

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, PROVINCIAL MUSEUM OF
NATURAL HISTORY AND ANTHROPOLOGY, AND
COMMERCIAL FISHERIES BRANCH

Year Ended December 31

1967



Printed by A. SUTTON, Printer to the Queen's Most Excellent Majesty
in right of the Province of British Columbia.
1968

VICTORIA, B.C., January 25, 1968.

*To Major-General the Honourable GEORGE RANDOLPH PEARKES,
V.C., C.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, 1967.

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

VICTORIA, B.C., January 23, 1968.

*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, 1967.

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

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COVER PHOTOGRAPH

Wildlife artist Clarence Tillenius, of Winnipeg, at work on the background of a diorama that will be part of the bighorn sheep exhibit in the new Provincial Museum.

ORGANIZATION
DEPARTMENT OF RECREATION AND CONSERVATION
Victoria, B.C.

Year Ending December 31, 1967

MINISTER OF RECREATION AND CONSERVATION
Hon. W.K. Kieran

Deputy Minister and Commissioner of Fisheries

D.B. Turner

Administrative Officer

B.J. Pauls

BRANCHES

FISH AND WILDLIFE DIRECTOR

G.I. Levy

FISH AND WILDLIFE DIRECTOR

J. Hatter

Asst. Director

D.J. Robinson

Enforcement Chief

C.E. Estlin

Research & Tech. Services

T.G. Northcote

Habitat Protection

I.L. Wither

Wildlife Management

H.J. Spalding

Conservation Officers:

Vernon, Kelowna, Penticton,

Armstrong, Princeton,

Revelstoke, Merritt, Salmon Arm,

Williams Lake, Alexie Creek,

Kamloops, Bella Coola.

Wildlife Management

R. Ritchey

H. Mitchell

Wildlife Management

J. Cartwright

Wildlife Management

L.G. Smith

Wildlife Tech.

H. Tydar

Wildlife Tech.

P. W. Martin

Wildlife Management

G. Stritter

Wildlife Management

R. Demarchi

Wildlife Management

D. Blood

Wildlife Tech.

J.P. Gibault

Wildlife Tech.

D. Sinclair

Wildlife Tech.

J.C. Lyons

Wildlife Management

R.W. Sinclair

Wildlife Tech.

M. Shandao

Conservation Officers:

Duncan, Alberni, Victoria, Campbell River, Comox, Courtenay,

Port McNeill, Port Hardy, Gold River, Invermere, Nelson.

COMMERCIAL FISHERIES DIRECTOR

R.G. Raym

Inspector of Fisheries

A.G. Karp

Supervisor

J. Kepp

Commercial Fisheries Director

G.I. Levy

Commercial Fisheries Director

J. Hatter

Asst. Director

D.J. Robinson

Enforcement Chief

C.E. Estlin

Research & Tech. Services

T.G. Northcote

Habitat Protection

I.L. Wither

Wildlife Management

H.J. Spalding

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D. Sinclair

Wildlife Tech.

J.C. Lyons

Wildlife Management

R.W. Sinclair

Wildlife Tech.

M. Shandao

Conservation Officers:

Duncan, Alberni, Victoria, Campbell River, Comox, Courtenay,

Port McNeill, Port Hardy, Gold River, Invermere, Nelson.

PROVINCIAL PARKS DIRECTOR

H.G. McWilliams

Assistant Director & Chef - Engineering Div.

C.J. Valey

Architectural & Engineering Designs

W.E. Roths

Water Systems Design & Special Engineering Projects

D.A. Shaw

Public Information & Education Office

J.B.L. Walter

Historic Parks & Sites Office

R. Lovrey

Park Use Planning Office

T.R. Broadland

Construction Section

C.E. Hammond

Landscaping Workshop Section

L.A. Shaw

Regional Supervisors

District Park Officers:

Kamloops - D.G. Pionover

Nelson - M.E. Goddard

Prince George - J.C. Lenan

Salt Spring - L.A. Shaw

Wildlife Management

C.E. Stenton

Enforcement

H.T. Butler

Wildlife Management

K. Rummik

Wildlife Management

G. Taylor

Wildlife Tech.

(Vancity)

Wildlife Management

H. Mitchell

Wildlife Management

R. Demarchi

Wildlife Tech.

G. Moore

Conservation Officers:

Victoria, Cranberry, Qualicum, Courtenay, Port Alberni, Tofino, Bamfield, Ucluelet, Powell River, Abbotsford, Lillooet, Pemberton, Squamish, Whistler, Sunshine Coast, Fort Langley, Fort St. John, Prince Rupert, Hazelton, Hazelton, Prince George, Kamloops, Salmon Arm, Revelstoke, Merritt, Salmon Arm, Williams Lake, Alexie Creek, Kamloops, Bella Coola.

Wildlife Management

R. Demarchi

Wildlife Management

D. Blood

Wildlife Tech.

J.C. Lyons

Wildlife Management

R.W. Sinclair

Wildlife Tech.

M. Shandao

Conservation Officers:

Duncan, Alberni, Victoria, Campbell River, Comox, Courtenay,

Port McNeill, Port Hardy, Gold River, Invermere, Nelson.

Report of the Department of Recreation and Conservation, 1967

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

INTRODUCTION

On April 1, 1967, a major change took place in the composition of the Department of Recreation and Conservation. The historic event was the creation of a new department of government, the Department of Travel Industry. Two important branches of the Department of Recreation and Conservation—the British Columbia Government Travel Bureau and the Photographic Branch—were formed into the new separate Department. The Honourable W. K. Kiernan holds the portfolios of both Departments, the old and the new.

Because of the tremendous growth of the tourist industry in British Columbia, at a rate on the average exceeding 10 per cent annually for the past five years, and because the magazine "Beautiful British Columbia" has had such unprecedented popular and successful growth and circulation that it is now a leading Canadian as well as British Columbia publication, the merging of the British Columbia Government Travel Bureau and the Photographic Branch into a detached department was not only warranted but inevitable. The fact that the Honourable W. K. Kiernan directs the policy for both Departments, however, indicates that the disassociation is mainly an administrative one designed for decentralization of senior authority and responsibilities, and for recognition of the fact that the travel industry, in dollar-earning, now ranks as British Columbia's third major business, following forestry and mining and leading agriculture and commercial fisheries. The separation, therefore, into two Departments must be regarded as mainly administrative and as recognition of major status having been reached in the tourist-promotion field of the Province as a whole. The association of the two Departments, in terms of common aims, purposes, and operations in the fields of recreation and conservation, remains intact and unchanged, and liaison remains powerful and mutual.

All members of the four remaining branches of the Department of Recreation and Conservation wish their colleagues in the new Department the best of success and strong continued growth in their productive efforts to establish British Columbia as a prime and major world vacation centre and playground.

In keeping with the need to keep the close association and harmony between all of the original six branches of the Department of Recreation and Conservation, arrangements have been made, and plans drawn which are presently under expedition, to house the two Departments under one roof. The former Liquor Control Board six-story stone warehouse, at the foot of Fort Street at Wharf Street, is partially reconstructed, and the administrative offices, the major travel parts of the new Department, the magazines "Beautiful British Columbia" and the "Wildlife Review," and the Commercial Fisheries Branch of the Department of Recreation and Conservation already occupy their new quarters. As renovation proceeds, the Provincial Parks Branch and the Fish and Wildlife Branch of the Department of Recreation and Conservation and the Photographic Branch of the Department of

Travel Industry will all be established at 1019 Wharf Street in what is to be known as the Dogwood Building.

The year 1967 was a busy one for the Department of Recreation and Conservation, in keeping with the population, work, and play growths of a young and vigorous Province. The highlights of Departmental activities and projects can be read in the pages immediately following. To single out events and accomplishments is invidious perhaps, but special mention can be made here of significant and noteworthy items: the high efficiency of the Accounts Section, under direction of Mr. G. L. Levy, Comptroller, which serves both the new and the old Departments and carries out the many and varied business operations related to the magazine "Beautiful British Columbia"; the gratifying accomplishments in the Kootenay regions of the Fish and Wildlife Branch in terms of the Meadow Creek spawning-channel to accommodate the spawning kokanee and the completion of the plan for Duck Lake to provide nearly 4,000 acres of nesting, resting, and feeding water and marsh areas for migratory waterfowl; the translation of the abstract to the real by the Provincial Parks Branch in the building and presentation to the public of historic Fort Steele near Cranbrook; the excellent field and workshop activities and projects in preparation for the opening of the nearly completed Provincial Museum Building in Victoria; and the earnest studies and application of the Commercial Fisheries Branch in the spheres of shellfish and aquatic plants. The Departmental highlights for 1967 in the pages following provide a swift and succinct account of other activities and accomplishments worthy of note and indicating the year's progress.

HIGHLIGHTS OF 1967

GENERAL ADMINISTRATION

PERSONNEL SECTION

The Personnel Section processed 36 requisitions to the Civil Service Commission for the purpose of obtaining new and replacement positions. This Section also processed 71 Civil Service requisitions for the Department of Travel Industry.

EXAMINATIONS

More than 200 applications were received from persons interested in becoming Conservation Officers, and 80 applicants were selected to write examinations.

MOVE OF OFFICES

The offices of the Deputy Minister, Public Information Officer, General Administration, and the "Beautiful British Columbia" magazine subscription services moved into new accommodation at 1019 Wharf Street.

FISH AND WILDLIFE BRANCH

SPAWNING-CHANNEL COMPLETED

The Meadow Creek spawning-channel was completed and put into operation. During the late summer and fall of 1967, 200,000 kokanee spawned in this 10,000-foot spawning-channel.

DUCK LAKE PLAN COMPLETED

This plan provides for 850 acres of nesting area for waterfowl and improved habitat on the remaining 3,100 acres of Duck Lake.

NUMBER OF RESIDENT HUNTERS INCREASED

Resident hunters increased from 132,780 to 143,003 in 1967, the largest increase in one year since 1962.

NEW MANAGEMENT AREAS

New management boundaries were established on the basis of wildlife populations, watersheds, and access. There are now 28 management areas. The increase of seven is due mainly to division of Northern British Columbia into smaller management units.

INTERIOR LAKES REOPENED

Sheridan Lake in the Cariboo and Niskonlith Lake near Kamloops were opened after treatment and stocking. Both produced good fishing during 1967.

PROVINCIAL PARKS BRANCH**HISTORIC PARKS**

The Fort Steele Historic Park was officially opened in June. The newly completed museum as well as other points of interest have proven to be major tourist attractions.

WINTER RECREATIONAL FACILITIES

A new cafeteria and paving projects in Mount Seymour Park together with a new chair-lift and other improvements at Gibson Pass area of Manning Park have greatly improved winter recreational facilities at these two parks.

RATHTRREVOR BEACH

Acquisition of further acreage this year will permit the development of a major campground and picnicking area at this park.

PARK USE

An increase of almost 1,000,000 visits gave a total of over 6,000,000, and set a record.

BRITISH COLUMBIA PROVINCIAL MUSEUM**ARCHÆOLOGICAL " DIG "**

A study of an old Indian village-site on Gabriola Island proved to be highly productive.

DISPLAY PROGRAMME

The first of a series of dioramas was installed in the new building and background painting was commenced.

ATTENDANCE

More than 270,000 persons visited the museum, an increase of over 25 per cent as compared with the previous year.

COMMERCIAL FISHERIES BRANCH**ABOVE AVERAGE VALUE**

The value of 1967 fish production was above average but significantly less than in 1966. Reduced herring, halibut, coho, and groundfish landings were partially offset by good catches of sockeye, pink, and chum.

AQUATIC PLANTS

Six prospective aquatic harvesting companies were in various stages of development in 1966. Their long-term leases are subject to annual review and (or) production clauses.

SHELLFISH

Oyster production was considerably less than in 1966, chiefly as a result of depletion of the wild crop of oysters originating from the heavy 1958 natural setting. A moderate natural set occurred in 1967, which will again increase production by 1970 or 1971.

INCREASED MOBILITY

Acquisition of the 28-foot patrol boat M.V. "Marten" increases both the mobility and efficiency of the Branch.

INTERNATIONAL MEETINGS

Participation in international fishery meetings was a 1967 highlight, with the Branch participating in the North Pacific Fisheries Commission meetings in Tokyo and the South-east Alaska salmon discussion in Seattle.

FEDERAL-PROVINCIAL CO-OPERATION

Two productive Federal-Provincial British Columbia Fishery Committee meetings provided an effective vehicle for increasing liaison and co-operation between the Federal Department of Fisheries and several Provincial agencies whose activities affect fisheries management.

GENERAL ADMINISTRATION



БАНКО
МОГАДИШО



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, including the Department of Travel Industry, 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 36 requisitions to the Civil Service Commission for the purpose of obtaining new and replacement positions for all branches of the Department. This section also processed 71 Civil Service requisitions for the Department of Travel Industry. The Personnel Officer sat in on many interviewing panels for the selection of these candidates.

During the month of September, 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, 80 were selected to write this examination.

This Department had one employee selected to participate in the three-year Executive Development Course. One employee in this Department was selected for the one-year Basic Public Administration Course.

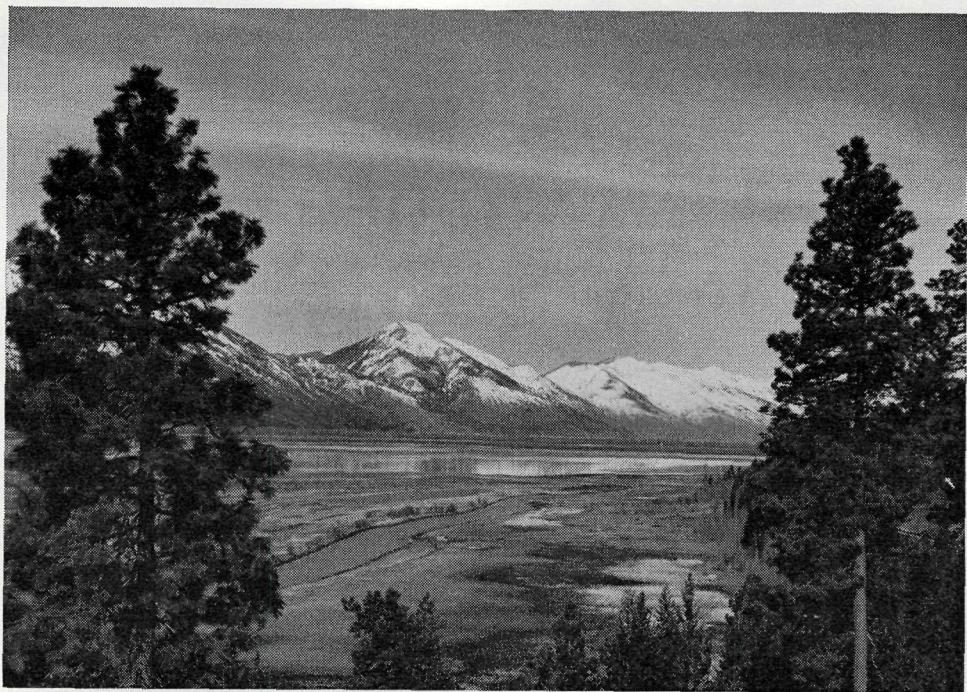
Regular meetings are held with employees of the Parks Branch and the Fish and Wildlife Branch for the purpose of reviewing personnel accidents and seeking methods of improving safety.

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

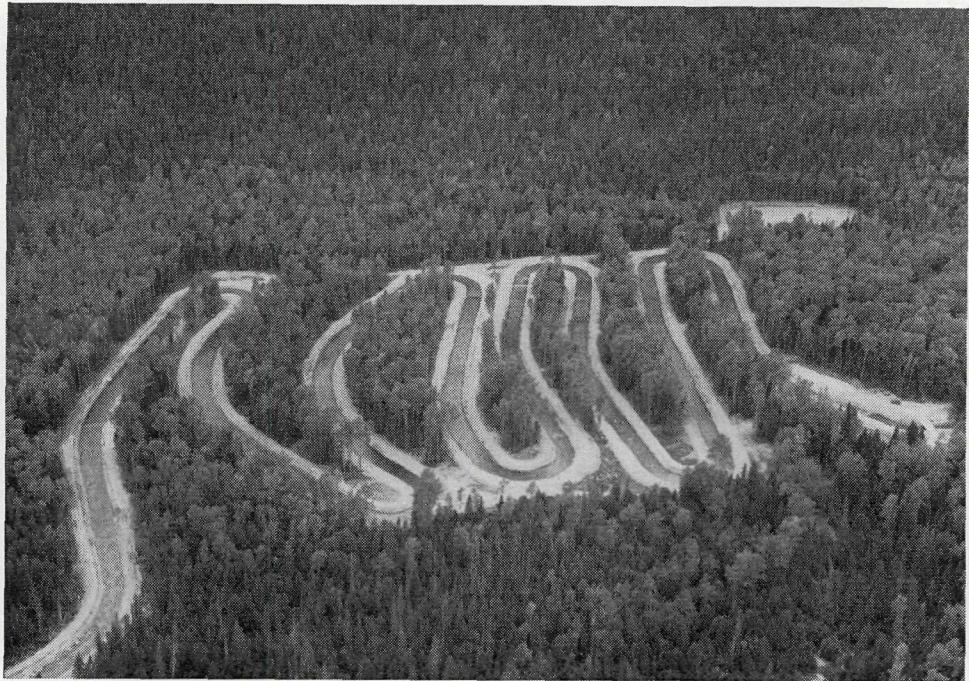
During the early part of 1967, the offices of the Deputy Minister, Public Information Officer, General Administration, and the "Beautiful British Columbia" magazine subscription office moved to a new location. This is the first step toward bringing together all branches of the Department of Recreation and Conservation and the Department of Travel Industry.

