PROVINCE OF BRITISH COLUMBIA

ANNUAL REPORT 1974

British Columbia Department of Recreation and Conservation

HON. JACK RADFORD, *Minister* — LLOYD BROOKS, *Deputy Minister*
ED VERNON *and* BOB AHRENS, *Associate Deputy Ministers*

containing the reports of the

GENERAL ADMINISTRATION

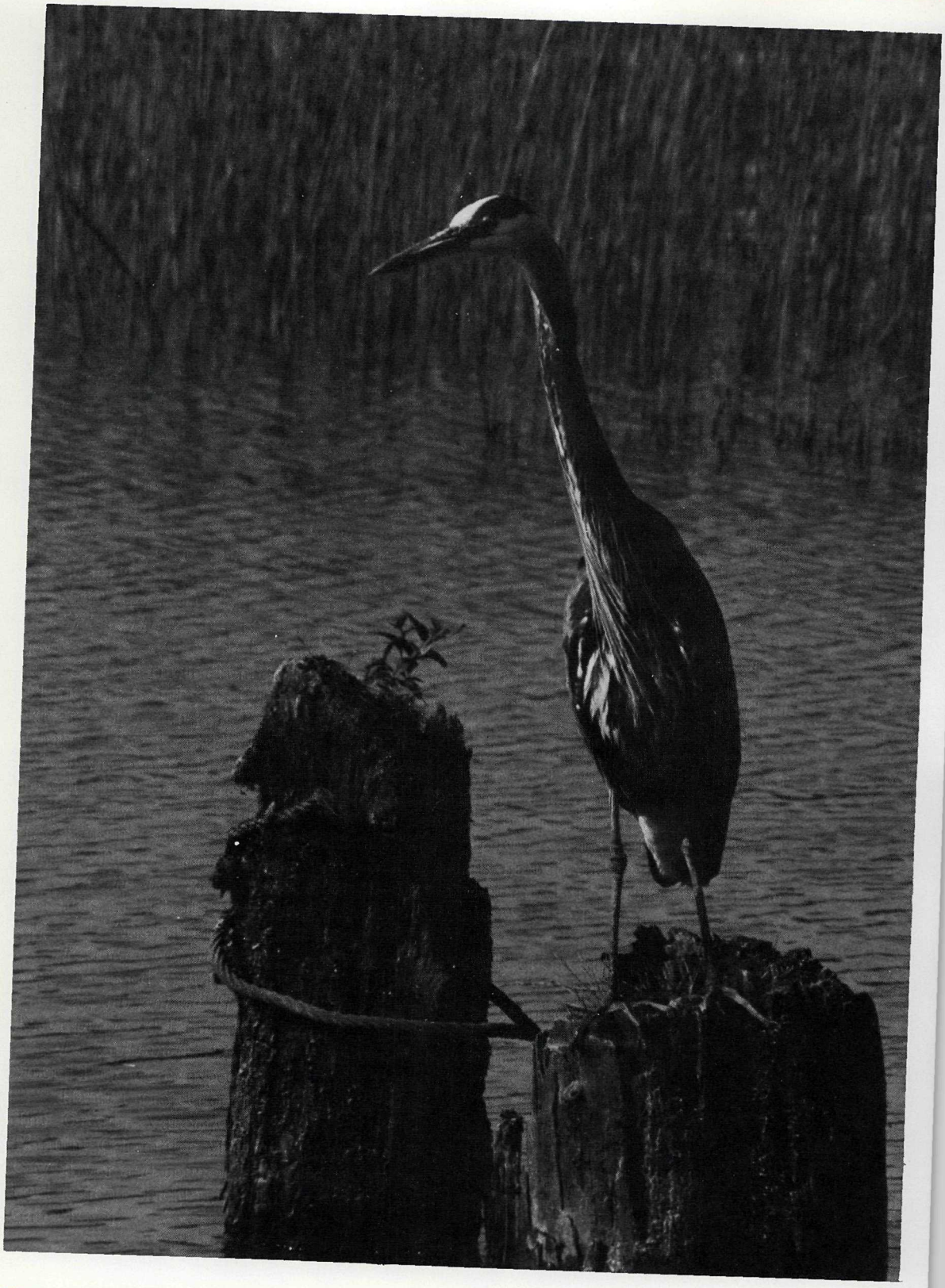
FISH AND WILDLIFE BRANCH

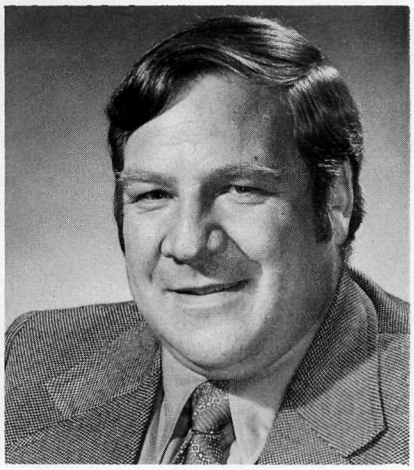
PROVINCIAL MUSEUM

PROVINCIAL PARKS BRANCH

MARINE RESOURCES BRANCH

FOR THE YEAR ENDED DECEMBER 31, 1974





The Honourable Jack Radford,
Minister of Recreation and Conservation.

To Colonel the Honourable WALTER STEWART OWEN, Q.C., LL.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, 1974.

