated during 1965. They were located at Brentwood, Nanaimo, and Quadra Island. Production to the end of November, 1966, was 110,759 cans, compared to a total pack in 1965 of 35,000 cans.

REVIEW OF FISHERIES PRODUCTION, 1965

The total marketed value of the fisheries of British Columbia for 1965 amounted to \$84,700,000, which was \$7,400,000 less than in 1964. The main reason for this decrease in value was a canned-salmon pack of only 913,957 cases, nearly 350,000 cases lower than in 1964. Helping to offset this to some extent was a herring production of over 220,000 tons with a record market level of over \$11,700,000; as well as this, the wholesale value of British Columbia halibut at \$10,191,000 was more than \$2,000,000 above 1964.

As marketed, the principal species were salmon, with a value of \$52,071,000; herring, with a value of \$11,752,000; and halibut, with a value of \$10,191,000.

The landed value of the 1965 halibut catch was \$8,699,000, as compared to \$6,270,000 in 1964.

In 1965 the marketed value of shellfish amounted to \$2,744,000. The value of the clam production was \$296,000; oyster production, \$708,000; crab production, \$1,144,000; and shrimp production, \$596,000.

GEAR AND EQUIPMENT

The 1965 inventory of fishing-gear included 10,007 salmon gillnets, 524 salmon purse-seines, 10 salmon drag-seines, 127 herring gillnets, 124 herring purse-seines, and 27 herring trawl-nets, with a total value of \$7,526,000. Wire, cotton, and nylon trolling-lines were valued at \$533,000.

SALMON-CANNERY OPERATIONS

The Commercial Fisheries Branch licensed 22 salmon canneries to operate in 1965, one more than in 1964. The operating canneries in 1965 were located as follows: Queen Charlotte Islands, 1; Skeena River, 7; Central Area, 2; Vancouver Island, 1; 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 1965, amounted to 913,957 cases, 341,361 cases less than the 1964 pack and the smallest since 1960. With a value of \$35,060,000, the 1965 pack was worth \$8,616,000 less than the previous year's figure.

SOCKEYE SALMON

The 1965 sockeye pack was 245,798 cases. The wholesale value of sockeye production decreased to \$12,800,000, compared to \$18,115,000 in 1964. Sockeye comprised 35 per cent of the value of the total canned pack.

PINK SALMON

The pink pack of 287,925 cases was valued at \$9,047,000. The wholesale value for all pink-salmon products was less than half the \$18,550,000 level of 1963 and lower, too, than 1964's \$12,553,000.

COHO SALMON

The wholesale value of all coho products established a new high at \$19,792,000, compared to last year's record of \$16,376,000. The canned pack totalled 295,284 cases, valued at \$11,700,000 or 59 per cent of the product value.

CHUM SALMON

The chum pack of 65,216 cases was the lowest since 1931. Total production of chum salmon was the lowest of any year on record. Owing to a coast-wide scarcity, the value of chums sank to \$2,300,000 from the previous year's total of \$7,200,000. The 1964 pack was 232,722 cases.

CHINOOK SALMON

The west coast of Vancouver Island was the coast's premier fishing area in 1965, with trollers landing 5,500,000 pounds more salmon than in the previous year. Chinook-salmon landings by trollers off the west coast of Vancouver Island totalled 4,300,000 pounds, a substantial increase from 1964 landings of 3,700,000 pounds. The canned pack of 18,891 cases in 1965 was worth \$510,661, compared to a pack of 9,127 cases worth \$224,146 in 1964.

STEELHEAD

The 1965 steelhead-trout pack amounted to 843 cases, 419 less than the 1964 pack of 1,262 cases. Although steelhead are not salmon, some are canned each year, principally those caught incidental to fishing other species.

OTHER CANNERIES

Shellfish Canneries.—In 1965, 10 shellfish canneries were licensed to operate in British Columbia and produced the following pack: Clams, 16,816 48-pound cases plus 209 5-pound cases; crabs, 9,826 48-pound cases plus 60 5-pound cases; abalone, 16 cases; shrimp, 387 5-pound cases plus 14,291½ pounds (pack not specified); oysters, 160 cases.

Tuna-fish Canneries.—Two of the three tuna-fish canneries licensed to operate in 1965 produced a pack of 77,827 cases of canned tuna.

Specialty Products.—Sundry processing plants produced the following: Canned smoked oysters, 329 cases; oyster stew, 2,674 cases; fish spreads, 27,862 cases; herring canned in tomato sauce, 311 cases; creamed salmon with peas, 16,513 cases of 12/15-ounce cans; smoked salmon, 213 cases (various weights); boneless white spring salmon, 24 10-pound cases; lingcod fish cakes, 40,000 pounds; smoked steelhead, 112 cases.