FISH and WILDLIFE BRANCH





The Duck Lake unit of the Creston Valley Wildlife Area, scheduled for habitat development early in 1968.



Aerial view of Meadow Creek spawning-channel for kokanee from Kootenay Lake.
Flow is from right to left. (B.C. Hydro photo.)

FISH AND WILDLIFE BRANCH

JAMES HATTER, DIRECTOR

ADMINISTRATION

The year 1967 marked a number of important advances in certain activities of the Fish and Wildlife Branch. Some of the more important endeavours are as follows:—

- (1) Meadow Creek kokanee spawning-channel was successfully completed and became operational.
- (2) The final engineering plans were completed for the development of the Duck Lake component of the Creston Valley Wildlife Management Area.
- (3) A waterfowl specialist was appointed to supervise planning and development of the Creston Valley Wildlife Management Area.
- (4) An interdepartmental committee was established to study integration of resource use in the East Kootenay region.
- (5) Sheridan Lake in the Cariboo was opened after treatment and restocking with rainbow trout.
- (6) Habitat protection activity associated with mines, pulp-mills, logging, and other resource uses was increased.
- (7) A new administrative region was established with headquarters at Kamloops.
- (8) A thorough review of the guiding industry was completed.

Habitat protection and management received more than usual attention in 1967. Both fisheries and wildlife personnel increased their activities in presentation of briefs, participation on committees, and direct field liaison with other resource agencies. One intensive habitat-management project was completed—namely, the Meadow Creek spawning-channel. Completion of detailed biological and engineering plans for waterfowl at Duck Lake and on the Lower Mainland were other undertakings of significance in this regard.

Senior Conservation Officer R. E. Allan and Conservation Officer F. H. Greenfield retired after long and diligent service to the Branch, which has benefited over the years from the dedicated service of such persons. Twenty-five-year service records were achieved by C. E. Estlin, L. G. Smith, W. H. Richmond, and R. J. Guay. The Branch is pleased to acknowledge the long service of these individuals.

Thanks are extended to other Provincial and Federal departments for their valued assistance and co-operation. The stresses placed on fish and wildlife habitat by accelerated development of other resources make this assistance increasingly valuable. The British Columbia Wildlife Federation extended support, as did the Royal Canadian Mounted Police, who assisted our field staff as usual. Such co-operation is gratefully acknowledged. The British Columbia Hydro and Power Authority was a major contributor to the Meadow Creek spawning-channel and the Duck Lake waterfowl unit. Many other organizations, such as naturalists, guides, universities, and private citizens, gave assistance and support for conservation-based activities of the Branch. Their interest and assistance is gratefully acknowledged.

WILDLIFE MANAGEMENT

The rapid social and economic development of the Province in recent years and during 1967 continues to expose more of the wildlife resource to the influence of human activities. Rural settlement and development, industrial activities, Pro-

vincial and municipal development schemes, urban extension, and the growing participation in outdoor recreation are a few of the more obvious human activities that influence wildlife resources and our ability to use and enjoy these resources.

The continuation of this trend in 1967 has furthered the need for the kind of legislation, planning, and action that is capable of sustaining wildlife-resource capabilities and public opportunity to use the resource, along with the other aspects of Provincial development.

Wildlife resources have capabilities that can be exploited along with other resources of the environment, and the resources have limitations that cannot be ignored without consequence. In essence, the art of managing the resource involves the identification of these attributes and applying this knowledge in planning and effecting the social and economic development of the Province.

Much progress has been made in improving our ability to effect the use of wildlife resources in the Province. The increasing level of public participation in wildlife-based recreation and continued increases in wildlife harvest reflect the adequacy of legislation, policies, and methods pertaining to the use of the resource.

Of less note perhaps, but of more consequence, the aspect of wildlife management relating to the protection and integration of the resource in the development of the Province has understandably been slower to emerge. Wildlife is a product of the environment, and until management includes the protection and development of the environment, the production and use of wildlife resources will remain an accidental benefit—or loss—from other kinds of resource developments, and the capacity of the land to sustain many wildlife species and public hunting opportunity will continue to diminish.

The programme of wildlife management in the Province during 1967 sustained activities relating to the use of the resource, and became more active in the field of habitat evaluation and protection, and in supporting and assisting economic studies relating to the resource.

MANAGEMENT PROGRAMME

WILDLIFE POPULATION MANAGEMENT

The introductory section of this Annual Report refers to two major aspects of the management of wildlife resources in the Province—that relating to use of the resource, and that respecting the status of the resource itself. Management activities relating to the use of the resource include an annual assessment of game production, survival, and harvests.

Activities relating to the resource status include habitat evaluation, inventory, and action relating to the protection and development of wildlife habitat.

The major features of the management programme are outlined as follows:—

Game Counts

Annually repeated population composition, survival, and production counts provide a factual basis on which game seasons are determined. These counts include winter aerial counts and ground counts.

Winter aerial counts in the Province involved a total of 250 hours of flying, which yielded classified counts of 6,000 moose, 5,000 deer, and 1,700 elk. Pre-season production counts recorded 4,100 deer and 200 elk. Waterfowl production counts were conducted in all areas of the Province in co-operation with a programme operated by the Canadian Wildlife Service. Grouse production counts were conducted in the Central and Northern Interior of the Province.

Game Checks

Game check-stations were operated in numerous areas of the Province during the 1967 game season, and the Cache Creek check-station continued operation on a 24-hour basis throughout the season. Table II in the Statistical Supplement of this report gives a summary of some comparative results of this check. Elsewhere in the Province, 39 checking-stations operated at selected times during the fall months of 1967 and recorded 46,000 hunters, with a bag of 17,800 big-game animals and 30,000 birds.

Hunter Sample

The 1966/67 season hunter sample published this year is the 16th consecutive publication of this record of game harvests in the Province. The sample consisted of 73,899 questionnaires mailed to big-game hunters, 24,589 to bird-hunters, and, for the first time, 9,983 hunters were sampled regarding the hunting of cougar, wolves, and coyotes. Comparative hunter sample statistics are given in Tables III and IV in the Statistical Supplement to this report.

Regulations

Management area boundaries were redesigned in 1967 to provide a more effective basis for the administration and management of wildlife resources. Boundaries were generally designed to encompass natural ecological areas which contain particular wildlife populations, and which were distinctive in other terms, such as access, hunting opportunity, climate, and other attributes. A separate management area description and map was published during the year, to eliminate the need to annually duplicate this information in the game regulations. Seven new management areas were added to the Province, mainly as a result of further dividing the north half of the Province.

As a service to the hunting public and guides, tentative opening dates for male big-game animals were published early in the year. The tentative dates were later confirmed by the game regulations.

Black and grizzly bear seasons were changed to coincide with the calendar year, enabling more effective administration and assessment of fall and spring hunting of these species.

Small-game seasons were declared in the 1966/67 game regulations for the first time, due in part to altered status of certain fur-bearing species under the *Wildlife Act*. At present, raccoon, skunk, bobcat, fox, and wolverine are in the small-game category.

In general, game seasons for the 1966/67 season were little changed from those of recent years. A five-day antlerless moose season in Management Area 11 was allowed for the first time. A two-moose bag limit was initiated in Management Areas 21 and 28, the latter to allow increased harvests in the vicinity of the Peace River reservoir.

Extensive and prolonged forest closures occurred in the Province during 1967, an event which may have reduced hunting success in various areas of the Province. Forest closures can have a serious effect on hunting opportunity, and on the resulting economic benefits from wildlife resources.

Wildlife Habitat Management

Control of wildlife habitat on Crown land is vested by legislation in the Lands Branch, and numerous submissions respecting the protection of habitat from alienation and from other inimical dispositions were made during the year. A number of reserves for habitat protection were requested, and the establishment of a 10,000-

acre reserve on the Beatton River for wildlife management and live-stock grazing represented a precedent in purpose.

Liaison with the Forest Service and the Grazing Division respecting access to wildlife, and protection of habitat from damaging use, was conducted on numerous occasions during the year.

Habitat-development activities included a biological and engineering study of the Duck Lake unit in the Creston Valley Wildlife Management Area, completing feasibility and cost appraisals for the development of this unit to mitigate wetland habitat losses resulting from the Duncan Dam development. This project was conducted in co-operation with the Canadian Wildlife Service and the British Columbia Hydro and Power Authority.

Negotiations with Ducks Unlimited for wetland developments in the Province were conducted for the first time in 1967, and plans have been formulated for the development of a marsh area on the Serpentine River in the Lower Mainland by Ducks Unlimited. Preliminary arrangements for several other wetland developments by Ducks Unlimited were commenced.

The ARDA Canada land inventory of ungulate capabilities in the Province operated on schedule in 1967, mapping capabilities for Vancouver Island and the Chilcotin regions. This programme in the Province is well advanced, and will provide a wealth of technical information on which wildlife-resource management can be based.

A land-acquisition budget was initiated in 1967 for the purpose of purchasing land for wildlife management.

REGIONAL ACTIVITIES

Prince George Region

Familiarization with the region and its wildlife populations continued throughout 1967. During the winter months an extensive aerial inventory of big-game animals was conducted over Northern British Columbia, yielding population data on Stone sheep, wolves, caribou, and moose.

Cariboo-Coast Region

Waterfowl population studies, California sheep trapping and transplanting operations, and evaluation of waterfowl ageing techniques were major activities during 1967.

Kamloops Region

Work on the Wells Gray Park experimental burn was continued. To date 600 acres have been burned, and moose are using these areas, which are producing three times the forage of surrounding unburned areas. A deer-tagging project was continued during 1967, and range boundaries and migration patterns are emerging. Waterfowl population studies were conducted during summer months.

Okanagan Region

A detailed geographic and botanical description of all the major winter ranges was commenced. This will be a major component of a long-range plan for deer management in the Okanagan region. Policies and practices related to habitat protection and developments are considered in this plan.

Kootenay Region

A study of whitetail deer food habits, based on rumen samples, showed a winter preference for evergreen browse. A wildlife capability inventory of 250,000 acres

of private lands in the East Kootenay was completed, as was an aerial survey of one of the major Canada geese producing areas in the Province, the Columbia marshes.

Lower Mainland

In addition to routine management activities, a comprehensive report on the status of waterfowl reserves was prepared. The report will serve as the basis for waterfowl habitat development in the region. A deer-tagging programme was commenced on the international deer herd in the Skagit drainage to determine herd size and migration patterns, and to provide a basis for appraising the effect of water storage on winter deer populations.

Vancouver Island

Management activities were again directed primarily at deer. In addition, surveys were conducted into possible release sites for the reintroduction of the sea otter (*Enhydra lutris*) to the Province. The annual Peale's falcon harvest was again closely supervised, in conjunction with an inventory of the Peale's falcon nesting population.

RESEARCH

Research attention was focused upon the range ecology and population dynamics of the bighorn sheep in the Rocky Mountain Trench. In addition, studies on blacktail deer reproduction, the effect of hunting and forage succession on deer populations, and the ecology of bighorn sheep ranges in the Ashnola were conducted.

Rocky Mountain Bighorn Sheep

Investigations included the determination that the disease complex had spread to the last major low-elevation winter range and was limited to those animals utilizing these ranges. To date 56 sheep have been trapped for disease investigations and marking for further studies of distribution movements and behaviour. Range condition assessments continued with the measurement of forage production and utilization. Fertilizer and reseeding trials were initiated to provide information on improvement possibilities of specific winter ranges and to assess optimum productivity under sound range management.

Parasite and Disease Studies of Captive Bighorn Sheep

It has been demonstrated that a high-quality diet has obviated pathological symptoms of bronchial pneumonia and parasitism. Although several species of parasite, including the lungworm, are still present, the two ewes and the lamb held in captivity for this study are in excellent condition.

The Ecology of Land Snails-Lungworm Infections of Rocky Mountain Bighorn Sheep

To test the hypothesis and implication of terrestrial land snails as intermediate lungworm hosts in the disease complex, a study was initiated to determine the species of snails present, their distribution and degree of infection. To date no infected snails have been found, indicating that either the snails are not obligatory as important vectors of the lungworms or that ecologic conditions have not resulted in a significant infestation of the snails since the sheep die-off.

The Effect of Hunting and Forest Succession upon Deer Populations

Studies of the effect of hunting and forest succession on the structure and dynamics of the Northwest Bay deer herd have been continued in 1967. These studies demonstrate that hunter harvests have had less effect on the deer population than has the progressive decrease of quality habitat through advancing forest succession.

The Ecology of the Ashnola Bighorn Sheep Ranges

This study is concerned primarily with the edaphic and climatic factors limiting the productivity of certain ranges in the Ashnola area. The study has been expanded to include adjacent grasslands in the Similkameen drainage and broadened to include a study of the water budget of these dry-land ranges.

Parasites and Diseases of Wildlife

Although emphasis in this section has been placed upon the specimens obtained from Rocky Mountain sheep, other specimens from a variety of wildlife species have been received and examined.

The Reproductive Biology of Female Blacktail Deer

This study is designed to assess age specific reproduction of deer population on Vancouver Island. The histological examination of 452 deer reproductive tracts showed the peak reproductive rates reached at the age of 2½ years.

FUR-MANAGEMENT

Promotion of the wild-fur product abroad was continued this year with an exhibit of selected British Columbia pelts at the Frankfurt Fur Fair. Fur management included active promotion of the humane animal trap amongst Provincial trappers, liaison with Federal authorities in the instruction of Indian trappers in the use of this trap, and revision of the registered trap-line regulations, aimed at increasing trap-line use in areas where this is desirable. Effort was also aimed at educating trappers to produce higher-quality furs, which is a major factor in the value of the wild-fur catch in the Province. Comparative fur yields are tabled in the Statistical Supplement.

SPECIAL INVESTIGATIONS*Pesticide Studies*

A continuing study of the occurrence of pesticide residue in wildlife was continued during 1967.

The use of pesticides for the control of insects and weeds is associated with side effects which can be harmful to wildlife. Harmful side effects can be placed in three categories—(1) mortality of wildlife due to the toxic properties of pesticides, (2) damage to habitat, and (3) accumulation of pesticide residues in the tissues of edible species.

Mitigation of side effects is achieved through co-operation with pesticide-users to see that proper precautions are exercised. Co-operation and co-ordination with users and other interested parties takes place in committees such as the Pest Control Committee of the British Columbia Loggers' Association and the interdepartmental Safe Use of Pesticides in Agriculture Committee.

Evidence of pesticide pollutions and evaluation of their seriousness are obtained by monitoring wildlife populations for pesticide content. A total of 71 specimens was submitted for analysis in 1967, of which 54 showed evidence of some pesticide contamination. Analyses were performed at the Department of Agriculture pesticides laboratory.

MEETINGS

Conferences attended and participated in by Wildlife Management personnel included those of the American Wildlife Society, the North-west Section of the Wildlife Society, the American Society for Range Management, the North-west Section

of the Range Management Society, the American Association for Conservation Information, the British Columbia Natural Resources Conference, the Canadian Society of Wildlife and Fisheries Biologists, the British Columbia Wildlife Federation, and a North American symposium on moose. Numerous professional and private association and club meetings within the Province were attended by headquarters and regional staff during the year.

PERSONNEL

Mr. Dwight Moore, a waterfowl biologist, was appointed under a contract with the Fish and Wildlife Branch and the Canadian Wildlife Service to supervise development of the Creston Valley Wildlife Area.

Messrs. D. Low and J. Bone were employed as technicians at Kamloops and Penticton respectively.

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FISHERIES MANAGEMENT

The pursuit of game fish has become a year-round activity in most regions of British Columbia as the popularity of ice fishing in Interior areas has recently grown to rival the traditional winter steelhead fishery of Coastal areas. Eastern brook trout lakes in the northern and Cariboo Districts, rainbow trout in the Kamloops-Okanagan area, and cutthroat trout in several Kootenay District lakes have yielded excellent catches during the winter months to predominantly family groups of anglers. The advent of year-round angling has increased the problem of proper management of the fisheries in many instances as the total harvest must be spread over a greater time to a larger group of anglers. As the productive capacity of most water bodies cannot be increased, more fish must be introduced through hatchery plantings or individual catches must be reduced to provide angling for all. Future management of the most popular winter fisheries will likely be based on a combination of these two methods.

Open-water fishing during the winter months for mountain whitefish and burbot or ling continue to provide considerable recreation in the East Kootenay. These fisheries attract large numbers of anglers from Alberta as well as many local residents.

MANAGEMENT ACTIVITIES

Sheridan Lake in the Cariboo District was opened to angling on May 20, 1967, after a five-year closure for treatment and removal of coarse-fish populations. Excellent fishing for rainbow trout continued from opening day until late fall, and a fishery for eastern brook trout is anticipated during the winter months when rainbow trout activity is at a minimum.

Steelhead harvest questionnaires were mailed to 19,538 licensed steelheaders during the latter part of March. Of these, 1,130 were to non-resident alien anglers, while the remaining 18,408 licensees were residents of British Columbia or other parts of Canada. Approximately 50 per cent of the anglers contacted completed and returned the questionnaire. Of those contacted, 2,604 (27 per cent) did not fish for steelhead, and of the 7,112 who did, 2,906 (41 per cent) caught one or more steelhead while 4,206 (59 per cent) were unsuccessful.

Catch information from many of the northern and central district lakes and streams was again collected at the Cache Creek checking-station during the fall months. This station has been in operation since 1949, and useful information on trends in angler use and catch success on various bodies of water has been obtained. This year a new punch-card recording system was introduced to facilitate collection of information from the angler and enable more rapid sorting and tabulation of the data.

An intensive study of the steelhead fisheries of the Morice, Kispiox, and Copper Rivers in Northern British Columbia was begun in September. Stomach samples are being collected to learn more of the feeding habits of steelhead and to provide a better basis for regulations regarding the use of various types of lures and natural bait.