JACK RADFORD
Minister of Recreation and Conservation

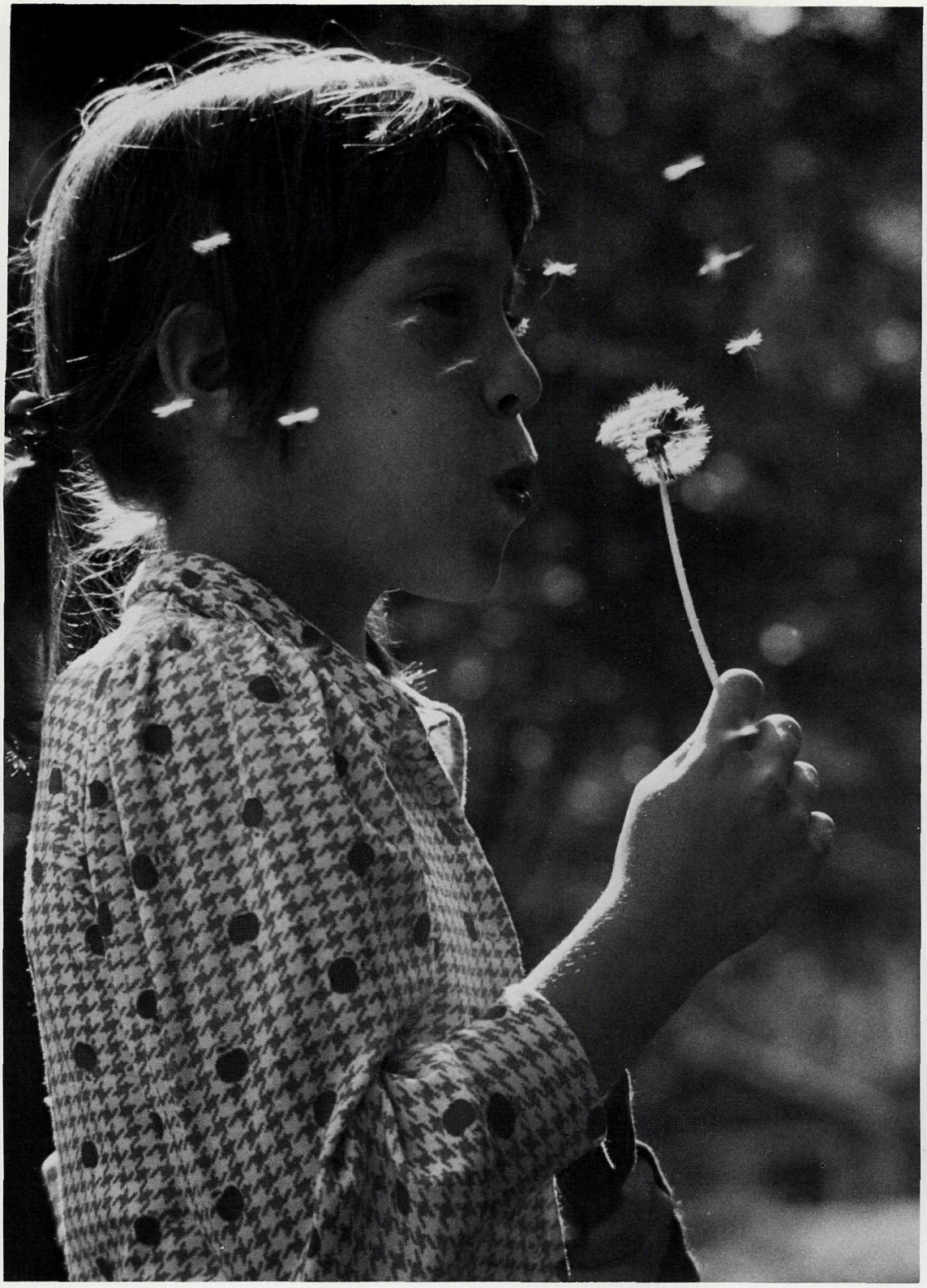
Victoria, B.C., February 1975.

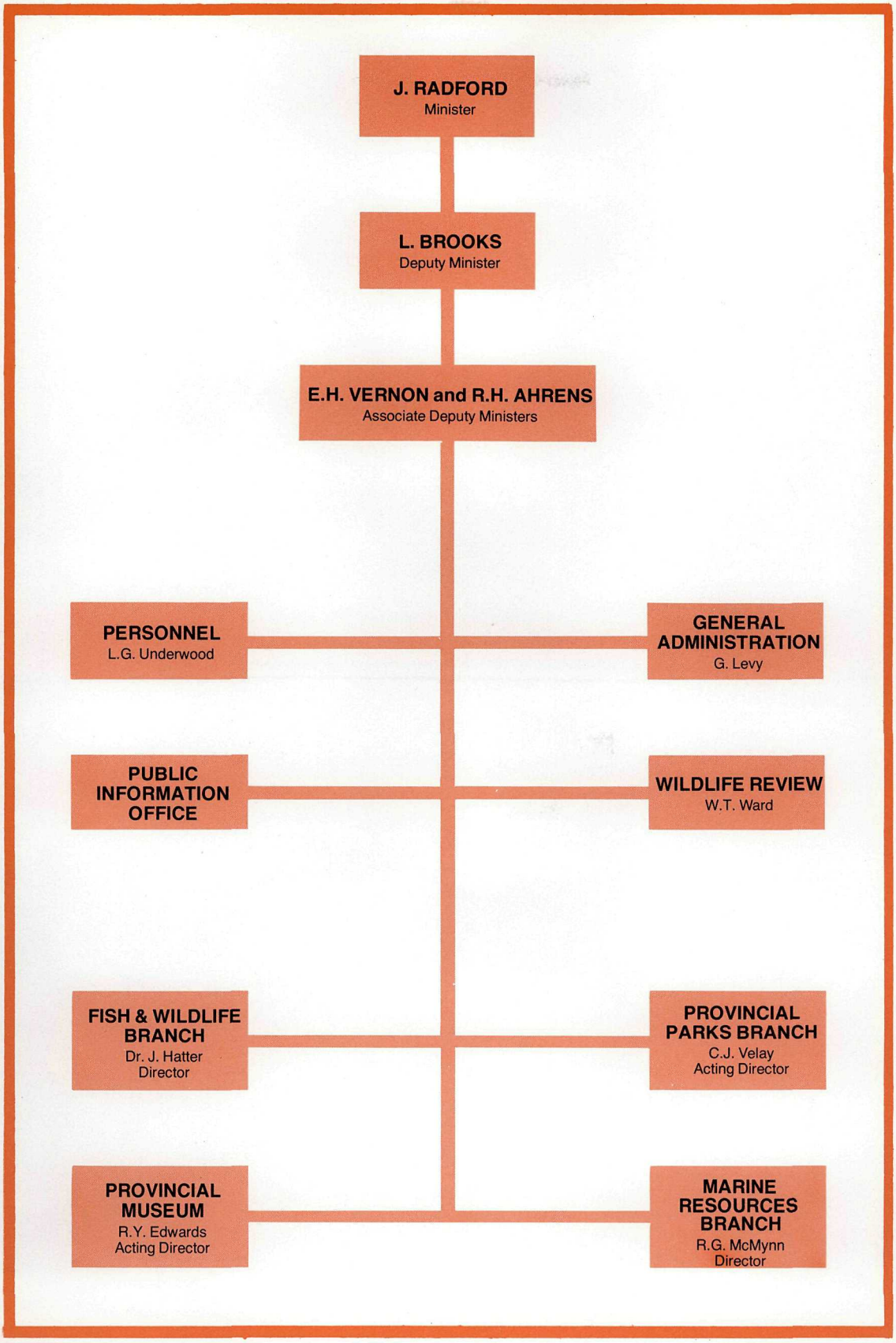
To the Honourable JACK RADFORD,
Minister of Recreation and Conservation.