FISH-CURING

Fifteen smoke-houses processed the following: Herring (kippers, 49,425 pounds; bloaters, 8,389 pounds); cod, 534,099 pounds; salmon, 428,422 pounds; eels, 4,500 pounds; mackerel, 4,000 pounds; shad, 600 pounds; eulachons, 200 pounds; smelts, 172 pounds; flounders, 13 pounds; and sturgeon, 5 pounds.

BRITISH COLUMBIA

DRY-SALTED HERRING

In 1965, 36 green tons of herring worth \$1,080 were salted; of these, 28 tons, worth \$840, were packed.

PICKLED HERRING

Three plants put up the following: 22 50-pound barrels, 44 25-pound barrels, 1,200 14-ounce containers, 50 cases of 6/6-pound cans, 1,832 cases of 12/32-ounce jars, 4,111 cases of 12/16-ounce jars, 3,274 cases of 12/12-ounce jars, and 43 25-pound kits.

FROZEN HERRING BAIT

Three firms reported a total production of 204,205 pounds of frozen herring bait in 1965. Returns for this year are not complete as all bait firms did not report.

MILD-CURED SALMON

Five plants were licensed to operate in 1965 and produced 541 tierces with a total weight of 6,087 hundredweight. In 1964 four plants operated and produced 610 tierces, with a total weight of 5,020 hundredweight.

SALMON ROE

Nine firms reported the following production for 1965: 7,500 cartons of 24/3-ounce and 24/3/4-ounce glass jars plus 17,500 pounds used for salmon-roe caviar; 1,782 25-pound cases plus 80,470 pounds of salted salmon roe; 110,000 pounds processed for sport-fishing bait; and 81,842 pounds processed but no specific use given. In addition, 4,500 pounds of salmon milt were processed.

HALIBUT

The average price for all sizes of halibut for the 1965 season was 34 cents a pound, compared with 25 cents in 1964. This was the highest price paid since 1962, when fishermen received close to 32 cents per pound. Total halibut landings in British Columbia ports of 25,783,000 pounds were slightly higher than those in 1964, when 25,124,000 pounds were landed. In addition, 7,190,000 pounds were landed in Alaska and Washington ports. Wholesale value of halibut was \$10,191,000.

FISH OIL AND MEAL

The winter herring season began December 1st, after protracted negotiations when fishermen agreed upon a price of \$17.40 per ton compared with \$14.48 in 1964. Landings for the year amounted to 222,031 tons, worth \$6,232,000.

There were 10 herring-reduction plants licensed to operate in 1965, and these plants produced a total of 41,509 tons of meal and 43,442,000 pounds of oil. Total value of all herring products was \$11,752,000.

Fish-liver Reduction (Cod, Dogfish, Halibut).—Three plants were licensed in 1965; two of them operated, processing 78,748 pounds of fish livers and producing 291,626 million U.S.P. units of Vitamin A. In 1964 two plants processed 312,736 pounds of fish livers and produced 1,278,802 million U.S.P. units of Vitamin A.

Fish-offal Reduction.—During the 1965 season nine plants were licensed to operate and produced 694.25 tons of meal and 59,772 gallons of oil. In 1964 eight plants produced 1,292 tons of meal and 279,452 gallons of oil.

STATISTICAL TABLES

TABLE I.—LICENCES ISSUED AND REVENUE COLLECTED, 1962 TO 1966, INCLUSIVE

Licence	1962		1963		1964		1965		1966	
	Number	Revenue								
Salmon cannery.....	21	\$4,200	24	\$4,800	21	\$4,200	22	\$4,400	23	\$4,600.00
Herring cannery.....	---	---	---	---	1	100	---	---	---	---
Herring reduction.....	9	900	13	1,300	9	900	12	1,200	9	900.00
Tierced salmon.....	6	600	5	500	4	400	5	500	4	400.00
Fish cold storage.....	20	2,000	19	1,900	20	2,000	21	2,100	19	1,900.00
Fish-processing.....	21	21	38	38	45	45	54	54	59	59.00
Shellfish cannery.....	8	8	13	13	14	14	9	9	11	11.00
Tuna-fish cannery.....	2	2	4	4	3	3	3	3	3	3.00
Fish-offal reduction.....	9	9	9	9	8	8	9	9	9	9.00
Fish-liver reduction.....	3	3	3	3	3	3	3	3	3	3.00
Whale reduction.....	1	100	1	100	1	100	1	100	1	100.00
Herring dry-saltery.....	---	---	2	200	1	100	---	---	1	100.00
Fish-buyers.....	448	11,200	447	11,175	403	10,075	404	10,100	400	10,000.00
Pickled-herring plant.....	---	---	---	---	1	100	---	---	1	100.00
General receipts.....	---	---	---	---	3	60	5	72	10	363.70
Custom canneries.....	---	---	---	---	---	---	---	---	3	75.00
Aquatic-plant harvesting.....	---	---	---	---	---	---	---	---	26	260.00
Oyster-picking permits.....	---	---	---	---	---	---	---	---	19	190.00
Totals.....	548	\$19,043	578	\$20,042	537	\$18,108	551	\$18,625	601	\$19,073.70