A casualty of the long hot summer was Nimpo Lake, one of the most productive lakes in the Cariboo District, which suffered a severe summer kill in early September. Weeks of hot, windless, sunny weather resulted in abnormally high water temperatures and an excessive bloom of algae, which eventually caused heavy mortalities of all species of fish. Rainbow trout were particularly susceptible, and the usual excellent fall fishery for this species did not develop. A substantial planting of hatchery-reared fish is planned to help bolster the natural recruitment to the lake.

An intensive investigation of the Kootenay Lake sport fishery was undertaken to determine catch success and total fish production, as well as to provide information necessary to determine a method of finding the actual economic value of the sport fishery. A large creel-census crew used aircraft, fast boats, and shore interviews to collect a variety of information from anglers in the West Arm as well as the main body of the lake. As a result of the information obtained, the creel-census method has been altered to provide better and more complete information on the fishery with little increase in effort.

In co-operation with the Canada Department of Fisheries, studies on steelhead migration patterns and angler success were continued at the Big Qualicum River on Vancouver Island. Results during the past year were remarkably similar to those of the previous two years and indicate that anglers are able to take only about 20 per cent of the steelhead in this river, regardless of the relative size of the run. The fence count of steelhead entering the river increased from 405 in 1965/66 to 611 in 1966/67, but subsequent catches were 20.7 and 19.5 per cent of the respec-

tive totals. Work on the steelhead production of this river will continue, with emphasis on total egg deposition, fry survival, and smolt production.

The extensive programme of investigation into the physical and biological characteristics of Kootenay Lake and its sport fisheries was continued during 1967 with funds provided by the British Columbia Hydro and Power Authority. The purpose of this programme, now in its second full year, is to obtain information on the effects of the changed water-flow regime in Duncan River upon the physical characteristics of Kootenay Lake and upon the extensive and valuable sport fisheries of the lake. Effort during the year was concentrated on gaining a maximum of field data; however, a study of macrozooplankton was concluded and published.

HABITAT PROTECTION

Habitat protection involves alert response to all forms of activity in the Province which can result in reduction or impairment of habitat for fish in our streams and lakes. The work largely involves providing advice based on field studies, whereby industrial or commercial activities in or near fresh water can be modified so as to minimize damage to sport-fish populations. Although effort in this field tends to show few tangible results, the preservation of habitat is the most important phase of fisheries work in the current period of rapid industrial expansion.

Investigation and mitigation of the effects of several industrial developments and flood-control proposals on sport fish and their habitat have been two of the prime objectives of the Fisheries Management Division during the year.

The Fish and Wildlife Branch submitted a brief to the Comptroller of Water rights at a public hearing at Kamloops held to consider a water-use application by Brenda Mines Limited to withdraw water from Pennask Lake for ore-milling purposes. The hearing was held to consider this water-use proposal in view of its possible conflict with agricultural, other industrial, and recreational interests. Although the Fisheries Management Division had been aware of the water-use proposal for some months and had been dealing with the company to prevent fish losses, the Branch appeared at the hearing to apprise participants of the value of the Pennask Lake sport fishery and the manner in which the fishery might be preserved.

Fisheries values are high in the drainage system. Pennask Lake provides good fishing for rainbow trout throughout the ice-free period of the year. About 50,000 to 60,000 trout are taken in the lake annually by anglers. In addition, the inlet and outlet streams (Pennask and Spahomin Creeks) provide 50 per cent of the rainbow trout eggs taken for fish-culture operations throughout British Columbia. Spawning fish from these streams have produced between two and five million eggs each year since 1929.

Fisheries problems which were foreseen in this application for water rights were that withdrawal of water for ore-milling could result in greater than normal annual fluctuations in lake-level, and that the low dam required at the outlet of the lake would prevent the return to Pennask Lake of small fish which had been spawned and reared in Spahomin Creek (the outlet stream). As a result of opposition by agricultural as well as fisheries interests, the application for water by Brenda Mines was refused, and the company has since found alternative sources of water.

For the first time, the Branch, working through the Pollution Control Branch, has been the sole fishery agency responsible for setting water-quality criteria for protection of sport fish at a pulp-mill site. These criteria were required for issuance of a pollution-control permit for disposal of pulp-mill effluent by Crestbrook Forest Products to Kootenay River at Skookumchuck. The river contains populations of rainbow and cutthroat trout and mountain whitefish. As little is known of the re-

sponses of whitefish to pulp-mill effluents, bioassays and behavioural studies will continue to determine if more stringent regulation of waste discharges than those presently proposed are required.

At a public hearing called by the Pollution Control Board to hear the views of persons and organizations on the desirable standards of water quality to be maintained in the Lower Fraser River, the need for maintenance of water of adequate quality to support healthy fish populations in the main stem and tributaries of the river was outlined. The life histories and habitat requirements of the principal sport fish in the system were described. The brief concluded with recommendations that dissolved oxygen in the main stem of the river should not drop below 6 p.p.m., that all industrial wastes be treated to reduce toxic materials to minimum practicable levels, and that bioassay techniques be used to determine the maximum allowable concentrations of toxic materials in waste discharges.

Several applications for permits to explore for and develop coal deposits in the East Kootenay District have been referred to this Branch. These applications cover 127 square miles of sparsely populated land and water, supporting populations of sport fish such as cutthroat trout, Dolly Varden char, and mountain whitefish, as well as big-game animals such as elk, moose, and bear. Areas involved in these applications, their wildlife populations, the harmful and possible beneficial effects of the coal-mining industry, and the methods employed elsewhere to minimize damage to animal populations are presently being studied. Some possible adverse effects to fish and game populations uncovered to date include water pollution from dust from stockpiles, sludge from washing plants, and phenols from coking operations. Fish habitat may be destroyed by operation of heavy equipment in and near streams, while critical game winter ranges may be reduced or destroyed in the same manner. Effort will now be directed to the placing of protective clauses for wildlife and their habitat in the leases.

A field study and report have been completed of the effects on fish and recreation of a proposal to effect complete flood control on Cowichan and Koksilah Rivers near Duncan by channelling and dyking. These rivers flood over their banks in some winters in areas downstream from the Trans-Canada Highway and in the Village of Lake Cowichan.

The Cowichan River is probably the most important recreational fishing-stream on Vancouver Island. An extensive and desirable fishery exists for anadromous steelhead and cutthroat trout, as well as resident cutthroat, rainbow, and brown trout. Salmon raised in the river contribute to an extensive sport fishery in Cowichan Bay and to the commercial fishery elsewhere. The river is also used for swimming and picnicking.

Studies in British Columbia and Montana show that fish populations are reduced by upward of 33 per cent in channelled sections of streams. While fish populations would not be totally lost as a result of the proposed channelization of the Cowichan River, they would be reduced significantly. Discussions are being held in an attempt to prevent losses to the fishery if the flood-control scheme is undertaken.

Other flood- and erosion-control proposals have been studied at several sites in the Province. The streams involved in these schemes are Kitsksis Creek at Port Alberni, the Nicomekl and Serpentine Rivers in the Lower Mainland, McLellan, Gifford, Willbrand, and Clayburn Creeks near Matsqui, and Coldwater and Nicola Rivers near Merritt. Sport fish inhabit all these streams, and recommendations for their protection have been submitted to the agency responsible for design of the flood-control proposal in each instance. These recommendations include restriction of channelling activity, use of dykes set back from stream channels, and installation of fish-passage facilities at man-made obstructions.

An agreement has been reached with the Lands Branch of the Department of Lands, Forests, and Water Resources whereby the Fish and Wildlife Branch will receive notice of applications to remove gravel from submerged Crown lands. This arrangement will allow the Branch the opportunity of restricting removal schemes which might adversely affect fisheries values. A similar scheme for removal of gravel under private tenure is not presently possible as in these cases an application to the Lands Branch is not required.

HABITAT IMPROVEMENT

A spawning-channel for Kootenay Lake kokanee was completed in Meadow Creek, a tributary of Duncan River. The purpose of this channel is to provide additional spawning-grounds to offset those lost as a result of the construction of Duncan Dam. The channel, which is 11,000 feet long and 30 feet wide, providing 35,000 square yards of additional spawning area, was constructed by the British Columbia Hydro and Power Authority with the Fisheries Division supplying design criteria and construction supervision. During September and October a total of 200,000 kokanee spawned in the channel and deposited approximately 25,000,000 eggs. Although fry production from this facility remains to be assessed in 1968, it is expected that over-winter survival of eggs in the gravel will be much higher than in the natural stream-beds of the Duncan River system.

Technical advice was provided to a local community organization for the diversion of water into Chain Lake, Princeton area, for the improvement of water quality and sport fishing.

During the course of the year, preliminary reconnaissance surveys were made of a large number of possible sites for stream-improvement work. Of these, at least three will be carried forward into the construction phase during 1968.

Follow-up studies in connection with the removal in 1965 of a natural obstruction to steelhead migration in the Coquihalla River has shown that both winter-run and summer-run fish passed the former obstruction in good numbers during 1967, and it now appears hopeful that these populations will be increased.

TROUT HATCHERIES

The Fish and Wildlife Branch administers the fish-culture programme for recreational fishing in the Province and operates three year-round trout hatcheries and various supporting egg-collecting stations to produce fish for this programme. Species raised in 1967 included cutthroat (coastal and Yellowstone), eastern brook, kokanee, lake trout, and rainbow. The permanent hatcheries are located at Abbotsford, Summerland, and Wardner (south-east of Cranbrook); the egg-collecting sites are in the Okanagan, Kamloops, and East Kootenay regions. Hatcheries are staffed by 13 permanent and six seasonal men.

Egg Collections

In 1967 cutthroat, kokanee, and rainbow eggs were collected. Cutthroat were taken at Kiakho Lake near Cranbrook, kokanee at Eagle River near Craigellachie, and rainbow at Beaver Lake (Kelowna), Niskonlith Lake (Chase), Pennask Lake (Peachland), Premier Lake (East Kootenay), and Salmon Lake (Falkland). At Pennask Lake the worst flood since 1948 allowed most of the spawners to escape upstream past the trap, and only about 30 per cent of the anticipated egg collection was realized. Flash floods at Beaver, Niskonlith, and Salmon Lakes also resulted in reduced collections.

To improve egg-collecting capacity in 1968, various additional facilities were constructed. Since good runs of kokanee are anticipated in the Eagle River in future years, a permanent fence was built on this stream. Rainbow spawner traps were also installed at Tawel Lake (Little Fort), Tunkwa Lake (Savona), and at Premier Lake (East Kootenay) during the autumn. Facilities were also extensively improved at Beaver Lake.

Production and Liberations

Despite the kokanee and rainbow egg shortage, production in 1967 was increased to 48,000 pounds from approximately 30,000 pounds in 1966. Given the required number of eggs in 1968, this upward trend will continue to the limit imposed by current hatchery facilities.

Lake plantings were down in number slightly to 6,589,000 (6,780,000 in 1966), but the weight of fish planted increased from 24,000 pounds in 1966 to 48,000 pounds in 1967, reflecting the planting of larger fish. Despite these increases, the fish produced were still short of the programme quota. Details of the fish liberations were as follows:—

By road vehicle (200 lakes)—	
Cutthroat	67,700
Eastern brook	2,007,700
Kokanee	1,300,000
Rainbow	2,323,100
By air (120 lakes)—Rainbow	890,500
Total	6,491,100
	(48,446 lb.)

The planting of kokanee was the first in many years, and all were planted in Green Lake, near 70 Mile House in the Cariboo. This marked the first three of four annual stockings into this lake in an attempt to create a major self-sustaining kokanee fishery. This particular part of the fish-culture programme will be extended in future years to include three lakes in the Lower Mainland region.

Fish planted varied in age from 2 to 15 months. The programme extended from March until November, and, as noted, over 300 lakes were planted. The extent of the 1968 programme will largely depend on the degree of success at various egg-collecting sites, but an increase is anticipated and necessary.

Public Relations

Information published by the Fish and Wildlife Branch and the Department of Travel Industry was available at the permanent hatcheries. In addition, Travel Industry Counsellors were on duty at Kootenay Hatchery to assist tourists in planning their trips. At the latter site an extensive public display was included in the building layout, and, perhaps significantly, over half of the 30,000 hatchery visitors were recorded there. Throughout the year several talks supplemented with coloured slides were given to public groups by hatchery personnel. To keep fishermen regularly informed, a résumé of lake stockings is now attached to the Fish and Wildlife Branch monthly reports.

New Hatchery Facilities

Fish-producing capacity of the hatchery system was not increased in 1967, although there were developments which will lead to increased production in the next two or three years. At Abbotsford, where the Department has 30 acres of property on which a small hatchery is presently located, the first phase of a water

survey for a larger hatchery was concluded. The final survey and assessment, as well as foundation tests, should be completed in 1968.

At Summerland, where a water shortage has existed during most of the last half of each year due to competing uses for the spring water supply, an agreement was completed late in the year whereby the total flow will be available continuously for hatchery use sometime in 1968. Planning toward increasing the rearing facilities at this hatchery can now be implemented.

In 1967 the weight of fish plantings and production were increased over that of 1966 by 100 and 60 per cent respectively. Increased egg availability in 1968, particularly rainbow trout, will mean further increases. However, even with an unlimited supply of eggs, production will shortly level off because of restricted hatchery facilities at Abbotsford and Summerland.

FISHERIES RESEARCH

A major study of factors affecting production of juvenile rainbow trout was begun on Pothole Lake, near Merritt, and Loon Lake, north of Cache Creek. Information on movement of adult spawners, fry populations, food supply, and feeding habits of young fish in inlet and outlet streams was obtained at both sites. Timing of entry of young fish to the lake appears to be quite different in the two systems. At Loon Lake many of the young leave the streams early in their first year, while at Pothole Lake virtually all the young fish spend the first year of life in the streams. Such differences in movement will have a marked effect on survival and growth of the fish, and investigation of the reasons for such differences in habits is continuing.

The field portion of a two-year investigation of survival and growth of hatchery-reared trout in lakes containing no fish, trout only, and mixed populations of trout and shiners was concluded during the autumn months. Three sizes of trout varying in length from 1½ to 3½ inches were planted in the 13 study lakes, and extensive collections were made of these fish by means of gill-nets and chemical treatment following a period of growth. The data are presently being analysed, but some differences in growth rate and survival are already obvious as those lakes containing shiner populations produced very few comparatively small trout. Information obtained from this study will be used to maximize the efficient use of hatchery-reared trout in the Province.

Studies of spawning requirements and behaviour of Kootenay Lake rainbow trout and Dolly Varden char continued during the year. Field studies of rainbow trout on the Gerrard spawning-grounds and description and analysis of spawning activities filmed in 1966 were completed. A small artificial spawning-flume was constructed at Coffee Creek, north of Nelson, in order to observe and describe the spawning activities and requirements of the large Dolly Varden char. Very little is known about this species in British Columbia as they usually spawn in small precipitous streams tributary to large lakes and rivers, making them very difficult to observe. In many regions these small drainages are being seriously affected by logging practices, and better knowledge of actual spawning requirements is urgently required.

The field portion of a study of the migratory habits of trout populations which live above and below impassable waterfalls was concluded during the year. Sizeable collections of adult fish from several streams in the Kootenay District were transferred to the hatchery near Wardner, where they will be held over winter and artificially spawned next spring. The young from each group will be reared and subjected to experiments designed to determine their response to currents. Observations to date indicate that above-falls populations are quite stable and make only

minimal contributions to lakes and reservoirs farther downstream. The results of this study should more clearly define the problems associated with fish spawning and recruitment of young to reservoirs.

The Research Section also gave assistance in several problems directly involved with management. These included obtaining oxygen and temperature data in hatchery water supplies and in several lakes which are subject to winter trout mortalities, and a study of conditions in Chain Lake prior to a diversion of water to improve water quality.

MEETINGS

A talk on the relation of fish movement and migration to production and a review of research activities of this Division was presented to the Department of Zoology of the University of Manitoba, and the Freshwater Institute of the Fisheries Research Board in Winnipeg following attendance at the annual meeting of the Canadian Committee on Freshwater Fisheries Research in Ottawa in January of 1967.

Other meetings attended during the year included the International Symposium on Eutrophication in Madison, Wisc., the Tenth International Ethological Conference in Stockholm, Sweden, as well as annual meetings of the American Fisheries Society and the Canadian Society of Wildlife and Fishery Biologists.