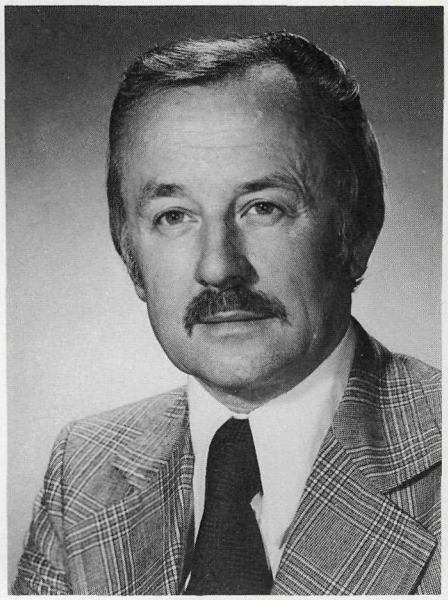
SIR: I have the honour to submit the Annual Report of the Department of Recreation and Conservation for the year ended December 31, 1974.

LLOYD BROOKS
Deputy Minister of Recreation and Conservation

Victoria, B.C., February 1975.




J. RADFORD
Minister
L. BROOKS
Deputy Minister
E.H. VERNON and R.H. AHRENS
Associate Deputy Ministers
PERSONNEL
L.G. Underwood
GENERAL ADMINISTRATION
G. Levy
PUBLIC INFORMATION OFFICE
WILDLIFE REVIEW
W.T. Ward
FISH & WILDLIFE BRANCH
Dr. J. Hatter
Director
PROVINCIAL PARKS BRANCH
C.J. Velay
Acting Director
PROVINCIAL MUSEUM
R.Y. Edwards
Acting Director
MARINE RESOURCES BRANCH
R.G. McMynn
Director

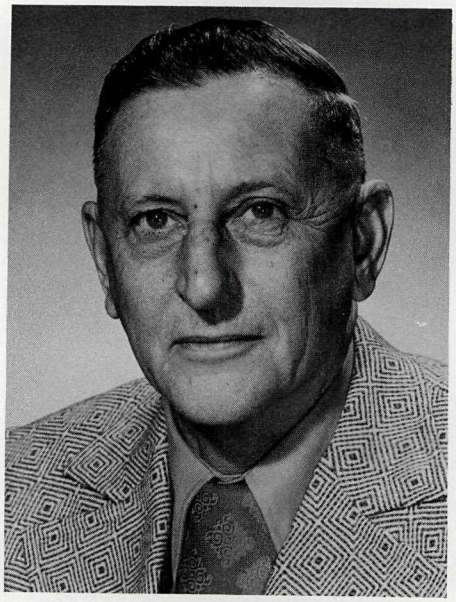


Lloyd Brooks,
Deputy Minister.

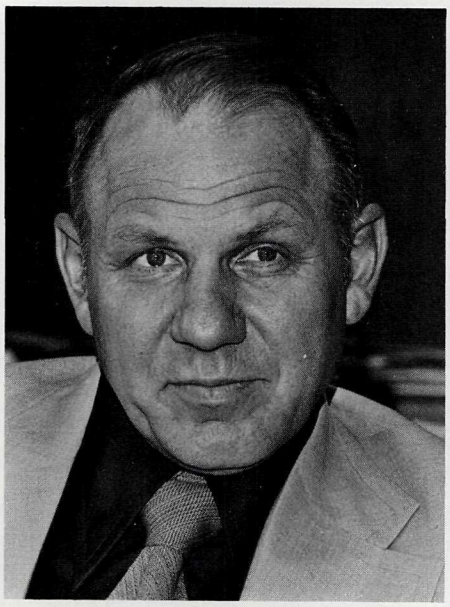
The Department of Recreation and Conservation is composed of a number of branches which together work toward an over-all responsibility for the management of living, recreational, and cultural resources in British Columbia. The Fish and Wildlife Branch is responsible for the protection and management of fish, wildlife, and their associated habitat. The Parks Branch is responsible for identifying, securing, and managing Provincial parklands. The Museum Branch collects, researches, and preserves many components of our history, culture, and living resources. The Marine Resources Branch is the Provincial voice in the commercial and recreational management of marine resources.

These branches are concerned with resources of land and water; of plants and animals and the communities which they form. Many of these resources are seen as the responsibilities of other agencies as well. But unlike any other resource department, the Department of Recreation and Conservation regards them as natural amenities for the enrichment of life in this Province. While other agencies are involved with the commercial or industrial use of natural resources, this Department looks to their recreational and cultural potential and seeks to secure and develop opportunities for their public use and enjoyment. The result is not only a wide range of recreational and educational benefits but also the security of knowing that we are preserving future options for the use of these resources.

In a time of growing population and expanding development of all types, this role becomes a most difficult one. The public, with a new sensitivity to environmental issues and a greater proportion of leisure time, is increasingly aware of the value of natural systems and environments. As a result they are demanding a greater quantity and quality of outdoor opportunities. But at the same time an expanding population and continuing industrial and resource development is steadily degrading the very basis for these opportunities. As the Department responsible for the conservation of recreational and living resources, we are caught squarely between the two. As a result, and as this Report will indicate, we are increasingly concerned with preventing or mitigating the more destructive results of this type of development. It is only in this way that the values we represent will be secured both now and for the future.



E. H. (Ed) Vernon,
Associate Deputy Minister.



R. H. (Bob) Ahrens,
Associate Deputy Minister.

General Administration

The general administration group consists of the Deputy Minister's office and those of the Associate Deputy Ministers; the Accounts office, the personnel section and, for the last year, the Departmental information office. At the most senior level —that of the Deputy and Associate Deputy Ministers—this function is responsible for creating an administrative and policy bridge between the minister's office and the senior staff of all branches of the Department. As an executive group, this office creates Departmental policy and guidelines, act as senior Departmental liaison on broad Governmental and interdepartmental issues and provide guidance to branches in major policy, budgeting, and administrative matters. The accounts office provides central accounting and fiscal control services, including those of payroll, and Departmental budgeting. The Personnel Section provides broad personnel services including those of recruitment, classifications, and advice on functional organization systems and union-management relations. The information office, responsible for providing public information services, was transferred to the newly formed Information and Education Branch in late 1974.