TABLE II.—SPECIES AND VALUE OF FISH CAUGHT IN BRITISH COLUMBIA, 1961 TO 1965, INCLUSIVE

	1961	1962	1963	1964	1965
Salmon.....	\$57,314,000	\$69,763,000	\$48,960,000	\$63,103,000	\$52,071,000
Herring.....	8,207,000	8,492,000	11,695,000	11,561,000	11,752,000
Halibut.....	7,099,000	9,312,000	7,993,000	8,056,000	10,191,000
Crabs and shrimps.....	1,511,000	1,415,000	1,573,000	1,751,000	1,740,000
Lingcod.....	551,000	544,000	492,000	549,000	723,000
Grey cod.....	487,000	405,000	705,000	1,160,000	1,800,000
Oysters.....	480,000	608,000	781,000	647,000	708,000
Sole.....	552,000	584,000	643,000	662,000	661,000
Black cod.....	147,000	173,000	162,000	273,000	321,000
Clams.....	324,000	448,000	340,000	190,000	296,000
Livers and viscera.....	122,000	58,000	57,000	55,000	15,000
Miscellaneous.....	1,092,000	2,876,000	2,599,000	4,110,000	4,197,000
Totals.....	\$77,886,000	\$94,673,000	\$76,000,000	\$92,117,000	\$84,475,000

TABLE III.—STATEMENT SHOWING THE QUANTITY OF HERRING PRODUCTS PRODUCED IN BRITISH COLUMBIA, 1960 TO 1966, INCLUSIVE

Season	Canned	Dry-salted	Meal	Oil
	Cases	Tons	Tons	Gal.
1960/61.....	9,074	---	31,203	2,966,547
1961/62.....	19,102	---	40,746	4,751,082
1962/63.....	892	206.35	41,299	40,243,000 lb.
1963/64.....	---	562.3	53,271	50,037,000 lb.
1964/65.....	---	210.64	46,071	44,902,000 lb.
1965/66.....	---	28.00	41,509	43,442,000 lb.

TABLE IV.—STATEMENT SHOWING THE QUANTITY OF MEAL, OIL, AND VITAMIN A PRODUCED FROM SOURCES OTHER THAN HERRING, 1959 TO 1966, INCLUSIVE

Season	From Whales		Oil from Fish Livers	From Other Sources	
	Meal	Oil		Meal and Fertilizer	Oil
	Tons	Gal.	Units ¹	Tons	Gal.
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	127,580
1962/63	2,661	639,060	575,337	1,704	167,349
1963/64	3,060	707,596	938,135	1,464	403,309
1964/65	3,398	663,200	1,272,815	1,292	279,452
1965/66	2,931	591,703	291,626	694	59,772

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, 1961 TO 1965, INCLUSIVE, SHOWING AREAS WHERE CANNED

(48-pound cases.)

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

1961

Species	Area		Total
	District Nos. 1 and 3	District No. 2	
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

TABLE V.—BRITISH COLUMBIA SALMON PACK, 1961 TO 1965, INCLUSIVE,
SHOWING AREAS WHERE CANNED—*Continued*

1963

Species	Area		Total
	Districts Nos. 1 and 3	District No. 2	
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

1964

Sockeye	200,203	143,155½	343,358½
Red spring	1,823	777	2,600
Pink spring	953½	2,076½	3,030
White spring	1,906	1,591½	3,497½
Steelhead	438	824	1,262
Blueback	36,259		36,259
Coho	90,665	77,808½	168,473½
Pink	140,475½	323,631	464,106½
Chum	76,990	155,731½	232,721½
Totals	549,713	705,595½	1,255,308½

1965

Species	Area		Total
	Fraser Area and South Coast	North Coast	
Sockeye	165,095½	80,702	245,797½
Red spring	4,682	1,718	6,400
Pink spring	1,567½	3,003½	4,571
White spring	5,998	1,922½	7,920½
Steelhead	337½	506	843½
Blueback	19,522	1,778	21,300
Coho	172,748½	101,235	273,983½
Pink	121,543	166,382	287,925
Chum	17,161	48,054½	65,215½
Totals	508,655	405,301½	913,956½

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