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STATISTICAL SUPPLEMENT

Table I.—Hunting Licence Sales

	1963	1964	1965	1966	1967
Resident	129,110 5,356	131,668 5,399	133,977 5,791	132,780 6,793	143,003 6,814
Non-resident					

Table II.—Cache Creek Check-station

	1963	1964	1965	1966	1967
Moose	5,456	5,502	5,931	7,264	7,258
Deer	3,670	3,450	2,232	3,008	3,635
Goat	169	135	138	197	183
Sheep	70	48	54	74	63
Black bear	61	111	149	138	121
Caribou	156	213	213	414	514
Elk	26	30	13	22	21
Waterfowl	7,318	7,085	7,118	7,265	6,720
Grouse	3,033	4,136	5,894	6,494	17,482
Residents	19,550	18,349	17,424	19,123	20,503
Non-residents	3,300	3,236	3,384	4,093	4,106

Table III.—Provincial Game Harvests by Resident Hunters, Hunter Sample Estimates, 1962–66

	1962	1963	1964	1965	1966
Grouse	360,500	245,470	522,064	621,150	508,514
Ducks	460,500	368,570	383,961	474,670	491,493
Pheasants	64,700	54,940	48,884	39,223	29,207
Moose	16,675	16,510	17,853	15,190	19,940
Elk	2,300	3,950	3,230	1,800	1,970
Deer	69,500	71,520	78,435	56,877	76,692
Goats	—	1,625	1,567	1,967	1,762
Sheep	—	—	295	242	226
Caribou	—	—	465	523	798

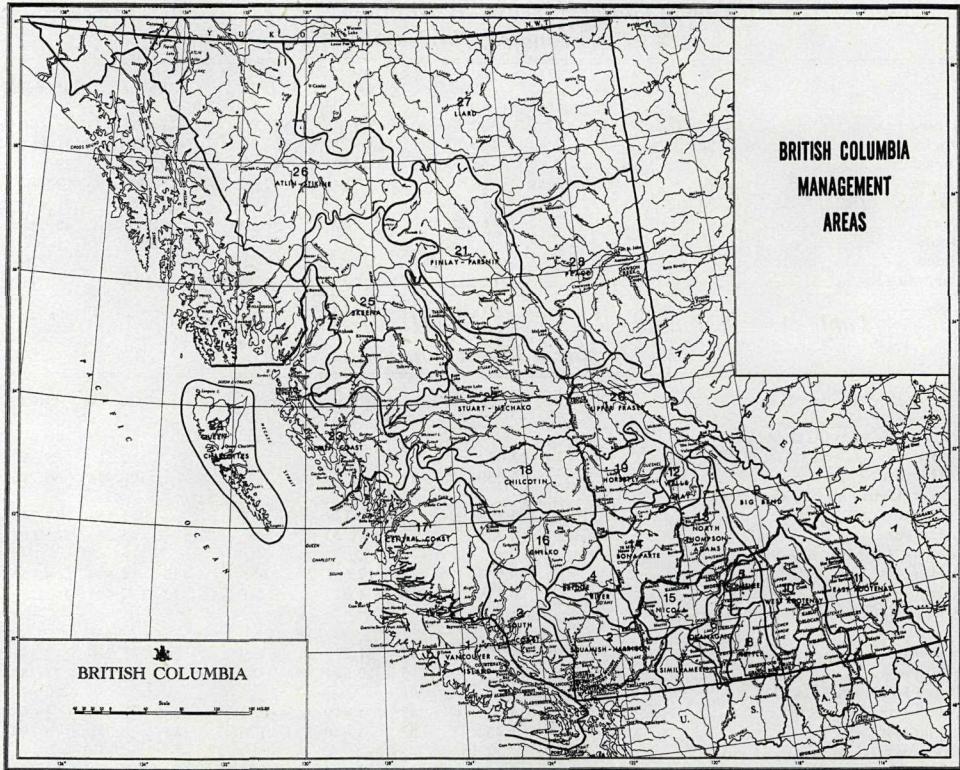
Table IV.—Estimated Regional Game Harvests by British Columbia Resident Hunters in 1966

Region Hunted	Caribou	Deer	Elk	Moose	Goat	Sheep	Grouse	Ducks
Vancouver Island (G.M.A. 1)—								
Hunters	—	22,054	1,261	—	—	—	10,217	5,397
Harvest	—	25,450	109	—	—	—	100,454	66,716
Lower Mainland (G.M.A. 2 and 3)—								
Hunters	—	14,104	22	129	574	—	11,551	14,741
Harvest	—	9,439	—	23	266	—	85,243	235,602
Interior (G.M.A. 6 to 9, 13 to 19)—								
Hunters	306	48,564	496	17,691	696	456	14,899	9,866
Harvest	39	26,899	20	4,827	248	32	172,481	101,145
Northern British Columbia (G.M.A. 20)—								
Hunters	688	9,770	92	21,213	920	20	5,070	2,371
Harvest	228	2,623	15	10,844	484	—	40,156	21,240
Peace River (G.M.A. 21)—								
Hunters	1,104	4,049	243	5,919	272	534	2,563	1,668
Harvest	499	1,454	52	3,646	176	184	29,740	18,494
Kootenay (G.M.A. 10, 11, and 12)—								
Hunters	136	12,920	8,592	2,466	1,083	174	6,168	2,477
Harvest	32	7,425	1,773	531	411	8	64,695	31,976
Upper Coast (G.M.A. 4 and 5)—								
Hunters	—	2,764	12	331	269	—	1,785	1,495
Harvest	—	3,349	—	56	174	—	15,745	16,320
Province—								
Hunters ¹	2,160	94,465	10,551	40,521	3,672	1,119	52,253	35,033
Harvest ²	798	76,692	1,970	19,940	1,762	226	508,514	491,493

¹ Many hunters hunt in more than one area. The Provincial totals are corrected for this.² Includes kill in unspecified areas.

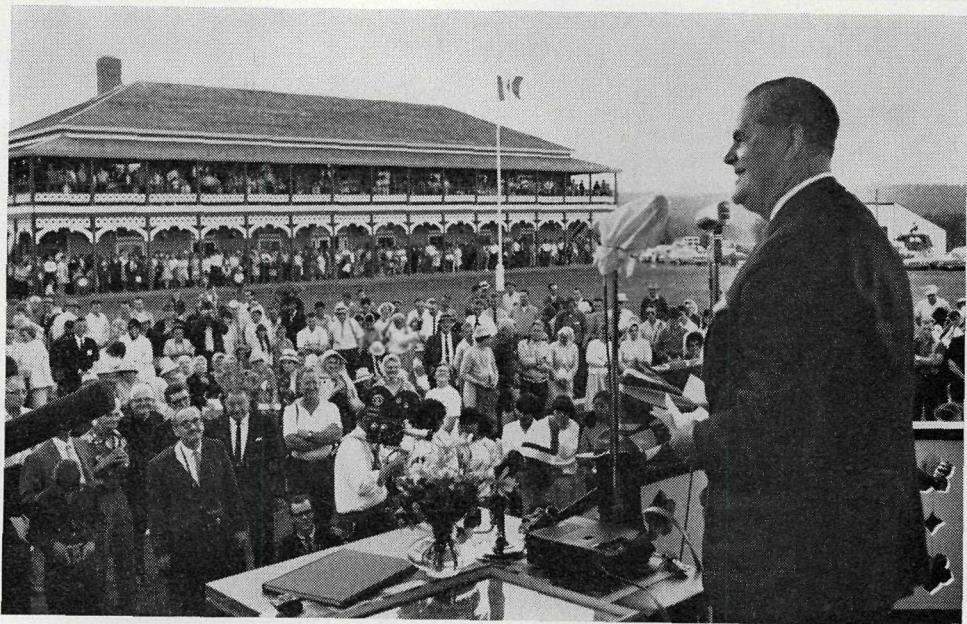
Table V.—Fur Yield and Value in British Columbia, 1962–66

Species	1962		1963		1964		1965		1966	
	Yield	Value	Yield	Value	Yield	Value	Yield	Value	Yield	Value
Beaver.....	26,529	\$385,996	26,638	\$395,574	21,769	\$254,914	28,751	\$464,903	25,309	\$333,825
Marten.....	8,099	92,814	7,266	66,992	2,749	27,407	5,271	54,607	7,613	88,843
Squirrel.....	197,072	88,682	72,188	51,253	133,600	82,832	63,103	37,230	92,052	49,708
Mink.....	11,896	136,804	10,629	126,059	5,593	68,178	5,936	64,346	6,409	47,490
Muskrat.....	39,811	64,095	27,663	39,558	30,058	54,104	37,300	70,870	35,604	45,217
Lynx.....	12,570	190,812	7,225	111,409	3,193	64,722	2,705	102,276	1,577	41,380
Otter.....	1,363	28,636	1,245	33,328	1,055	25,330	1,094	36,342	996	20,477
Weasel.....	10,821	8,007	7,457	7,158	5,647	7,510	11,807	17,828	10,369	14,309
Wolverine.....	40		214	3,297	165	3,187	250	7,480	309	9,514
Fisher.....	605	9,401	534	7,892	562	4,451	868	11,796	741	9,477
Fox.....	893	6,094	183	1,200	126	933	367	4,804	326	3,506
Bobcat.....	123		38		165	1,641	394	8,317	287	1,624
Raccoon.....	625	2,156	1,025	2,992	389	1,338	548	1,852	357	1,306
Total value.....		\$1,024,878			\$85,422		\$600,316		\$889,332	
										\$66,682

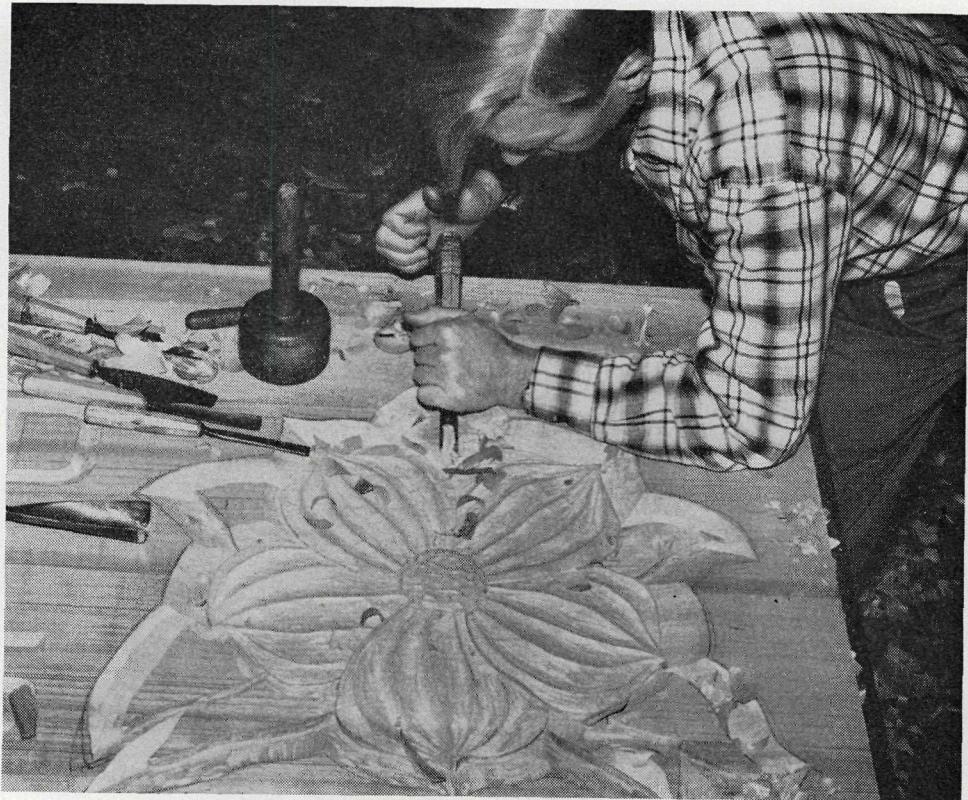


PROVINCIAL PARKS BRANCH





The Honourable W. A. C. Bennett officiates at the opening of the Fort Steele Historic Park and Museum, June 24, 1967.



At the Langford workshop a skilled craftsman puts the finishing touches on a carved dogwood emblem.

PROVINCIAL PARKS BRANCH

H. G. McWILLIAMS, DIRECTOR

The exceptionally good weather which prevailed from early June through September was probably responsible for the largest annual increase in park use in the history of the Parks Branch, with more than six million visits recorded.

The acquisition of additional acreage at Rathetrevor Beach on the east coast of Vancouver Island now makes it possible to proceed with the development of a major picnicking and camping area at that site.

The construction of a new coffee-shop on Mount Seymour and a twin chair-lift in Manning Park will add a great deal to the recreational use of these parks for winter sports.

MANAGEMENT DIVISION

During 1967 a 4-per-cent increase in development and maintenance appropriations was accompanied by an 18-per-cent increase in public use of Provincial parks and a 5-per-cent increase in the price of labour. In the same period, camping fee revenue was increased to \$19,662.

The widely recognized trend toward an increasing *per capita* use of parks was apparent throughout the Province, with more than three visits to Provincial parks recorded for every man, woman, and child in British Columbia.

During the year a special appropriation enabled a \$350,000 expansion of ski facilities at Gibson Pass in Manning Park. For the first time, Parks Branch management personnel undertook the operation and maintenance in Manning Park of the lifts, tows, and patrols so essential to the enjoyment of modern ski slopes.

The unprecedented establishment of 11 new regional districts in a single year placed new responsibilities on district and regional management personnel, who must now function on regional planning committees and provide advisory and consultative assistance, in the outdoor recreation field, to these numerous local authorities.

While all of these responsibilities and conditions combined to complicate the maintenance and operation of Provincial parks, field personnel generally maintained high standards throughout the system. The whole-hearted co-operation of Royal Canadian Mounted Police detachments throughout the Province resulted in a significant reduction in the incidence of hoodlumism and vandalism in parks.

PUBLIC INFORMATION AND EDUCATION

The Public Information and Education Office was not staffed for the first three months of the year due to the untimely death of Public Information Officer W. D. Reith.

Requests for information from the general public and special groups and individuals reflected the tremendous increase in park use during 1967. The correspondence file bulged with letters, some from as far afield as Poland and Viet Nam.

Two fifteen-minute television programmes on parks and interpretation were arranged. These were taped in Vancouver in May and broadcast in July as part of a daily feature on British Columbia.

The extreme forest fire hazard during the late summer which resulted in restrictions and the closure of a number of parks necessitated the preparation of special press, radio and television releases to keep the public informed of the changing situation.

A new "Manning Park" folder was completed and forwarded for printing, and will be ready for distribution early in the new year. "Mount Seymour" and "Garibaldi" publications were substantially revised and issued. In addition minor revisions of other information booklets were carried out and a new campground guide was prepared.

Several illustrated talks were given to various interested groups in the course of the year. The Canadian Forestry Association was assisted in its Vancouver night school adult education programme. A special presentation was made to the British Columbia Government Travel Bureau Counsellors Training course in Vancouver.

The Public Information Officer was seconded to the Department of Travel Industry to take part in a goodwill tourist promotion tour of Saskatchewan in June. He was also a delegate to the annual conference of the American Association for Conservation Information which was held at Victoria the same month.

INTERPRETATION AND RESEARCH

In 1967 public participation in our interpretation programme once more showed a steady increase. By actual count our naturalists made 76,130 visitor contacts at our three nature houses and 34,860 contacts on conducted walks and evening campfire talks. Additionally, it is estimated that over 15,000 people contacted our naturalists on non-scheduled activities. Many more park users walked our nature trails, studied the natural-history displays on park information shelters, and visited parks where natural history is the principal or only attraction. In total the various phases of park interpretation served at least 260,000 people.

Ten parks held interpretation programmes conducted by park naturalists. Of these, Manning, Miracle Beach, and Shuswap Lake Parks had programmes based upon nature houses. Goldstream, Wickannish, Mitlenatch Island, Ellison, Okanagan Lake, Haynes Point, and Kokanee Creek Parks had naturalists giving walks and talks only. All three of the nature houses experienced record one-day attendances.

A major advance in 1967 was the opening of the new permanent nature house at Shuswap Lake Park. This new building, half the size of those at Manning and Miracle Beach Parks and retaining their general style, replaces the temporary tent structure that had been in use since 1962.

Also new in 1967 was the Mule Deer Nature Trail at Manning Park. A careful survey of this and other self-guiding nature trails indicates their use by approximately 70,000 people during the season. Spot checks showed that several dozen people per day hiked the new 12-mile Mount Frosty Trail in Manning Park. This number of hikers indicates the willingness of many park users to participate in this kind of strenuous activity.

The programme of interpretation at Kokanee Creek Park was a trial one of but two weeks' duration. It was carried out concurrently with a survey of the park's flora and fauna with a view to determining the park's potential for a future programme. Indications are that the park will be an eminently suitable site for expansion of the interpretation programme into the Kootenay District, especially if the campground is enlarged.

Four new interpretive pamphlets were completed this year—"Berries," "Starfish," "Flora of Manning Park," and Volume II of "Things to Do Outdoors."

This year, for the first time, a naturalist was appointed specifically to provide field supervision of summer staff. In particular, his attention was directed toward assessing and improving the quality and content of conducted walks and evening talks. This was done in conjunction with the short course given new naturalists at

the beginning of the season. As our over-all programme grows, the task of training and supervising seasonal staff increases and will continue to increase.

The interpretation workshop at Langford had a busy season, producing 28 new displays, mostly for the new Shuswap Lake Nature House, as well as the year's requirements of nature-trail cards, posters, and signs.

In general, 1967 was a year of excellent progress for the Section. We did have one very serious loss. Mr. R. Y. Edwards, Park Officer i/c Research and Interpretation, left in midsummer to join the Canadian Wildlife Service. It should be recorded that our programme has been shaped by Mr. Edwards since its inception 10 years ago, and it is largely to his individual credit that today the programme is widely regarded as one of the leaders of its kind in North America.

PLANNING DIVISION

In addition to discharging its responsibilities in Provincial parks, the Parks Branch Planning Division, through an interdepartmental steering committee, maintained contact with and rendered assistance to The Canada Land Inventory-Recreation Sector being conducted under the ARDA programme.

The Branch also provided representation from British Columbia on an Inter-governmental Advisory Committee on Outdoor Recreation and Wildlife created by the Canadian Council of Resource Ministers to review and report on legislated basis and administrative organization for, as well as major problems confronting, use of natural resources for recreation.

A government-university committee has been named, as a consequence of meeting in 1967, to investigate the possibilities for selecting "ecologic preserves" representative of the 33 major biotic zones and sub-zones of British Columbia, and to recommend the best means of setting these aside for scientific study purposes. A degree of involvement of Provincial parks is anticipated. Master plans are now to take these areas into account where it is necessary they be established in Provincial parks.

PARK SYSTEM PLANNING

The potential for resource-oriented parks north of the 57th parallel was again placed under scrutiny this year, and interesting park values were found in the vicinity of Hayworth, Tuchodi, Redfern, Denetiah, Fishing, Jennings, and Wokk-pash Lakes.