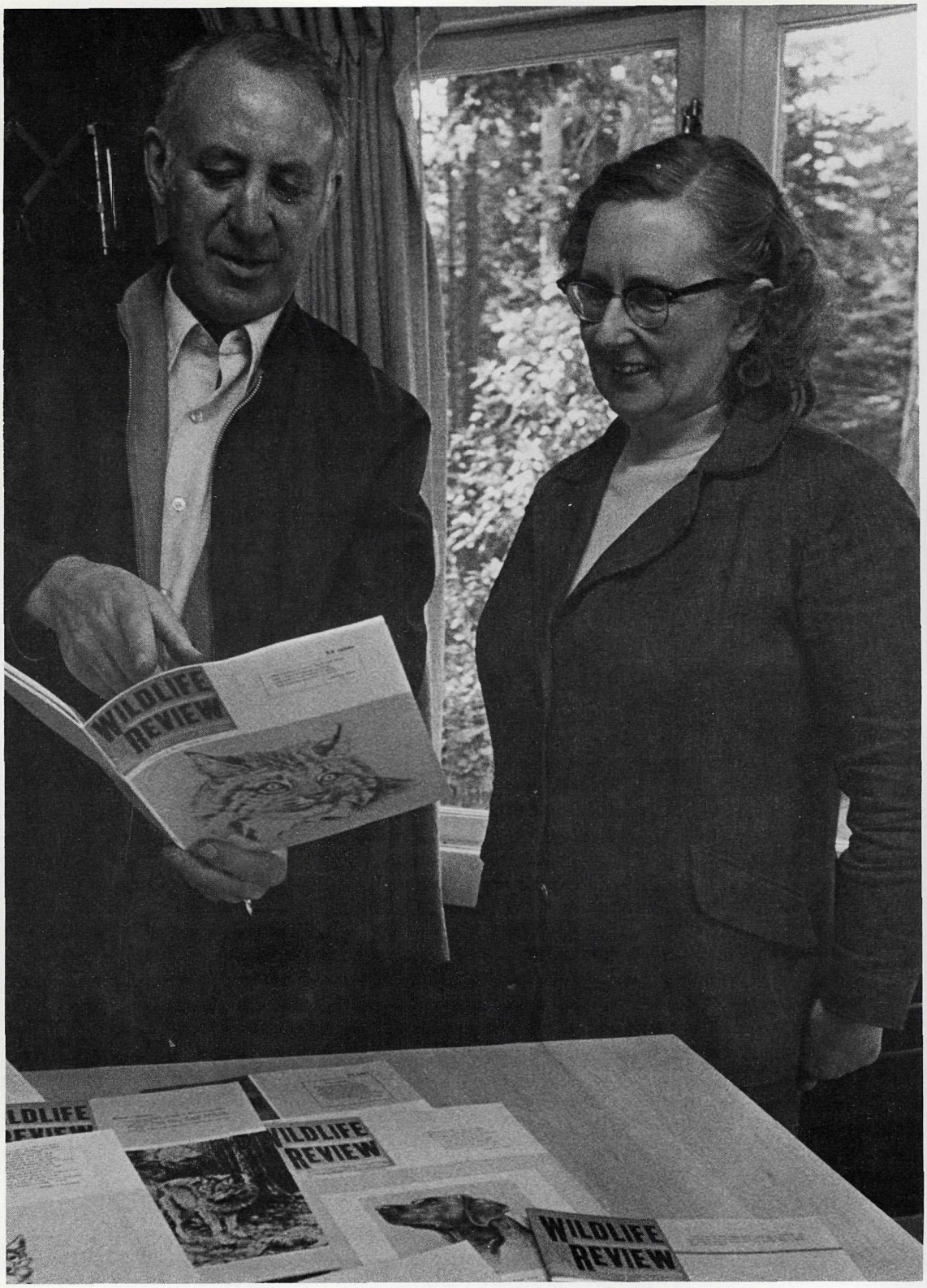
A major step in developing the capability of this group was made with the appointment of two Associate Deputy Ministers. E. H. Vernon, formerly of the Fish and Wildlife Branch, was appointed an Associate Deputy Minister in late 1973 and assumed broader administrative responsibilities throughout this year, particularly related to the Fish and Wildlife, Information and Education, and Marine Resource Branches. Late in 1974, R. H. Ahrens, formerly Director of the Parks Branch, was appointed as a second Associate Deputy Minister with specific responsibilities for the Parks Branch, the Provincial Museum Branch, and the organization of a new Outdoor Recreation Branch. These appointments represented a major step forward in the integration of Branch functions to meet the over-all responsibilities and philosophy of the Department.

PERSONNEL

A major staff increase and the negotiation and implementation of the first Government-Union contracts shaped most of this year's activities.

Over 348 new positions were established in the Department for an over-all increase of 46 per cent over 1973. A new branch, the Information and Education Branch, was also established. At the same time, two master union agreements and 10 component agreements were negotiated. Personnel staff participated in these negotiations and subsequently set up systems to administer the agreements. As part of this process, a series of meetings was held to introduce both headquarters and field staff to bargaining procedures and contract interpretation.

The Careers '74 program provided an opportunity for experimentation with new programs while providing meaningful summer employment for students and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REVIEW

introducing them to the activities of the Department. The personnel office assisted in the administration of this program, including the recruitment of staff.

The hiring of two personnel officers allowed the reorganization of the personnel office to deal more effectively with its various responsibilities. As a result, recruiting and classifications were set up as separate functions within the group. Also established was a circular of appointments and transfers. The following employees received continuous service awards:

35-year Awards	*25-year Awards*	
R. K. Leighton	R. H. Ahrens	W. H. Fowkes
J. J. Osman	T. R. Broadland	R. F. McKay
F. J. Renton	W. J. Forsythe	J. W. Moore
	T. H. Hunter	C. J. Velay

WILDLIFE REVIEW

As a Departmental magazine, *Wildlife Review* continues to promote not just the activities of the Department but the broad environmental and conservation values that represent this Department's philosophy.

The magazine is issued quarterly, and each edition runs to some 36,000 copies. It is worth pointing out that the majority of this circulation consists of paid subscriptions; this is part of a philosophy that suggests a commitment of the recipients of the magazine rather than a broadcast and unsolicited type of distribution.

Throughout the year *Wildlife Review* gave exposure to many issues which fundamentally affected public attitudes toward conservation. On a number of occasions, an article in the magazine has provided the first public airing of issues which subsequently received wide attention through major media. For example, the conflict between wildlife and domestic cattle on Crown ranges, first described in a *Wildlife Review* article, later became a Provincial issue, resulting in major Governmental policy changes.

As with the information office, *Wildlife Review* will continue as a function of the Information and Education Branch.