Intensive ground surveys followed last year's work by air in the vicinity of Kiniskan Lake, Edsisa Mountain, and on Esker Lake formations near Hyland River. Alpine areas in the Okanagan District were given a close comparative examination this year to determine the most desirable for park purposes. With the assistance of both the Fish and Wildlife Branch and the Forest Service, the Parks Branch was able to examine at least a portion of the coastal waters between Prince Rupert and Campbell River for marine park potential. The Nass River lava bed was given attention again with a view to providing for industrial use without destruction of the natural geological feature. An alpine area west of Kimberley at the headwaters of the St. Mary River received a close examination, and McIntyre Canyon in the Okanagan Valley was assessed to determine suitable boundaries for a park containing winter range for the California bighorn sheep.

Nine new Class A parks, containing 2,138 acres, and three new Class C parks, containing 143 acres, were created during 1967. The Eutsuk Nature Conservancy Area, containing 629,300 acres, was zoned in Tweedsmuir Park. The last significant inholding in Bowron Lake Park was purchased, and an agreement negotiated

which will lead to the acquisition of a marine park at Pender Harbour. The establishment of Golden Ears Park, Class A, marked the formal division of Garibaldi Park. An additional 8,500 acres in the Tingle Creek-Stave River drainages was added to Golden Ears Park. Mount Judge Howay Recreation Area, containing 15,270 acres, in the Tingle Creek-Stave River area, was also established. The Cathedral Park proposal was further assisted through the co-operation of the Department of Mines and Petroleum Resources, which established a mineral reserve over the area. Through the joint efforts of this Branch and Malaspina Ratepayers' Association, Myrtle Rocks near Powell River were made available for park purposes.

The boundaries of nine Class A parks were extended by a total of 10,860 acres. Three Class C parks were enlarged to include an additional 241 acres. Five Class A parks were reduced in area by 3,019 acres, and 355 acres were deleted from two Class C parks.

With the co-operation and assistance of other departments of the Government, it was possible to have 113 areas, containing 2,341 acres, reserved for public recreational use. In the same period, 10 reserved areas containing 5,307 acres were cancelled. To date approximately 2,341 sites, containing a total of 357,646 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 141.5 acres:—

The Gibson family—the Ahousat Hot Springs, now established as Gibson Marine Park near Tofino in honour of Mr. and Mrs. W. F. Gibson.

Mr. Gordon Harvey—a fossil bed near Smithers, now established as Driftwood Canyon Park.

The British Columbia Hydro and Power Authority—an access point on Wahleach Lake near Hope.

Mrs. B. F. Leary—the mineral rights to the land surrounding Nakusp Hot Springs.

PARK-USE PLANNING

The pattern of recent years—planning for the improvement and refurbishing of existing developments in parks—continued through 1967, but there was an increasing emphasis on planning for major parks. Planners spent a large proportion of their total effort on Manning, Strathcona, Garibaldi, Bowron Lake, Tweedsmuir, Mount Robson, and Wells Gray Parks. With the exception of Manning Park, actual developments in these large parks have been on a small scale. Moreover, in parks generally, new developments have been slow paced in recent years because funds have had to be stretched to fit the needs of an expanded system. The hiatus, until a new era of expansion begins, is giving staff the opportunity to dig into some of the basic planning requirements of major parks.

In Manning Park, plans were formulated for a dramatic expansion of the existing ski developments in Gibson Pass. The expansion included a chair-lift, a beginners' rope tow, and the slope-clearing to accommodate these facilities. The chair-lift has a vertical lift of 732 feet and a capacity of 1,200 skiers per hour; the rope tow has a vertical lift of 165 feet and a capacity of 4,500 skiers per hour. These projects necessitated all planning functions—field studies, mapping, design, layout, and supervision—during development.

In Strathcona Park, planners gave close surveillance to the road being constructed along the shore of Buttle Lake so that recreational values were preserved as much as possible. The road gives access to Ralph River Campground, which was planned and partially developed during the year. Another campground was also planned and partially developed at the north end of Buttle Lake. As the park boundary excludes most of the north end of the lake, steps were taken to make additions to the park in that area.

Trail-system planning was the main activity in the northern portion of Garibaldi Park. Planners decided on improvements and relocations for the trails of the Black Tusk Meadows, where human erosion has been serious. A youth crew completed the Barrier Cut-off Trail, which gives a direct approach to Garibaldi Lake without the climb to the meadows. Another youth crew built about 3,000 feet of trail along the sidehill of Rubble Creek to replace the old trail, which traversed the stony floor of the valley. The Varsity Outdoor Club continued its volunteer trail-building up Fitzsimmons Creek. It hopes to complete this trail to Singing Pass in two more seasons. Another volunteer effort was that of the British Columbia Mountaineering Club, which began the erection of a public shelter near the pass.

The Ranger headquarters and youth crew camp in Black Tusk Meadows were shifted from the Taylor Cabin to Battleship Islands Bay, where fixed-wing aircraft rather than helicopters can be used for transportation. Permanent A-frame shelters were built for the youth crew at this site.

The most significant work in Bowron Lake Park during 1967 was the building of the Isaac River portage trail. Planners flagged the route in the spring, and a small crew constructed about a mile of trail from Isaac Lake to the foot of the Cascades during the summer. Prior to this work, portaging a canoe across the crude and bouldery trail was the one bad feature of a trip around the lake quadrangle. Another job was the reopening of the old canal between Skoi Lake and Spectacle Lake, so that the decrepit railway across the portage can be removed. First steps were taken to plan Bowron Lake Campground, which will be the main development for public use in the park.

Planning staff spent about a month making a survey of all licensed guides operating in Tweedsmuir Park. Conservation Officers at Burns Lake, Vanderhoof, and Bella Coola, as well as Regional Biologists at Prince George and Williams Lake, co-operated. Information was gathered also on wildlife problems, particularly in regard to caribou and grizzly bears. Planners explored the Turner Lake Chain, the southern Rainbow Mountains, and Knott Lake.

This was the second year in a three-year study to produce a master plan for Tweedsmuir Park. An outcome of the work so far was the delineation of Eutsuk Nature Conservancy Area, covering 629,300 acres of the park. Special protection is now given to this zone because of its superlative natural beauty, outstanding wilderness qualities, and wildlife.

Planners dealing with Mount Robson Park have continued to be concerned with the reconstruction of Highway No. 16. They worked on plans for roadside view points and an entrance portal at the British Columbia-Alberta Boundary. A study of the west boundary of the park led to the conclusion that some non-recreational land should be excluded from the park.

In Wells Gray Park, reconnaissance was carried out for a new crossing of the Murtle River and access to Battle Mountain. Staff also laid out the roads for the new campground at Mahood Lake.

Improvement and refurbishing of existing developments occurred at numerous parks: Quinsam Campground was enlarged; the entrance to Skihist Park was re-

designed; Savona Park was changed from a campground to a picnic-ground; and the service yard at Ten Mile Lake was extended.

In Mount Seymour Park, completion of the cafeteria was a big step forward. The high-use area took on a much more finished appearance with the paving of the upper portion of the road and the chair-lift parking-lot. The new ski bowl at Little Twin Tow was shaped, and additional slopes were cleared of trees to facilitate ski instruction, which has become extremely popular on the mountain. Metal signs were placed along the ski runs.

New developments were planned and carried out at Kawkawa Lake picnic-ground, China Creek boat-launching ramp and picnic-ground, and at Clearwater River Park (roads for campground). Prison labour did the work at Clearwater River Park and on the continuing development of a campground at Paul Lake Park.

Plans were drawn up for major campgrounds and day use areas at Moyie Lake Park, Charlie Lake Park, and Syringa Creek. A campground was also planned for Green Lake Park, a picnic-ground for Christie Memorial Park, and an expansion of the existing picnic-ground at Saltery Bay.

A planning report was prepared for the proposed Sasquatch Park, covering Hicks and two neighbouring lakes. The report urged the establishment of this park.

Technical advice and assistance (extension planning) to local organizations in connection with recreational developments were extensive during 1967. Help was given in regard to Girl Guide camps at Sproat Lake, Koksilah River, and at Chilliwack. Maps were produced for local parks near Kelowna and at the 100 Mile House. Parks at Royston, Wellington, and Comox also received attention.

One member of the planning staff made a short survey of possible park-sites in the vicinity of the W. A. C. Bennett Dam. He attended meetings with B.C. Hydro engineers on the recreational potential of the reservoir area adjoining the dam.

A small crew mapped about 550 acres where development is intended. The crew was able to stay afield much of the winter by working in snow-free parks on Vancouver Island. The mapping is done to a scale of 50 feet equals 1 inch, with 5-foot contours. Areas included Rathetrevor Beach, Ralph River, the north end of Buttle Lake, Gibson Pass, Bowron Lake Campground, Syringa Creek, Nakusp Hot Springs Park, Kokanee Creek Park, Peckhams Lake, Otter Lake, and Paul Lake Park.

In co-operation with the Federal Government and local people at Hazelton who are developing K'san Indian village into a handicrafts and museum centre, a parcel of land to be devoted to a commercial campground was mapped.

Two members of the planning staff had the opportunity to attend training courses. One was the short course on administration of National parks given at Jackson, Wyo.; the other was the National Park Service winter ski and avalanche rescue school at Banff, Alta.

HISTORIC PARKS AND SITES

BARKERVILLE HISTORIC PARK

For the first time since Barkerville opened in 1958, a drop in attendance was noted over the preceding year. This is attributed partly to the fact that 1966 was a record year, partly to the hot dry summer, and partly to the pull of Expo. Approximately 154,000 visitor-days were recorded, with registration in the museum's visitors' book totalling 41,705.

Department of Provincial Secretary's funds were expended toward projects approved by the Barkerville Restoration Advisory Committee. In the restoration

area the Cariboo Sentinel Building was constructed and foundations of the Barnard Express Office were laid. Considerable renovations, repairs, and decorations were done at the Nicol Hotel, the Wesleyan Methodist Church, Kelly's Store, Masonic Hall, Theatre Royal, and several residences.

A start was made toward installation of an underground wiring system on the main street. A 3,000-gallon septic tank was constructed in conjunction with staff housing.

Considerable work was done on the J. P. Taylor Drug-store exhibit with the co-operation of the British Columbia Pharmaceutical Association. A United Church student minister conducted services in the Methodist Church. Andrew Kelly artifacts donated by Mrs. R. Armour were displayed in the museum.

COTTONWOOD HOUSE HISTORIC PARK

With removal of the tenant, a comprehensive programme has been started to restore this historic house to the period of the 1880's and 1890's. Foundations have been replaced, and interiors of all rooms have been restored or renovated as required.

A great deal of exhibit material, some of which belonged to the Boyd family at Cottonwood, has been gathered and stored toward a furnishing programme slated for next year.

FORT STEELE HISTORIC PARK

The park was officially opened on June 24th by Premier W. A. C. Bennett. The new museum was also opened at that time, and by the end of October more than 78,000 people had been tallied through its display area. Approximately 100,000 visitor-days were recorded in the park during the year.

Several projects were undertaken in a co-operative programme between the Fort Steele Foundation and the British Columbia Centennial Committee. These included introduction of the Dunrobin Centennial train, operation of the four-horse stagecoach, and performances of the Fort Steele Follies.

Phase three of the museum building was completed. This included the complete display area, offices, and public washrooms on the main floor, the tearoom-cafeteria on the second floor, and a covered balcony around three-quarters of the second floor.

New construction included the bandstand, barber-shop, N.W.M.P. sergeants' quarters, and N.W.M.P. blacksmith and saddler's building.

Besides the major display in the new museum, exhibits were started in Dr. Watt's office, dentist's office, blacksmith-shop, express office, courtroom, and the Anglican rectory. Also, Kootenay Indians exhibited some of their fine hand-crafts. An air locomotive with several cars was donated by Crow's Nest Industries.

Seven thousand feet of track was laid toward operation of the Dunrobin outside of the palisaded village complex next summer. Two thousand two hundred feet of track will be completed to supply the old water storage tank. It is hoped that a new reservoir can be started next year.

"STOP OF INTEREST" PLAQUES

In a co-operative programme with the British Columbia Centennial Committee, 15 "stop of interest" plaques were cast. This brings the total of this type of marker in the Province to 106.

A special commemorative ceremony was held on October 29th east of Abbotsford, with the placement of the "Sumas Reclamation" plaque. Unveiled by Deputy

Provincial Secretary L. J. Wallace, the plaque represented the 100th marker of its type to be placed throughout the Province since the start of the programme in 1958.

ENGINEERING

VANCOUVER ISLAND REGION

New campgrounds and boat-launching ramps were constructed at the north end of Buttle Lake and at Ralph River in Strathcona Park. A water system was installed at Wickaninnish Beach Park, and the waterworks were completed at Miracle Beach Park. A deep well and pump were installed at Prior Centennial Park, and at China Creek Park a boat-launching ramp was built and a picnic area developed.

GARIBALDI REGION

Work continued on Nairn Falls Park campground, and major improvements were effected to Diamond Head Chalet. The Black Tusk area, which has come under full-time administration, was the site of considerable trail building and reconstruction. In Alice Lake Park, roads were oiled and some paving took place.

ALOUETTE REGION

The electrical system at Alouette Lake was completed. Improvements were made to the lakeshore in Rolley Lake Park and to the road in Davis Lake Park.

CULTUS LAKE REGION

The Cultus Lake Park water system was improved, and work was done on the parking-lot and boat-launching area at Jones Lake. At Peace Arch Park new roofs were placed on the kitchen and toilet buildings.

MOUNT SEYMOUR REGION

A boat-launching ramp was built at Saltery Bay Park, and minor improvements were made to floats and the water supply at Princess Louisa Marine Park. The camp-sites at Roberts Creek Park were gravelled, and at Mount Seymour Park the parking areas were paved, three-quarters of a mile of road was reconstructed, a new equipment-shed built, and there were major improvements to ski slopes and runs. Furnishings and kitchen equipment as well as water and sewage facilities were installed at the new Mount Seymour Park cafeteria.

MANNING REGION

Picnic-grounds at Allison Lake and Otter Lake Parks were improved, while at Kawkawa Lake Park, parking area, picnic, and lakeshore development took place. In Manning Park the Centennial Trail was finished; new sewage fields were built and a new electrical station installed for the Pine Woods area; a chair-lift, beginners' rope tow, ski-slope improvements, temporary warming shelter, ski-rental buildings, additional parking-lot, and an electrical station were completed at the Gibson Pass area.

SHUSWAP REGION

A new campground was under construction at Paul Lake Park, and at Lac Le Jeune Park exploration was under way for a deep well and work was being done on the service area.

OKANAGAN REGION

Water systems were installed at Ellison and Okanagan Lake Parks. The road to the Okanagan Lake Park picnic-ground was paved, and a toilet-change house was built at Christie Memorial Park.

CARIBOO REGION

The highway entrance to Skihist Park was altered, and a deep well and pump were installed at Goldpan Park.

WELLS GRAY REGION

Development of campgrounds in Clearwater River Park and at Mahood Lake continued, utilizing Corrections Branch inmate labour. A water system was installed at the Wells Gray Park administration centre, and an access road to Battle Mountain was built.

BOWRON LAKE REGION

Improvements were made to the parking area, trail system, and portages in Bowron Lake Park.

LAKELSE LAKE REGION

A campground and boat-launching site were constructed in Lakelse Lake Park. The parking-lot and campground in Seeley Lake Park and the portage railroad in Tweedsmuir Park were improved.

BEAR LAKE REGION

Campgrounds were under construction in Charlie Lake and Moberly Lake Parks, with expansion under way to the existing campground in Ten Mile Lake Park. Water systems were installed in Beaumont and Ten Mile Lake Parks, and minor improvements were carried out in Liard Hot Springs Park.

MOUNT ROBSON REGION

Minor improvements to existing facilities in Mount Robson Park were carried out.

WASA REGION

Improvements were made to the sewage facilities and campground in Wasa Lake Park and to the road in Columbia Lakes Park.

KOKANEE REGION

A water system was installed, an entrance portal erected, and the main access road and parking-lots were paved at Champion Lakes Park.

YOUTH CREW PROGRAMME

The 140 boys employed in the youth crew programme spent the summer engaged in trail work, campground reconstruction, and installation of water systems in Garibaldi, Laird Falls, Alice Lake, Manning, Ten Mile Lake, Champion Lakes, and Mount Robson Parks.

PARKS BRANCH-ATTORNEY-GENERAL PROGRAMME

Again in 1967, as in previous years, the Attorney-General's Department assisted the Parks Branch by permitting the employment of Corrections Branch inmates on various parks projects.

The inmates were engaged in campground expansion in Elk Falls Park and firewood-cutting in Miracle Beach Park on Vancouver Island. They worked at campground maintenance in Cultus Lake Park and campground and picnic-ground maintenance at Alouette Lake, as well as lakeshore development in Rolley Lake Park. In Wells Gray Park, inmate labour was employed on campground construction, road work, and firewood-cutting. Inmates also worked on the campground in Clearwater River Park and on the campground and boat-launching area in Paul Lake Park.

LANGFORD WORKSHOP

Manufacture of wood products, such as tables, benches, and signs, and plastic products, such as lifeboats, marine buoys, and toilet stools, continued, with an increase shown in plastic products production over 1966.

Plans were prepared for a new shop.