PUBLIC INFORMATION OFFICE

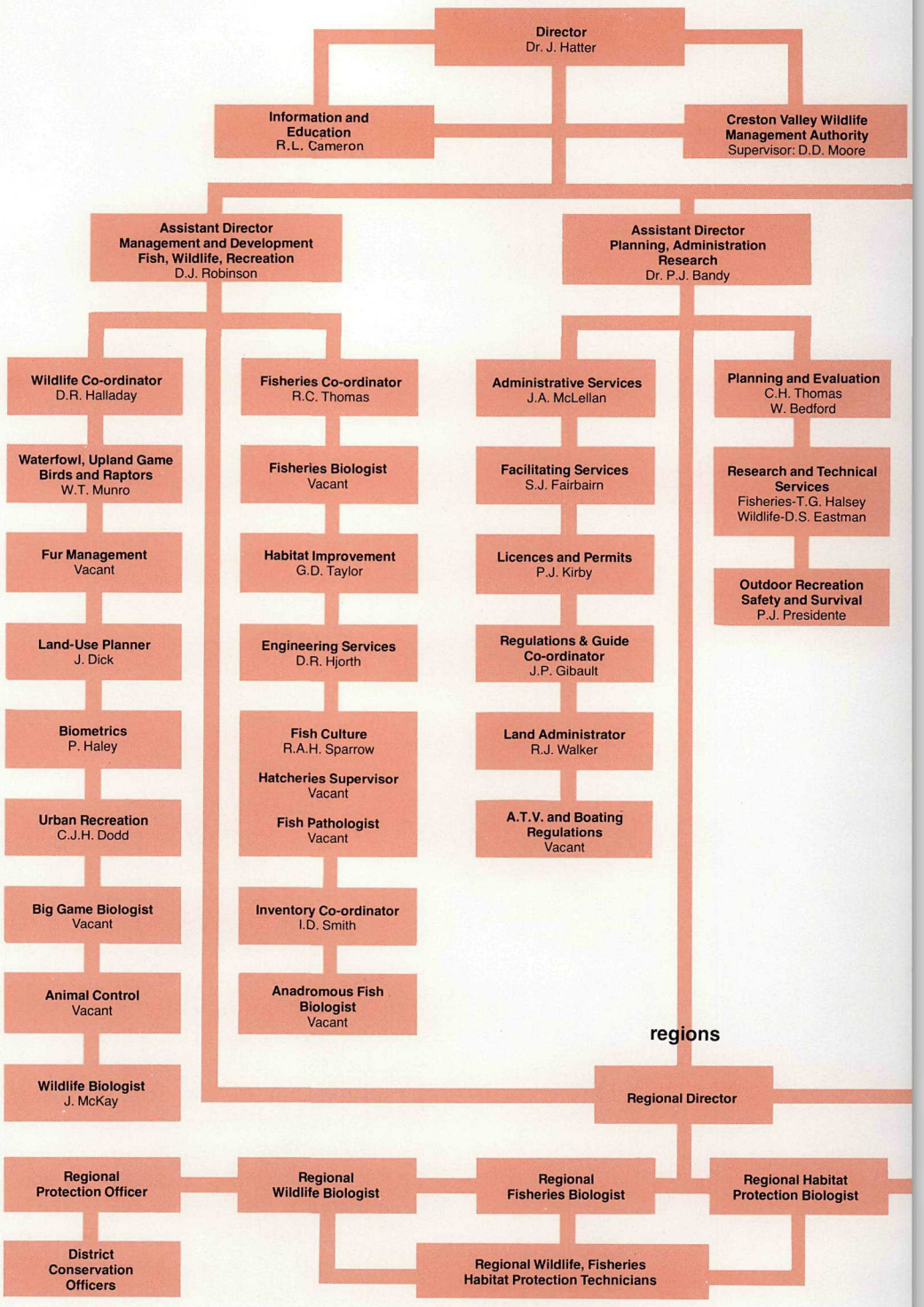
The public information function was forced to assume a holding position for the better part of 1974. There were two reasons for this. First, the position of Departmental Public Information Officer was vacant for the better part of the year, and information activities were maintained largely by support staff. Secondly, a decision had been made to create an Information and Education Branch, of which the Departmental Information office would become a part. As a result, most of the year was occupied with analysis of the information office and its role in Departmental communication. An acting Information Officer, hired during this period, devoted most of his time to this type of analysis and research.

By mid-year, most of the groundwork had been laid for this new Branch. It was to consist of Information, Education, and Communication Services Sections and would carry out Departmental information and education programming in addition to providing services to parallel functions in the various Branches. The information office, reorganized under a Chief of Information Services within this new Branch, would assume information service responsibilities on a much broader scale than previously.

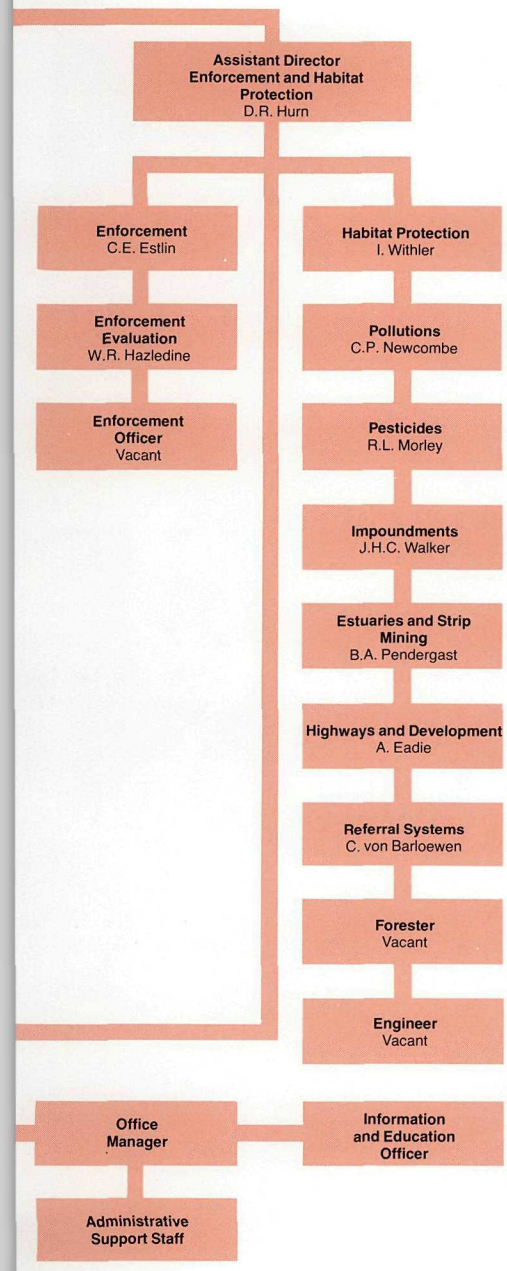
By the end of 1974, organization, staffing, and budget had been determined for the new Branch. The new director was R. L. Cameron, previously of the Fish and Wildlife Branch, and staffing was to consist of all Departmental Public Information Officers, the information and education centre located in Vancouver, and a series of new positions to bridge these components and provide new staff for additional Departmental programming.

Fish & Wildlife Branch

The Fish and Wildlife Branch is responsible for the protection and management of Provincial fish and wildlife resources to ensure sustained benefits from these resources for the people of British Columbia. To accomplish this, the Branch engages in research and inventory, the protection of land and water environments required by fish and wildlife, and the establishment and enforcement of regulations for the orderly use of these resources. Public benefits from fish and wildlife resources take the form of recreational opportunities as well as monetary returns through licensing and for this reason, programs are also developed to enhance fish-and wildlife-based recreation and the quality of the environment in which these activities take place.


Director
Dr. J. Hatter
Information and Education
R.L. Cameron
Creston Valley Wildlife Management Authority
Supervisor: D.D. Moore
Assistant Director Management and Development Fish, Wildlife, Recreation
D.J. Robinson
Assistant Director Planning, Administration Research
Dr. P.J. Bandy
Wildlife Co-ordinator
D.R. Halladay
Waterfowl, Upland Game Birds and Raptors
W.T. Munro
Fur Management
Vacant
Land-Use Planner
J. Dick
Biometrics
P. Haley
Urban Recreation
C.J.H. Dodd
Big Game Biologist
Vacant
Animal Control
Vacant
Wildlife Biologist
J. McKay
Fisheries Co-ordinator
R.C. Thomas
Fisheries Biologist
Vacant
Habitat Improvement
G.D. Taylor
Engineering Services
D.R. Hjorth
Fish Culture
R.A.H. Sparrow
Hatcheries Supervisor
Vacant
Fish Pathologist
Vacant
Inventory Co-ordinator
I.D. Smith
Anadromous Fish Biologist
Vacant
Administrative Services
J.A. McLellan
Facilitating Services
S.J. Fairbairn
Licences and Permits
P.J. Kirby
Regulations & Guide Co-ordinator
J.P. Gibault
Land Administrator
R.J. Walker
A.T.V. and Boating Regulations
Vacant
Planning and Evaluation
C.H. Thomas
W. Bedford
Research and Technical Services
Fisheries-T.G. Halsey
Wildlife-D.S. Eastman
Outdoor Recreation Safety and Survival
P.J. Presidente
regions
Regional Director
Regional Protection Officer
District Conservation Officers
Regional Wildlife Biologist
Regional Fisheries Biologist
Regional Habitat Protection Biologist
Regional Wildlife, Fisheries Habitat Protection Technicians

fish & wildlife branch

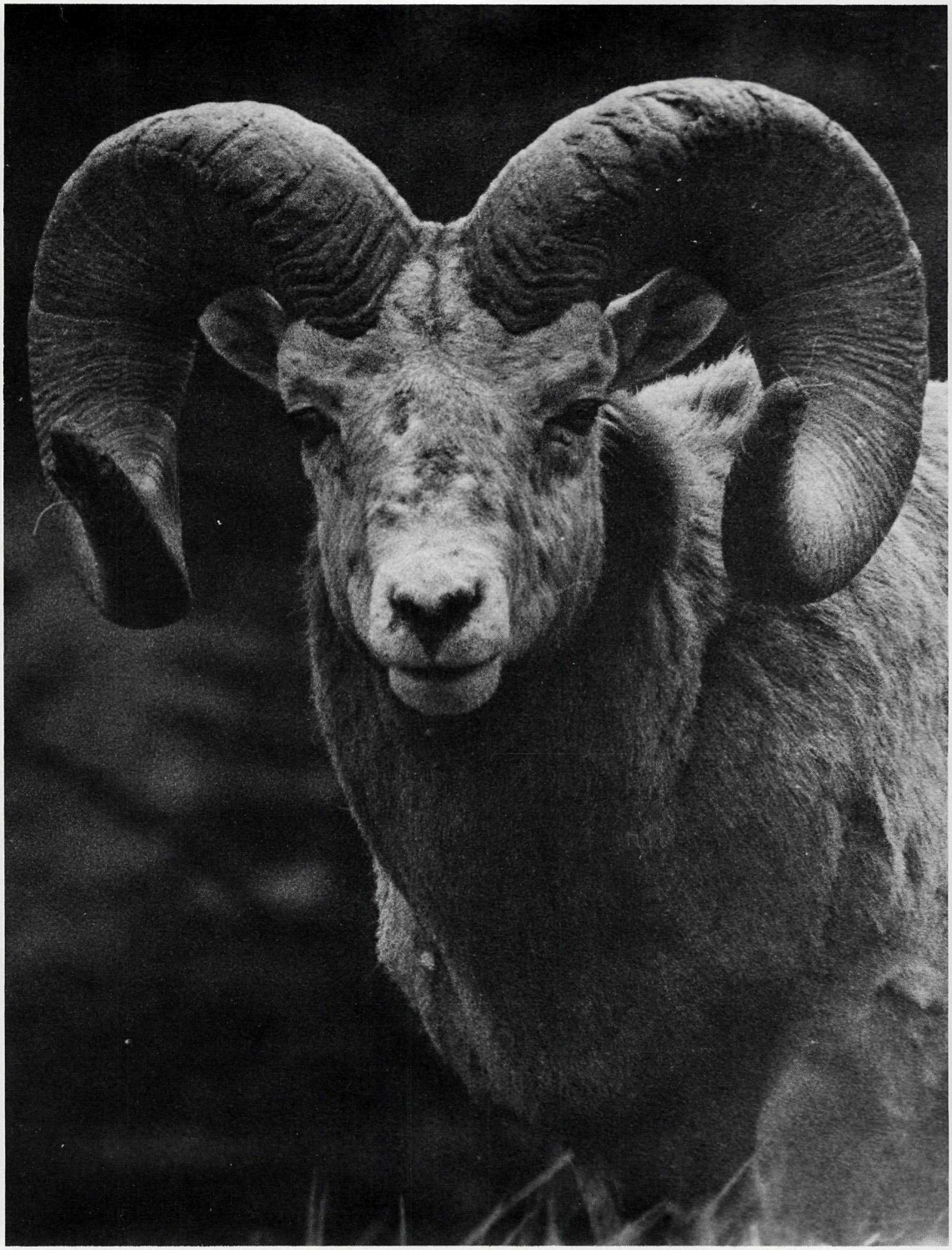


The management responsibilities of the Fish and Wildlife Branch are divided into five main areas. The fisheries management group are responsible for the management and enhancement of the Provincial freshwater sport fishery. The wildlife management group have an equivalent role in the management of Provincial wildlife resources. Habitat protection is a separate section which works closely with the Fish and Wildlife Management functions and other land and water-use agencies to ensure the protection of fish and wildlife habitat requirements. The Enforcement Section, through field conservation officers, enforces both fishing and hunting regulations and those concerned with habitat protection. The Information and Education Section is responsible for the development of programs to increase public awareness of Fish and Wildlife values, management, and opportunities.

The organization of the Fish and Wildlife Branch is a highly regionalized one; as a result the various described functions are reflected in both the regional offices, through regional management specialists, and in the headquarters office, through Provincial level co-ordinators. For this reason, each function is reported here at both Provincial and individual regional levels. In addition, the head quarters office provides special management services such as research, inventory, and administrative services.