DESIGN AND CONTRACT PREPARATIONS

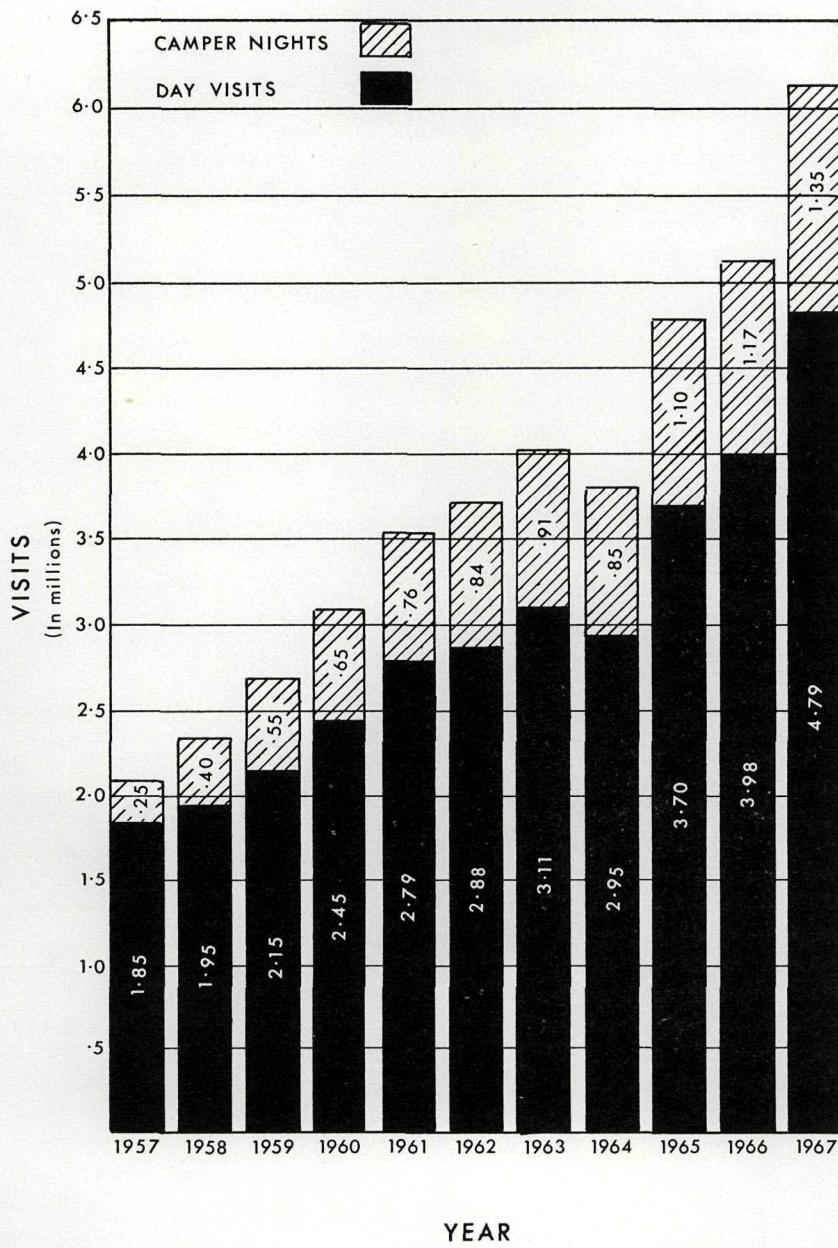
Tenders were called and contracts awarded for the construction of a toilet-change house in Christie Memorial Park and for road and parking-lot paving in Mount Seymour and Champion Lakes Park. Contracts were also awarded for electrical installations in Manning and Mount Seymour Parks.

A major water- and sewage-system plan was commenced for Manning Park. Plans were prepared for a garage workshop in Wells Gray Park, a toilet-change house in Rathtrrevor Beach Park, and a warming-shelter for Manning Park.

SUMMARY OF PROVINCIAL PARKS, 1967

Classification	Number	Total Acreage
Class A parks	175	1,780,501
Nature conservancy areas in B parks (4)	932,094	
 Total protected park acreage	 2,712,595	
 Class B parks	 9	 4,614,548
Class C parks	76	29,246
 Total parks	 260	 6,424,295
 Recreation areas	 2	 15,345
 Nature conservancy areas in A parks (1)—North Garibaldi (Garibaldi Park)		44,032
 Nature conservancy areas in B parks (4)—		
Big Den (Strathcona Park)	29,784	
Central Strathcona (Strathcona Park)	215,000	
Comox Glacier (Strathcona Park)	58,010	
Eutsuk (Tweedsmuir Park)	629,300	
		932,094
 Total nature conservancy areas (5)		 976,126

ANNUAL ATTENDANCE



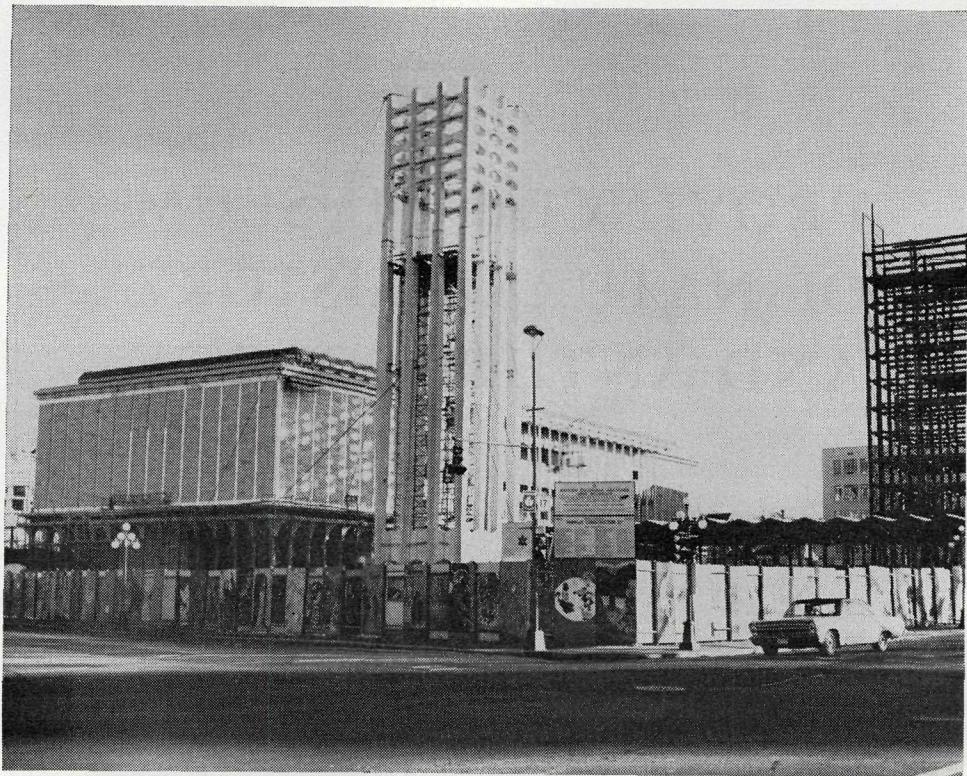
АЛТЕРНАТИВНА

СЕРІЯ ЗВІТІВ

ВІД

PROVINCIAL MUSEUM OF NATURAL HISTORY AND ANTHROPOLOGY





British Columbia Provincial Museum and Archives complex with Carillon Tower in foreground, as it looked in November, 1967.



Site of archaeological dig at Gabriola Island, August, 1967.

PROVINCIAL MUSEUM OF NATURAL HISTORY AND ANTHROPOLOGY

G. CLIFFORD CARL, DIRECTOR

The year 1967 was a particularly busy one for the Provincial Museum. Apart from field work undertaken by members of all divisions, the major activity concerned the planning and production of displays for the building under construction. The Museum's scope of activity was also broadened and deepened by several additions to staff, and attendance figures almost reached an all-time record. The details are given in the following sections.

FIELD WORK

NATURAL HISTORY DIVISION

Field work carried on by staff in this Division has been directed toward collecting material either for exhibits or for research. For example, Mr. C. J. Guiguet spent several seasons in the field, first in the Lower Fraser Valley, accompanied by Mr. M. D. Miller, to collect small mammals and birds, and then later in the Nanaimo Lakes area on Vancouver Island and in the Fort St. John area in the northern part of the Province to collect big game for mounting. While in the latter area he was joined by Dr. A. F. Szczawinski, who collected local vegetation for use in a diorama under construction. Also involved in this particular project were Conservation Officer G. D. Gosling and W. G. Pratt and Senior Conservation Officer B. G. Paull, whose combined help was greatly appreciated.

In the research category was field work carried on by Mr. Guiguet on several islands in the Barkley Sound area near Bamfield. The objective here was to collect significant samples of small mammals as part of a long-range project concerning mammalian populations on coastal islands.

On the botanical side, extensive plant collections were made in various parts of Saanich Peninsula by Mr. S. Harrison, under the direction of Dr. Szczawinski, as the second phase in a survey of vegetation cover of this part of Vancouver Island. The volunteer help of Miss M. C. Melburn in this project is gratefully acknowledged.

HUMAN HISTORY DIVISION

A wide variety of field work was carried on by staff members in this Division in several parts of the Province. Of major importance was an excavation undertaken at a very large archaeological site on Gabriola Island facing False Narrows. Here a crew under the direction of Mr. John Sendey spent four months, during which a representative profile was completed and a series of burials was studied in detail. The results promise to be most significant in interpreting the prehistory of the Gulf Islands area. At the same time, the operation attracted a great deal of public interest; more than 2,000 persons visited the site before the crew left at the end of August.

Another productive venture was a boat trip up the coast as far as the head of Bute Inlet through the generosity of Mr. and Mrs. R. I. Stewart, of Canoe Cove, Sidney, B.C., who offered their services and accommodation aboard M.V. "Point Hope" for this purpose. The several staff members who took part were able to visit and record a number of archaeological and historical sites located in relatively inaccessible areas.

The Provincial Museum wishes to acknowledge its gratitude to the following volunteers, who gave significant assistance to these and other archaeological projects during the year: Mr. and Mrs. Frank Fleming, of North Vancouver; Mr. Stanley Waters, of Philadelphia; and Messrs. Alan Carl, John Hall, and David Sawbridge, all of Victoria, who helped in the excavation at False Narrows. Mr. William O. Payne, of Newport Beach, Calif., carried out a site survey for the Museum among the islands off Sidney and also joined the coastal survey crew aboard the "Point Hope." Mr. S. Whalens also assisted on the "Point Hope" survey, as did Mr. and Mrs. Stewart's daughters, Mrs. Ann Neelley and Miss Merrie Stewart. Mrs. Nancy Hayden has given considerable help with cataloguing artifacts in the Museum.

Thanks are also due to other Government departments which contributed materially to the success of the False Narrows project. The Archaeological Sites Advisory Board (Department of Provincial Secretary) provided the salary for one regular crew member, Alan Hoover. The Surveys and Mapping Branch, Topographic Division of the Department of Lands, Forests, and Water Resources, produced an excellent topographic map of the site to our specifications.

On several occasions Mr. P. Macnair and occasionally other staff members were able to witness native dances and other ceremonies both locally and at Alert Bay. Other trips were as follows: D. N. Abbott and P. Macnair to Friendly Cove to investigate totem poles; P. R. Ward and John Smyly to Hazelton to inspect and advise on conservation of totem poles; John Sendey and G. Moore to Alert Bay and Fort Rupert to purchase Indian material; Miss C. M. Case to Southern British Columbia and Williams Lake to purchase historical material; Messrs. Moore and Ward to Alert Bay and Fort Rupert to establish contacts with both communities and to reconnoitre island sites in Johnstone Strait; Messrs. Moore and Ward to the Okanagan Valley to visit museums and historic sites; several staff members to Comox to produce a short historical documentary film on board the replica of the S.S. "Beaver" on her last trip before retirement.

While on a personal trip to Eastern Canada, Mr. Moore visited the new Museum of Science and Technology at Toronto and the Peabody Museum at Yale.

DISPLAY PREPARATION

The planning and production of new exhibits was carried on throughout the year with no interruption, but occasionally slowed when key staff members were on leave or away on other business. However, real progress has been made; many display units are now ready for final installation, and a number of others are in various stages of planning and construction.

Four dioramas, which are major exhibits in the Natural History Section, have been assembled in their location on the exhibit floor. Although lighting fixtures, glass, and other components have not been completely installed, the background painting for the bighorn sheep group has been well started by Mr. Clarence Tillenius, and work on all four is expected to proceed smoothly in the new year. In the meantime Mr. John Hermann-Blome, Vancouver taxidermist, has mounted and delivered three bighorn sheep and four caribou; in preparation are three elk, four mule deer, and a bull moose.

Various exhibit accessories have also been prepared, including mounted small mammals and birds, artificial tree trunks, wild flowers, rocks, and working models of several types. Most await construction of exhibit cases before they can be installed.

In the human history field a number of large totems and other wood carvings have been expertly repaired and restored by Mr. Smyly, ready for placing on display, and outstanding examples of art have been selected by Mr. Bill Holm, an expert in this field, for inclusion in a hall being designed by him.

Not directly related to the Museum programme were two other activities of the Display Division—namely, involvement of technical staff in the training programme sponsored by the Vancouver City College in February, and active participation in various workshops held in connection with the annual meetings of the British Columbia Museums Association held in Victoria in September. For the latter, considerable time and labour went into the construction of an animated map in conjunction with a rear projection cabinet.

CURATORIAL ACTIVITIES

NATURAL HISTORY DIVISION

In addition to routine inspection and care given to the bird and mammal collections, the entire bird skeleton collection was reorganized by Miss Veronica Harrison. During her term of employment she also prepared and catalogued a significant part of our large accumulation of bird and mammal material. Special attention was also given to the stored insect collection and to the fish, amphibian, and reptile collections preserved in liquid, neither of which had been checked for some time.

As a spare activity, Mr. E. Thorn has reorganized the collections of spiders, millipedes, and centipedes and has submitted a number of the former to specialists for study and identification.

During his travels in various parts of the Province, Mr. Moore has arranged for further specimens to be collected to augment the Provincial collection.

HUMAN HISTORY DIVISION

A great deal of time and energy was spent on the Indian collection during the year as a result of several major projects. The first was the selection, documentation, and transportation of a large number of items which were loaned to the Vancouver Art Gallery as our contribution to the very successful "Arts of the Raven" exhibit on view from June 15th to September 24th.

Loans of Indian material were also made to exhibits at Expo 67 in Montreal, the most important being a mask displayed in the International Fine Arts Exhibition.

Another flurry of activity was occasioned by the necessity to move our extensive collection of Indian artifacts from a storage place in the Dogwood Building to temporary quarters in another location, where the material will remain until required for display or until moved into permanent storage quarters.

With the appointment of Miss C. M. Case as Curator of History, a system of accessioning and recording historical material was set up, and much time was spent in organizing collections in this field and in acquiring further material. The number of valuable historical items that have been turned over to the Museum as a result of her activities has been most gratifying.

Miss Case has also devoted some time giving technical advice in connection with the operation of Helmcken House and Craigflower Manor.

In connection with all the above activities, the services of Mr. P. R. Ward have been in constant demand concerning conservation and handling of the various objects concerned. This has involved cleaning, repairing, photographing, documenting, and handling a great many objects, mostly examples of Indian art; checking environmental conditions in display and storage areas; and visiting other places in the Province where his advice was required.

Messrs. Moore, Ward, and Smyly, together with Miss Case, collaborated to produce a plan (including a brief and a model) for a proposed reconstruction of the Father Pandosy Mission near Kelowna at the request of the Okanagan Historical Society; the early stages of the project were implemented in November.

RESEARCH

While most of the Museum staff time has been devoted to routine matters and to the display programme, a portion has been utilized in research. As already reported, field collecting of research material was carried on in connection with the long-term study of small-mammal distribution, with the plant survey of Saanich Peninsula which was started last year, and with the survey of archaeological sites on the Gulf Islands. Materials so collected have yet to be critically examined in detail. Progress has also been made in the study of the flora of the Province, a joint undertaking of Dr. Szczawinski and Dr. T. M. C. Taylor, of the University of British Columbia.

Other research projects under way include an analysis of archaeological material from the Pedder Bay area by Mr. Abbott, a taxonomic study of local spiders by Mr. Thorn, an investigation of wood preservation by Mr. Ward, a study of data retrieval systems by Mr. Moore, and a study of plant preservation by dehydration by Mr. F. L. Beebe and Mr. Miller.

THUNDERBIRD PARK

Early in January a 60-foot pole carved by Messrs. Henry and Tony Hunt was completed and shipped to Montreal for erection in the Indian Pavilion at Expo 67. The original log was generously donated by MacMillan Bloedel Limited (Shawnigan Division). At the same time, a "welcome figure" designed and carved by Simon Charlie, of the Cowichan Band, was also completed and sent to Montreal. The log for this carving was donated by British Columbia Forest Products Limited. Later Mr. and Mrs. Henry Hunt, Mr. Jonathon Hunt (Henry's father), Mr. Tony Hunt, and Mr. Simon Charlie flew east to take part in the dedication ceremonies at the Indian Pavilion.

In April and May Mr. Charlie designed and carved two 12-foot poles which were presented by the Honourable W. K. Kiernan to the 3rd Field Squadron, R.C.E., for erection at the entrance to the camp at Vedder Crossing. Mr. Charlie also spent a week in San Francisco demonstrating carving as guest of the Canadian Government Travel Bureau.

The remaining time of the carvers was spent producing house posts and adzed planks to be used in constructing a replica of a dance house in the new museum. Logs for the planks were donated by MacMillan Bloedel Limited, and those for the house posts by British Columbia Forest Products Limited.

OUT-OF-PROVINCE TRAVEL

During 1967 various staff members travelled outside of British Columbia, as follows:—

Abbott: Ann Arbor, Mich., to attend annual meetings of the Society for American Archaeology, returning by way of Toronto and Ottawa (May).

Abbott: Bluff Creek, Calif., to investigate reports of Sasquatch.

Carl: Toronto, to attend joint meetings of the Canadian Museums Association and American Association of Museums, returning via Montreal (May).

Guiguet: San Francisco, to attend annual meeting of the North American Wildlife and Natural Resources Conference, returning by way of Denver, Colo., to study diorama presentation (March).

Macnair: Seattle, to attend Northwest Anthropological Conference (March).

Moore: Portland, Oreg., to attend a seminar as guest of the American Association of State and Local History (September).