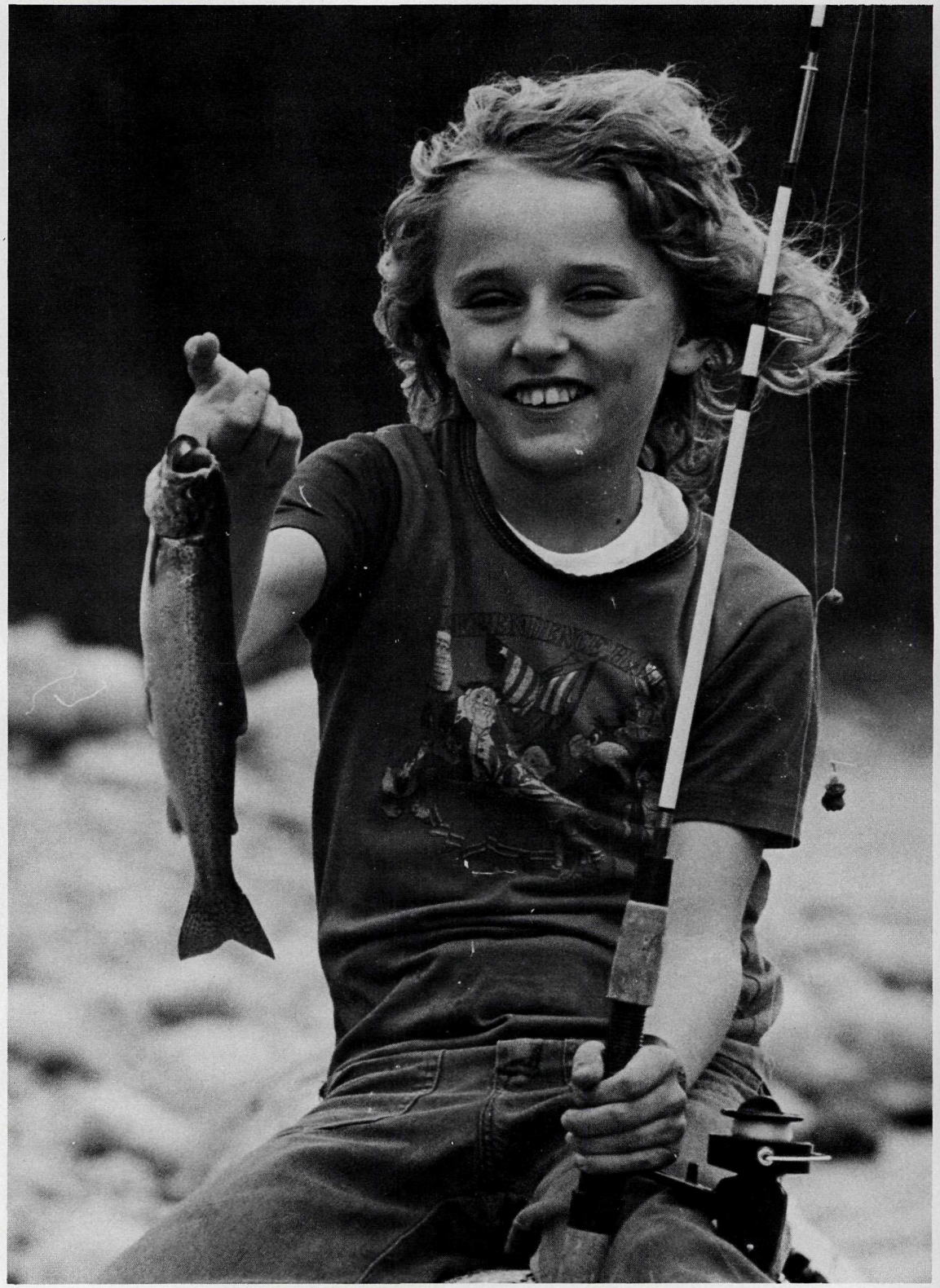
Vancouver Island	— J.C. Lyons
Lower Mainland	— G.A. West
Kamloops	— G.E. Stringer
Penticton	— Vacant
Prince George	— R. Goodlad
Kootenay	— G.F. Hartman
Smithers	— D.J. Spalding
Williams Lake	— I. Withler

67 District Offices



1974 HIGHLIGHTS OF THE FISH AND WILDLIFE BRANCH

- Eight key wildlife habitat areas totalling 1,200 acres were acquired for wildlife management purposes.
- A resident-only limited entry hunting season on grizzly bear, mountain goat, and mountain sheep was instituted in several areas of the Province.
- A committee representing seven wildlife agencies was formed to contribute to the Federal-Provincial Humane Trapping Program. In addition, a Trapper Education Course was initiated in Prince George.
- Two new staff positions were established to develop a Fur Management Program.
- A Provincial Predator Management Committee was formed to develop new predator management policies and a process to implement them.
- The John Creek diversion was completed at the Meadow Creek Spawning channel; 15 per cent more kokanee entered the Meadow Creek system to spawn than in the 1970 brood-year.
- The annual operation and maintenance budget for the Creston Valley Wildlife Management Authority reached $200,000.
- A framework for an inventory program was developed, with Fisheries and Wildlife groups adopting identical guidelines.
- A Summer Outdoor Recreation and Fishing Program provided 323 disadvantaged children from the Lower Mainland with a quality outdoor sport-fishing experience in a total of 19 outings.
- The Public Conservation Assistance Fund, created to encourage private conservation groups in their conservation activities, made 15 grants for a total of $44,390.
- A program was developed to encourage citizens to OBSERVE, RECORD, and REPORT wildlife violation to Conservation Officers or police.
- Twenty-five new Conservation Officer (Enforcement) positions were established—the largest increase in Branch history. New offices were opened in Tofino, Gold River, Pemberton, Valemount, Mackenzie, and Atlin.
- Prosecutions had increased by 197 over 1973 figures by the end of November; this is a continuation of a three-year trend that may be related to staff increase and use of auxiliary Conservation Officers.
- Environmental assessments and impact studies were completed on a number of existing or proposed B.C. Hydro projects.
- Work began with the forest districts to begin preparation of resource folios, a system to establish and identify all resource values before planning for forest harvest begins.
- The Conservation and Outdoor Recreation Education Program was made mandatory for certain licence applicants. This promoted a Province-wide increase in the number of CORE courses offered, with 4,945 students and over 1,000 instructors qualified between April and November.
- Information and Education Officers were appointed to regional offices at Nanaimo, Burnaby, Kamloops, Prince George, Nelson, and Smithers to administer information and education programs in these regions.
- David R. Hurn was appointed Assistant Director of the Enforcement and Protection Division of the Fish and Wildlife Branch.
- A plan to change the hunting licence system from a manual to a computerized operation was initiated.
- Substantial increases in nonresident hunting and fishing fees and the replacement of the trophy fee system by a species licence system were put into effect.



J. Hatter,
Director.

Fish & Wildlife Branch

A budget increase of $2.2 million over 1973 and an increase of 97 in permanent staff has marked the second consecutive year of unprecented expansion in the Fish and Wildlife Branch. This Report can touch only in general terms on the diverse activities of the Branch.