Thorn: Toronto, to attend the joint meeting of the Canadian Museums Association and the American Association of Museums. He also visited the National Museum of Canada, Expo 67, Museum of History and American Museum of Natural History, New York (May).

Ward: Anchorage, Alaska, to attend the second conference on Southeast Alaska Native Artifacts and Monuments, and the inaugural meeting of the Alaska Historical Society at Anchorage, Alaska (November). (Mr. Moore accompanied Mr. Ward as guest of the Alaska Government to attend the same meetings as a consultant on organizational matters, and to address the first annual meeting of the Alaska Historical Society.)

EXTENSION SERVICES

The chief activity under this heading was that of Mr. Moore, who was appointed as Museum Adviser in October, 1966. In order to acquaint himself with the museums of the Province and to learn of their needs and problems, Mr. Moore travelled over much of British Columbia visiting as many institutions as possible and conferring with all interested persons. In those cases where a personal call was not possible, contact has been maintained by letter or by telephone.

The results so far have been most gratifying. In all cases he was able to offer helpful advice or to put persons with common interests in touch with one another. Often he acted as a catalyst between local groups requiring guidance in museum matters.

Mr. Moore also took an active part in the training course offered by Vancouver College by contributing to the teaching sessions in Vancouver and by arranging a two-week training session in Victoria whereby 11 students received specialized instruction at the Greater Victoria Art Gallery, the Maritime Museum of British Columbia, and the Provincial Museum. In this connection the co-operation of local residents who provided lodging and entertainment for the visitors was greatly appreciated.

In September Mr. Moore attended an intensive three-week seminar on museum management sponsored by the American Association of State and Local History. The meetings were held in Portland, Oreg.; Mr. Moore was the only Canadian to be selected for the course.

Throughout the year various staff members have presented lectures and demonstrations on numerous occasions, especially during the September meetings of the British Columbia Museums Association, hosted by the Maritime Museum of British Columbia. Two short television programmes were also given over Channel 8.

After an uninterrupted period of 12 years on the air, the weekly local radio programme "Outdoors with the Experts," in which the Director took an active part, was discontinued in May.

Mr. Abbott was appointed to the Advisory Committee to the 'Ksan project, an ARDA-sponsored scheme to improve the economic situation of Indians around the Bulkley and Upper Skeena Rivers. He has paid one visit to Hazelton to obtain background for the proposed reconstruction there and in connection with a craft training programme which he has been asked to organize.

In October Mr. Abbott organized a meeting of several dozen scientists and other persons at the University of British Columbia to view a film made by Mr. Roger Patterson, of Yakima, Wash., and purporting to show a Sasquatch photographed near Bluff Creek, Calif.

PUBLICATIONS

The following publications have appeared in 1967:—

G. Clifford Carl.

- On Powdered Wings. "Beautiful British Columbia," Spring, 1967.
The Lone Sentinel. Victoria Naturalist, Vol. 23, No. 9, pp. 101–102.
Arthur Lionel Meugens (1881–1967). Victoria Naturalist, Vol. 24, No. 2, p. 21.
Between Tides on Southern Vancouver Island. Naturalist's Guide to the Victoria Region. B.C. Nature Council, pp. 25–29.
Putting "Life" into Exhibits. Museum Round-up. British Columbia Museums Association, No. 28, pp. 45–47.

Carolyn M. Case.

- Cataloguing and Classifying. Museum Round-up. British Columbia Museums Association, No. 28, pp. 27–32.

L. Colin Curtis.

- The Mosquitoes of British Columbia. Occasional Papers of the British Columbia Provincial Museum No. 15, pp. 1–90.

George Moore.

- Random Notes. Museum Round-up. British Columbia Museums Association, No. 25, pp. 15–17.

- Twelve-day Workshop. Museum Round-up. British Columbia Museums Association, No. 26, p. 3.

- Museums and the Tourist Dollar. Museum Round-up. British Columbia Museums Association, No. 27, pp. 4–5.

- Museum Management. Vancouver City College, Museum Workers' Newsletter, November.

Robert F. Scagel.

- Guide to Common Seaweeds of British Columbia. British Columbia Provincial Museum Handbook No. 27, pp. 1–330.

Adam F. Szczawinski.

- Recommended References to the Flora of British Columbia. Provincial Museum 1967.

Erik Thorn.

- Preliminary Distributional List of the Spiders of British Columbia. Report of the Provincial Museum for 1966, pp. 23–39.

Philip R. Ward.

- Conservation. Museum Round-up. British Columbia Museums Association, No. 28, pp. 48–51.

- Some Notes on the Preservation of Totem Poles in British Columbia. British Columbia Provincial Museum, manuscript report. November.

In addition to the above, the following reprints were issued: "The Birds of British Columbia, (5) Gulls, Terns, Jaegers, and Skua," Handbook No. 13; "The Birds of British Columbia, (6) Waterfowl," Handbook No. 15; "Guide to Common Edible Plants of British Columbia," Handbook No. 20; "The Freshwater Fishes of British Columbia," Handbook No. 5.

In the meantime a manuscript on the Alcids and related sea birds is being prepared by Mr. C. J. Guiguet for possible publication in 1968.

STAFF CHANGES

Coupled with the need to increase the production of new displays and with the expanding scope of the Museum, several persons were added to the staff in 1967.

Two notable additions were Miss Carolyn M. Case as Curator of History and Dr. T. C. Brayshaw as Associate Curator of Botany. A graduate in history from the University of British Columbia, Miss Case spent several years in the museum field in England before coming to the present post; she is now in charge of the acquisition, documentation, preservation, and interpretation of historical items for the Provincial collection. Dr. Brayshaw is also a University of British Columbia graduate with special training in plant ecology and related fields. He has had some 10 years' experience in the employ of Canada Department of Forestry as a research scientist at Ottawa and Chalk River before returning to British Columbia.

At various times during the year Mr. Lloyd Cook, Mr. John Waters, and Mr. Alex James joined the display division as technicians, and for the summer months student help was employed as follows: Mrs. Nancy Hayden, Mr. E. J. Noury (archaeology), Miss Veronica Harrison (zoology), Mr. S. Harrison (botany), and Miss P. McAfee (display).

Mr. Robert Nichols left the Museum staff early in the year, and his duties as Museum field agent were taken over by Anthropological Technician John Sendey.

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

We were saddened by the loss of Mr. Milke, who died suddenly on September 5th just after a short turn of duty. He had been acting as occasional relief attendant since July, 1966.

At a ceremonial potlatch given at Alert Bay in late December, Anthropological Assistant Peter Macnair was greatly honoured by being given the Kwakiutl name "Muhleedi" by Chief Peter Smith, of Turnour Island, B.C.

ADMINISTRATION

In order to provide authority for the Provincial Museum to operate in the full field of human history, minor amendments to the *Museum Act* were proposed and approved at the 1967 Session of the Legislative Assembly. At the same time the objects of the Museum were rephrased in simpler and clearer terms.

ATTENDANCE

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

January	6,700	August	81,000
February	8,000	September	27,000
March	12,000	October	5,000
April	7,000	November	6,000
May	12,000	December	3,000
June	28,000		
July	78,000	Total	273,700

Of the total attendance, 9,621 persons were members of groups classified as follows:—

Kindergartens	7
School classes	117
Summer play groups	11
Guides or Scouts	44
Church groups	4
Birthday parties	7
Others (education for democracy, clubs, tours, etc.)	34
Total	224

The estimated total attendance is one of the largest on record, being matched only by the attendance in 1962, the year of the World's Fair in Seattle, Wash. The 1967 figure shows an increase of about 29 per cent over that of the previous year.

As has been the policy in recent years, the Museum's hours were extended to 9 p.m. each evening except Sunday during the summer months.

NEW BUILDING CONSTRUCTION

The contract for the final phase of construction of the main building of the Museum-Archives complex was awarded to Farmer Construction Limited, of Victoria, in December, 1966; work commenced almost immediately and continued without interruption throughout 1967. A rough schedule of progress is as follows:—

- January: Floors being poured; service tunnel to power-house under construction; retaining-walls and stairs being constructed in sunken garden (Oliver Construction Company).
- February: Service driveway poured, steam pipes and duct-work being installed.
- March: Pouring of third floor completed; south wall being erected.
- April: South and north wall completed; junction boxes for power-line installed along Government Street.
- May: Insulation applied to south wall; some stone facing in place.
- June: Plaster walls being installed in basement; lecture theatre floor poured.
- July: External stonework completed except for vertical columns; tarring and graveling of roof almost finished; insulation of interior steelwork largely completed.
- August: Partitions being installed on exhibit floors and walls being painted.
- September: Metal framing for windows being installed.
- October: Installation of marble work almost completed.

OBITUARIES

We pay tribute here to several citizens of British Columbia who have passed on in 1967.

Dr. Edgar C. Black, physiologist and faculty member of the University of British Columbia School of Medicine, renowned for his work on physiology of fatigue in fishes (March 11th).

Mr. Archie Nicholls, amateur naturalist and photographer of fungi, a long-time resident of British Columbia (July 17th in New Zealand).

Mr. Arthur Lionel Meugens, amateur oologist and photographer, co-founder of the Victoria Natural History Society (July 27th).

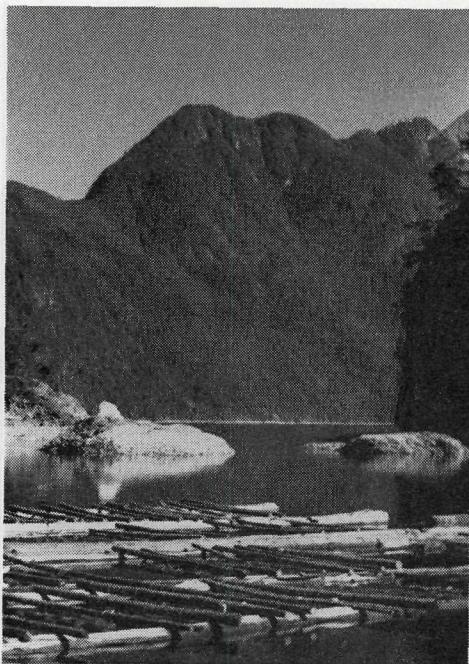
Mr. Norman Milke, relief attendant, on the Museum staff since June, 1966 (September 5th).

COMMERCIAL FISHERIES BRANCH





Barge-load of oyster-shell strings for collecting oyster spat.



An oyster-spat raft in Pendrell Sound (left) and shell strings for collecting oyster spat (right).

COMMERCIAL FISHERIES BRANCH

R. G. McMYNN, DIRECTOR

GENERAL

Participation by the Commercial Fisheries Branch in the many facets of British Columbia's commercial fisheries during 1967 resulted in a most gratifying year for the staff. Activities ranged from enforcement work in the shellfish fisheries and aquatic-plant industry to more or less routine licensing and inspection duties in the processing sector through advisory and consultative services in matters of pollution control and other resource-use conflicts. The Branch is finding more and more that its major contribution to the well-being of the commercial fisheries lies in its ability to act as the "Provincial voice" in the fisheries-management field, which, by legislation, is predominantly a Federal responsibility. As a result, attendance at meetings and membership on a number of fishery committees and boards is a time-consuming, but nevertheless, productive activity of the Commercial Fisheries Branch. For the first time in many years the Branch represented the Province at two meetings international in scope in 1967—the North Pacific Fisheries Commission in Tokyo and the Southeast Alaska Salmon Fishery meeting in Seattle. Two Federal-Provincial British Columbia Fishery Committee meetings have been instrumental in improving understanding and co-operation between Federal and Provincial Government agencies involved in fishery matters.

One new piece of Provincial fishery legislation was enacted in 1967. This was a regulation aimed at preventing further spread of the oyster drill, a parasitic snail very damaging to oyster beds. Considerable time was spent during the year in drafting Provincial fish-inspection legislation to parallel recently enacted Federal Acts and regulations, but these will not be ready until 1970 at least.

The acquisition of a 28-foot patrol vessel, the M.V. "Marten," late in 1967 greatly increases the mobility and effectiveness of the Branch's activities, especially in the oyster and clam fisheries. As interest develops in the field of aquatic plants, the M.V. "Marten" will be a valuable management tool. The vessel also means that the Branch can maintain closer contact with fish buyers, packers, and processors, a difficult task when restricted to ground transportation.

The following figures indicate the wholesale value of fish and fish products, the number of boats and fishermen, and the value of fishing-gear for the 1962-67 period. The significant decline in number of licensed boats and fishermen has resulted from the imposition of higher salmon licence and boat registration fees in 1965. It is, however, necessary to point out that the reduction in the salmon fleet has only involved the "putter fleet" (the small 12- to 16-foot boats operated by part-time commercial fishermen); the building of new and larger salmon-trolling vessels is still continuing.

*Wholesale Value of Fish and Fish**Products*

1962	\$94,673,000
1963	76,000,000
1964	92,117,000
1965	84,666,000
1966	118,000,000
1967 (estimated)	80,000,000

Number of Licensed Boats

1962	9,143
1963	9,745
1964	9,343
1965 (not available)	—
1966	7,435
1967	7,341

<i>Number of Licensed Fishermen</i>	<i>Value of Gear</i>
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
1966 ----- 11,977	1966 ----- 11,414,000
1967 ----- 11,800	

At the time of writing it is estimated that the wholesale value of fish and fish products for 1967 will be above average for the past 10 years but considerably less than the record value for 1966.

The very much reduced herring catches, as well as reduced halibut, coho, and groundfish landings, have contributed to this decline from 1966. Fortunately, good catches of sockeye salmon tended to offset the herring, halibut, and coho situation. Current showings of coho, grilse, and chinook salmon in the winter sport fishery give an optimistic outlook for these species in 1968.

The canned-salmon pack for 1967 was 1,466,288 cases, 352,927 less than the 1966 pack of 1,819,215 cases. Although this year's pack was down, it was still the second highest in the last five years. The total this year included 12,897 cases of sockeye, 2,301 cases of pinks, and 1,104 cases of other species, totalling 16,302 cases, packed from salmon imported from the United States.

BRITISH COLUMBIA SALMON-CANNING INDUSTRY

Twenty-two salmon canneries were licensed to operate in 1967. 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, 9. One previously licensed cannery in the Vancouver area ceased production, and the machinery and equipment were dismantled.

COMPARATIVE PACK BY SPECIES (48-POUND CASES)

	1966	1967
Sockeye -----	407,949	558,910
Chinook -----	14,585	14,962
Steelhead -----	2,480	1,294
Bluebacks -----	21,087	7,798
Coho -----	260,536	138,869
Pink -----	951,794	650,460
Chum -----	160,784	93,995

HERRING PRODUCTION

A ban on herring fishing in the coastal waters of British Columbia by means of purse-seines and trawl-nets was imposed in October in order to rebuild the herring population. This fishery has been declining in value for some time, and the catch statistics for September, 1967, showed a production of only 3,070 tons, worth \$101,000, less than a third of the landings of the previous year. The winter herring fishery was at one time valued at about \$8,000,000, practically all from oil and meal production. Prices have declined on world markets, and, this year, operators offered fishermen \$9.60 per ton, compared to the price of \$17.40 per ton in effect since 1965.

Latest available reports for 1967 show herring-meal production of 2,711 tons and herring-oil production of 401,589 gallons. The production to the same date in 1966 was 8,062 tons of meal and 1,231,760 gallons of oil.

DOGFISH SUBSIDY

The Federal Government once again allocated a sum of money for continuation of the marketing assistance programme for production of dogfish flaps. This programme, initiated last year, has an appropriation of \$24,000, and this will provide for the production of approximately 200,000 pounds of flaps. At present the dogfish fishery cannot operate without government subsidy, but industry is hopeful that it could, in time, turn into a self-sustaining operation.

AQUATIC PLANTS

Six companies now hold all British Columbia coastal areas under licence, and, although only one company is at present actively engaged in harvesting or processing any aquatic plants, it seems more than likely that a sizeable industry has been founded. In order to provide encouragement in this field, a new policy of issuing 21-year licences for harvesting areas is now in force, and four of the six companies now hold such licences.

In the case of one of these companies, the Commercial Fisheries Branch has made, as a condition of the licence, the harvesting by 1969 and 1970 a designated minimum tonnage of kelp. If this condition is not met, the long-term licence will be subject to cancellation. Each of the other long-term licences will also be subject to annual review by the Minister of the Department of Recreation and Conservation.

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 1967 regulatory areas were as follows:—

- Area 2—South of 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 Pribiloff Islands in Bering Sea.
- Area 4B—Fox Islands in Bering Sea.
- Area 4C—South of a line between Cape Sarichef and Cape Navarin.
- Area 4D—West of 175° W. and the north-eastern flats.

Catch limits in 1967 were not attained in either Area 2 or Area 3A, where the bulk of Pacific Coast production is taken. The total catch by British Columbia fishermen for the season was 24,091,000 pounds, compared to 31,831,000 pounds in 1966. Landings were fairly evenly divided, 9,210,000 pounds in northern ports and 8,556,000 pounds in the south. A total of 6,313,000 pounds was landed at American ports.

PACIFIC OYSTER BREEDING, 1967

The summer of 1967 was characterized by long periods of exceptionally hot weather, resulting in high water temperatures favourable to the breeding of Pacific oysters. Setting occurred in Departure Bay, and breeding appears to have been general in the Strait of Georgia.

PENDRELL SOUND

A considerable number of straight-hinged Pacific oyster larvæ were taken in five-minute tows as early as June 8th. On June 15th, although the number of larvæ was small, temperatures in the sound ranged from 22.2° to 24.0° C. On June 22nd, with temperatures still well into the twenties, large numbers of early umboined and late straight-hinged forms were taken in plankton tows. Surface salinities were 16 ppt. on June 24th.

By June 28th, gear was available in the sound for quantitative sampling and for making temperatures and salinity measurements to depths of 20 metres or more. At this time, salinities were about 15 ppt. and surface temperatures were just about 22.0° C. There were 8.2 larvæ per gallon, of which the majority (72.0 per cent) were in the early umbo stage; together with the straight-hinged forms, these accounted for 87 per cent of the larval population. By June 30th, early and mid umbos made up the bulk of numbers (58 and 34 per cent respectively), but the over-all concentration was down to 1.9 per gallon. Salinities were still around 15 ppt. at the surface, and temperatures lay between 21° and 22° C.

Between June 30th and July 4th setting started, but by July 4th there were only 0.2 larva per gallon, all in the advanced umbo stage. The vast majority of larvæ, which had not been ready to set, had simply disappeared. Salinity in the upper sound was still around 15 ppt., but in the middle sound it had dropped to 10 ppt. in the surface layers; temperatures were still well above 20° C. down to a depth of 5 metres. It is possible, then, that there had been mortality caused by low salinities.

This first set gave only about four spat per shell on the experimental strings.

Measurements of salinity on July 7th gave a most extraordinary picture; the salinity rose from 11.3 ppt. at the surface to 11.6 ppt. at 4 metres but rose to 21.3 ppt. by the 5th metre, a sudden rise of nearly 10 ppt. in only a single metre of depth. Temperatures remained between 21 and 22° C. Despite the low salinity, it appeared that spawning had recently occurred since, although larval concentrations were only 0.7 per gallon, 94 per cent of these were in the straight-hinged stage.

No quantitative samples were taken on July 13th but a five-minute tow showed a fair number of straight-hinged forms. Salinities in the upper and middle sound lay between 11 and 12 ppt. at the surface. Temperatures on the surface were nearly 25° C., and even at 2 metres they were around 23° C. Quantitative samples taken on July 17th showed straight-hinged larvæ in a concentration of 8.2 per gallon; surface salinities were generally between 11 and 13 ppt., while temperatures lay between 22° and 24° C.

Readings taken on July 21st showed a drop in temperature of some 2° to 3° C., compared with the 17th; however, there had also been a rise in salinity of 1 to 3 ppt. Larval concentrations stood at 0.9 per gallon, all straight-hinged forms, but by July 26th there were 120 straight-hinged forms per gallon, the highest concentration recorded during the summer of 1967. The salinity stood between 13 and 14 ppt., and surface water temperatures were between 22° and 24° C.

By July 21st the bulk of the larvæ (86 per cent) were in the early umbo stage, with an average length of 124 u.; over-all concentration was 71.4 per gallon. Salinities were generally at 14 ppt. or slightly above; temperatures lay between 20° and 22° C. The heavy phytoplankton bloom which had accompanied the preceding periods of low salinity was showing signs of disappearing. However, readings made on August 3rd indicated that this upward trend in salinity was

being reversed; salinity was 12.4 ppt. at the head of the sound and fell progressively toward the mouth, where it was only 8.5 ppt. at the surface. Temperatures were around 20° to 22° C. There were 88 larvæ per gallon, and a larger proportion were in the mid-umbo stage. This growth was also reflected in the greater average size of 180 u.

Salinity in the upper sound had further declined by August 7th, but had risen in the lower and middle sound; temperatures were around 21° C. There were 98 larvæ per gallon; the average size (length) was 154 u., and the majority were in the early umbo stage. This apparent decrease in size must be put down to sampling error. At this stage the salinometer became unserviceable, and it was no longer possible to make comprehensive temperature and salinity profiles. However, samples of water could be taken and their salinity measured by means of a hydrometer.

Of the 88 larvæ per gallon sampled on August 10th, 79 per cent were in the mid-umbo stage and only 4 per cent were in the advanced umbo stage. Surface salinities were 14 to 15 ppt. Setting began shortly after this date, giving about 35 spat per shell on the experimental strings. Sets on commercial strings varied from 0 to 98 per shell. On August 14th there were only seven larvæ per gallon, and nearly all of them were dead or moribund. Salinities varied from 13.1 ppt. in the lower sound to 16 ppt. at the head; temperatures were still in the twenties. Since the larvæ had already survived salinities lower than those prevailing at this time, it is difficult to ascribe mortality to this source.

No further quantitative samples were taken after this date, and plankton tows failed to reveal any significant numbers of larvæ. The average final count for commercial cultch was 38 spat per shell.

LADYSMITH HARBOUR

Temperatures during July were around 20° to 21° C. On July 26th six larvæ in the advanced umbo stage were found in a five-minute tow at the head of the harbour, which was somewhat surprising since no straight-hinged forms had been previously noticed. On August 2nd, with temperatures between 21° and 22° C., eyed larvæ were found in the plankton, and the local growers were accordingly advised to put out their cultch. Temperatures continued to rise, slightly exceeding 23° C. by August 16th, and fair numbers of umboed and eyed forms persisted in the plankton. Some commercial shell was removed on August 29th and was found to have 53.5 spat per shell. By September 8th a few advanced umbos were present still, but water temperatures were down to around 18° C., so observations were discontinued from this time.

CUSTOM CANNERIES

Four canneries designed to custom-can sport-caught salmon operated during 1967. They were located at Brentwood, Madeira Park, Nanaimo, and Quadra Island. Production to the end of November, 1967, was 101,022 cans, and although a new cannery operated this year, the total pack was 9,737 cans fewer than that of 1966. Three thousand two hundred and nine sportsmen used these facilities; 2,078 were residents, 1,131 non-residents. The following number and species of salmon were canned: Coho, 6,846; chinook, 2,779; pink, 369; sockeye, 226; steelhead, 110; chum, 28. In addition, the canneries smoke-cured a total of 7,764 pounds of sport-caught salmon.

REVIEW OF FISHERIES PRODUCTION, 1966

The total marketed value of the fisheries of British Columbia for 1966 amounted to \$118,000,000, which was \$33,300,000 more than in 1965. The main reasons for this increase were salmon landings of 163,000,000 pounds, compared with 90,000,000 pounds in 1965, and a canned-salmon pack of 1,819,215 cases, nearly double the 1965 pack. The wholesale value of halibut at \$10,700,000 exceeded the previous year. Slightly offsetting this was a decline in the value of herring fishery of some \$3,400,000.

As marketed, the principal species were salmon, with a value of \$86,600,000; halibut, with a value of \$10,700,000; and herring, with a value of \$8,300,000.

The landed value of the 1966 halibut catch was \$8,687,000, as compared to \$8,699,000 in 1965.

In 1966 the marketed value of shellfish amounted to \$3,426,000. The value of the clam production was \$383,000; oyster production, \$964,000; crab production, \$1,438,000; and shrimp production, \$641,000.

GEAR AND EQUIPMENT

The 1966 inventory of fishing-gear included 9,843 salmon gill-nets, 511 salmon purse-seines, 7 salmon drag-seines, 107 herring gill-nets, 119 herring purse-seines, and 13 herring trawl-nets, with a total value of \$7,583,000. Wire, cotton, and nylon trolling-lines were valued at \$545,000.

SALMON-CANNERY OPERATIONS

The Commercial Fisheries Branch licensed 23 salmon canneries to operate in 1966, one more than in 1965. The operating canneries in 1966 were located 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.

The total canned-salmon pack for British Columbia, according to the annual returns submitted to this Branch by canners licensed to operate in 1966, amounted to 1,819,215 cases, 905,258 cases more than the 1965 pack. The canning industry experienced an excellent year with a resultant record wholesale canned pack valued at \$64,062,000.

Sockeye Salmon

The 1966 sockeye pack was 407,949 cases. This total was well above the pack of 245,798 cases in 1965 and the highest since 1958.

Pink Salmon

The pink pack of 951,794 cases was valued at \$27,272,654. This was the largest pink pack since 1962.

Coho Salmon

Although the 1966 pack of 281,623 cases was slightly below the pack of 295,284 cases in 1965, landings of 38,681,000 pounds were at a record level. Wholesale value of coho was \$20,847,000, highest in the last 10 years.

Chum Salmon

Landings of chum salmon were more than double those of 1965. The canned pack of 160,784 cases had a wholesale value of \$3,880,000.

Chinook Salmon

Chinook salmon landings of 15,300,000 pounds were within 2 per cent of the record production of 1963. The value of these landings, amounting to \$6,700,000, was \$1,100,000 higher than the previous record of 1965.

Steelhead

The 1966 steelhead-trout pack amounted to 2,480 cases, 1,637 more than the 1965 pack of 843 cases. Although steelhead are not salmon, some are canned each year, principally those caught incidental to fishing other species.

OTHER CANNERIES

Shellfish Canneries.—In 1966, 11 shellfish canneries were licensed to operate in British Columbia and produced the following pack: Clams, 22,195 cases; crabs, 13,484 cases; abalone, 15 cases; shrimp, 84 cases; oysters, 20,412 cases.

Tuna-fish Canneries.—Two of the three tuna-fish canneries licensed to operate in 1966 produced a pack of 192,977 cases of canned tuna.

Specialty Products.—Sundry processing plants produced the following: Fish paste, 26,544 24/2½-ounce cases; battered salmon, 3,235 hundredweight; shredded lingcod (Sushi), 162 cases; lingcod fish cakes, 54,000 ½-pound cakes; canned smoked oysters, 194½ 24/4-ounce cases; anchovy paste, 180 pounds; smoked-salmon paste in assorted containers, 8,551 pounds; specialty pack smoked salmon in mayonnaise and in oil, 1,615 pounds; canned smoked salmon, 349 cases of various sizes.

FISH-CURING

Eighteen smoke-houses processed the following: Herring (kippers, 56,547 pounds; bloaters, 6,420 pounds); cod, 484,798 pounds; salmon, 524,493 pounds; eels, 5,000 pounds; mackerel, 4,450 pounds; steelhead, 302 pounds; shad, 300 pounds; sturgeon, 250 pounds; and trout, 35 pounds.

DRY-SALTED HERRING

In 1966, 101.75 green tons of herring were salted; of these, 81 tons were packed in boxes.

PICKLED HERRING

Four plants put up the following: 720 cases of 12/12-ounce jars; 1,659 cases of 12/32-ounce jars; 4,040 cases of 12/16-ounce jars; 135 cases of 6-pound cans; 4,270 12-ounce jars; 3,480 14-ounce containers; 240 25-pound kits; 877 tins of rollmops; 812 tins of Bismark herring; and 1,244 tins of specialty pack.

FROZEN HERRING BAIT

Thirteen firms reported a total production of 39,835,200 pounds of frozen bait in 1966.

MILD-CURED SALMON

Five plants were licensed to operate in 1966 and produced 291 tierces with a total weight of 2,400 hundredweight. In 1965, five plants were licensed and produced 541 tierces with a total weight of 6,087 hundredweight.

SALMON ROE

Ten plants reported the following production for 1966: 4,000 cartons of 24/3-ounce, 24/3¾-ounce, and 24/5-ounce glass jars of salmon-roe caviar;

593,465 pounds of salted salmon roe; 338,000 pounds of salmon caviar Japanese style; salmon-roe bait, 40,000 pounds; and 139,192 pounds of salmon roe, use not specified.

HALIBUT

Halibut fishing 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 31,999,300 pounds, valued at \$11,471,000. Halibut fishing in British Columbia coastal waters closed August 25th.

FISH OIL AND MEAL

A six-week strike in the fall, coupled with a coast-wide scarcity of fish, gave British Columbia fishermen their poorest herring season in five years.

The year's landings dropped to 153,826 tons, nearly 70,000 tons under the 1965 total and far below the record number of 286,290 tons landed in 1963.

There were 10 herring-reduction plants licensed to operate in 1966, and these plants produced a total of 27,058 tons of meal and 27,560,000 pounds of oil. Total value of all herring products was \$8,305,000.

Fish-liver Reduction (Cod, Dogfish, Halibut).—Three plants were licensed in 1966, processing 170,939 pounds of fish livers and producing 787,992 million U.S.P. units of Vitamin A. In 1965 two plants processed 78,748 pounds of fish livers and produced 291,626 million U.S.P. units of Vitamin A.

Fish-offal Reduction.—During the 1966 season nine plants were licensed to operate and produced 6,540 tons of meal and 676,678 gallons of oil. In 1965 nine plants produced 694.25 tons of meal and 59,772 gallons of oil.

STATISTICAL TABLES

TABLE I.—LICENCES ISSUED AND REVENUE COLLECTED, 1963 TO 1967, INCLUSIVE

Licence	1963		1964		1965		1966		1967	
	Number	Revenue	Number	Revenue	Number	Revenue	Number	Revenue	Number	Revenue
Salmon cannery.....	24	\$4,800	21	\$4,200	22	\$4,400	23	\$4,600.00	22	\$4,400.00
Herring cannery.....			1	100						
Herring reduction.....	13	1,300	9	900	12	1,200	9	900.00	8	800.00
Tierced salmon.....	5	500	4	400	5	500	4	400.00	3	300.00
Fish cold storage.....	19	1,900	20	2,000	21	2,100	19	1,900.00	19	1,900.00
Fish-processing.....	38	38	45	45	54	54	59	59.00	86	86.00
Shellfish cannery.....	13	13	14	14	9	9	11	11.00	11	11.00
Tuna-fish cannery.....	4	4	3	3	3	3	3	3.00	1	1.00
Fish-offal reduction.....	9	9	8	8	9	9	9	9.00	9	9.00
Fish-liver reduction.....	3	3	3	3	3	3	3	3.00	1	1.00
Whale reduction.....	1	100	1	100	1	100	1	100.00	1	100.00
Herring dry-saltery.....	2	200	1	100			1	100.00		
Fish-buyers.....	447	11,175	403	10,075	404	10,100	400	10,000.00	387	9,675.00
Pickled-herring plant.....			1	100			1	100.00		
Province of B.C., receipts.....			3	60	5	72	10	363.70	145	2,375.21
Custom canneries.....							3	75.00	4	100.00
Aquatic-plant harvesting.....							26	260.00	44	440.00
Oyster-picking permits.....							19	190.00	189	1,890.00
Aquatic-plant processing.....									2	20.00
Totals.....	578	\$20,042	537	\$18,108	551	\$18,625	601	\$19,073.70	932	\$22,108.21

TABLE II.—SPECIES AND VALUE OF FISH CAUGHT IN BRITISH COLUMBIA,
1962 TO 1966, INCLUSIVE

	1962	1963	1964	1965	1966
Salmon.....	\$69,763,000	\$48,960,000	\$63,103,000	\$52,071,000	\$86,572,000
Herring.....	8,492,000	11,695,000	11,561,000	11,752,000	8,305,000
Halibut.....	9,312,000	7,993,000	8,056,000	10,191,000	10,741,000
Crabs and shrimps.....	1,415,000	1,573,000	1,751,000	1,740,000	2,079,000
Lingcod.....	544,000	492,000	549,000	723,000	797,000
Grey cod.....	405,000	705,000	1,160,000	1,800,000	1,837,000
Oysters.....	608,000	781,000	647,000	708,000	964,000
Sole.....	584,000	643,000	662,000	661,000	1,126,000
Black cod.....	173,000	162,000	273,000	321,000	451,000
Clams.....	448,000	340,000	190,000	296,000	383,000
Livers and viscera.....	58,000	57,000	55,000	15,000	25,000
Miscellaneous.....	2,876,000	2,599,000	4,110,000	4,197,000	4,704,000
Totals.....	\$94,673,000	\$76,000,000	\$92,117,000	\$84,475,000	\$117,984,000

TABLE III.—STATEMENT SHOWING THE QUANTITY OF HERRING PRODUCTS
PRODUCED IN BRITISH COLUMBIA, 1961 TO 1967, INCLUSIVE

Season	Canned	Dry-salted	Meal	Oil
1961/62.....	Cases 19,102	Tons —	Tons 40,746	4,751,082 gal.
1962/63.....	892	206.35	41,299	40,243,000 lb.
1963/64.....	—	562.30	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.
1966/67.....	—	101.75	27,058	27,560,000 lb.

TABLE IV.—STATEMENT SHOWING THE QUANTITY OF MEAL, OIL, AND VITAMIN A
PRODUCED FROM SOURCES OTHER THAN HERRING, 1960 TO 1967, INCLUSIVE

Season	From Whales		Oil from Fish Livers	From Other Sources	
	Meal	Oil		Meal and Fertilizer	Oil
1960/61.....	Tons —	Gal. —	Units ¹ 2,258,748	Tons 2,099	Gal. 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
1966/67.....	2,399	535,250	787,992	6,366.5	684,703

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, 1962 TO 1966, INCLUSIVE,
SHOWING AREAS WHERE CANNED
(48-pound cases.)

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

1962

Species	Area		Total
	Districts Nos. 1 and 3	District No. 2	
Sockeye.....	198,001	99,715½	297,716½
Red spring.....	1,217½	904	2,121½
Pink spring.....	1,145½	1,190	2,335½
White spring.....	1,698½	1,019	2,717½
Steelhead.....	520½	294½	815
Blueback.....	12,097	—	12,097
Coho.....	120,038	55,600	175,638
Pink.....	508,878½	679,783	1,188,661½
Chum.....	70,304	64,179	134,483
Totals.....	913,900½	902,685	1,816,585½

1963

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

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

TABLE V.—BRITISH COLUMBIA SALMON PACK, 1962 TO 1966, INCLUSIVE,
SHOWING AREAS WHERE CANNED—*Continued*

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

1966

Sockeye.....	287,319½	120,629½	407,949
Red spring.....	4,254½	1,743½	5,998
Pink spring.....	1,583	2,905	4,488
White spring.....	2,054	2,045	4,099
Steelhead.....	457½	2,022½	2,480
Blueback.....	20,989	98	21,087
Coho.....	136,750½	123,785½	260,536
Pink.....	252,773	699,021	951,794
Chum.....	36,078	124,706	160,784
Totals.....	742,259	1,076,956	1,819,215

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