The Land Acquisition Program was additional to the budget and was highlighted by the addition of six new properties for the protection and management of wildlife habitat. These acquisitions were funded from one or more of the following sources:

Provincial Greenbelt Fund,
National Second Century Fund,
Nature Conservancy of Canada, and
Okanagan Similkameen Parks Society.

This year marked the beginning of limited entry hunting in the Province with special seasons being applied to grizzly bears (Toba and Bute Inlets), mountain goats (near Terrace), and California bighorn sheep near Keremeos. Another innovation was the establishment of a Provincial Predator Management Committee and Associated Regional Advisory Committees to allow for involvement of private as well as Government interests in the management of nuisance predators.

Site preparation for the new Fraser Valley Fish Hatchery at Abbotsford was completed and construction is scheduled to begin early in 1975. This new hatchery will become a major contribution to fish culture and recreational fishing in the Province.

New also in 1974 was an experimental outdoor recreation and fishing program for disadvantaged children on the Lower Mainland. The program involved some 323 children and a total of 19 outings of up to three days in duration. Hopefully, this is the beginning of a trend toward greater emphasis upon achieving more apparent public recreational benefits from our fish and wildlife resources.

The year 1974 marked a new initiative in recognizing the service rendered to conservation issues by sportsmens', and other citizens' organizations. A Public

Conservation Assistance Fund of $50,000 provided for 15 grants to private conservation groups to assist them in work programs beneficial to fish and wildlife.

Voluntary citizen participation in law enforcement was intiated by the Observe, Record, and Report Program. In addition, 25 new Conservation Officer positions were created and two-men districts were established for the first time. A significant increase in the number of prosecutions has resulted.

Habitat protection activity was intense in 1974. The Branch was involved in numerous projected hydro developments and a great amount of routine protection activity. All regions commenced upon a Resource Folio Planning Program with the B.C. Forest Service.

The Conservancy Outdoor Recreation Education (CORE) Program became mandatory Province-wide for first licence applicants. From April to November almost 5,000 students took the program with some 1,000 instructors qualified for this purpose.

Substantial increases in nonresident hunting and fishing fees were put into effect. Resident licence fees were also increased. The old trophy fee system for nonresidents was abolished and replaced by a new species licence system. As expected, the new fees resulted in a small decline in resident licence sales and some 34 per cent decrease in nonresident hunting but this latter situation was partially due to economic conditions in the United States.

I wish to conclude these introductory remarks by saying that 1974 has been one of the most exciting and progressive years in the history of the Fish and Wildlife Branch. I am pleased to report that activities and work functions have been directed to the broad over-all goal of the Fish and Wildlife Branch, viz., to "Optimize the Opportunities for Public Use and Enjoyment of the Fish and Wildlife Resources of the Province," with all that this implies.

FISHERIES MANAGEMENT

Most Branch fisheries management work is organized and conducted in the field by biologists and technical staff under the direction of regional directors in seven management regions of the Province. As a result, most fisheries management activities are outlined in the regional sections of this report. Several Province-wide functions are, however, administered or co-ordinated through Victoria, to provide services and support to regional management programs.

ANGLING LICENCE STATISTICS

The table below presents the estimated number of angling licences sold in the Province annnually for the last 10 years. Due to some duplicate licensing (steelhead and alien three-day licences), there is a variation between these data and the actual number of anglers using British Columbia freshwaters.

Total Freshwater Anglers and Total Licence Sales

Year	Total Licence Sales	Year	Total Licence Sales
1964/65	219,551	1969/70	365,691
1965/66	236,789	1970/71	376,227
1966/67	289,436	1971/72	357,468
1967/68	315,790	1972/73	368,869
1968/69	328,767	1973/74	426,729

STEELHEAD QUESTIONNAIRE RESULTS

In the 1973/74 licence-year, 31,315 anglers purchased steelhead licences. Of that number, 11,025 (35.2 per cent) did not fish for steelhead. Of those who did (20,291) only 8,282 anglers (40.8 per cent) were successful in taking one or more steelhead. Some 58,695 steelhead were caught, of which 26,213 were released. Steelhead angling provided an estimated 208,000 angling-days of recreation in 1973/74, an increase of 5,000 days over the previous year.

HABITAT IMPROVEMENT PROGRAM

Regional and headquarters staff were involved in stream clearance and diversion, lake aeration and chemical rehabilitation, fish passage and enumeration, egg transplants, fish barrier construction, and inventory. Co-operative ventures with other Government agencies (Parks Branch in particular) resulted in further clearance of streams, stabilization of stream gravels, and recommendations for interpretation work.

Region and Headquarters staff provided on-site technical advice for LIP Grants, reviewed and recommended highway locations, studied the effects of placer mining activities, acquired map reserves and water licences, reviewed fish passage problems at culvert installations, provided extensive aerial photography, reviewed potential lake and stream enhancement projects, and represented Federal-International, Federal-Provincial, and interdepartmental agencies on resource use and policy committees.

A separate Engineering Services Section was formed in late 1974. This section will provide a broader service, as it will relate to functions other than the fish habitat improvement section.

Two large lake systems near population centres were treated with fish toxicants (antimycin and rotenone) to remove undesirable fish. Permanent barriers were

built on outlet streams to prevent reinvasion by nongame species. After rapid detoxification, one of the lakes was stocked with gamefish in 1974. Some undesirable fish remained, due to difficulties in dispersal of the chemicals. There will be a recolonization of the lakes by these fish, although fishing should be good for the next five to eight years because of the stocking program.

Lakes Chemically Rehabilitated in 1974

Lake	Region	Location	Surface Size
Rail	Cariboo-Coast	Lac la Hache	568 acres
Trapp System	Kamloops	Stump Lake	621 acres

A brief was prepared on "Lake Rehabilitation with Piscicides" for presentation to the Royal Commission of Inquiry on Pesticides and Herbicides. The brief included the history and highly limited use of piscicides in fishery management in British Columbia, guidelines for planning, conducting, and evaluating individual projects, and directions for future use of more selective (species-specific) toxicants.

FISH CULTURE PROGRAM

Approximately six million fish for a total of 64,000 pounds were distributed to 450 lakes in 1974.

Number and Weight of Fish Released from Hatcheries in 1974

	Number	Pounds
Brook trout	567,000	3,330
Cutthroat trout—		
Yellowstone	299,000	110
Coastal	22,000	400
Kokanee	559,000	1,370
Lake trout	4,500	1,800
Rainbow trout	4,560,000	56,000
Steelhead	29,000	1,400
	5,840,500	64,410

Fourteen million eggs were collected in 1974 from native stocks of trout and kokanee. Rainbow trout accounted for eight million of the total eggs collected.

The evaluation of two manufactured fish foods that started in 1961 should be finished in 1975. Results to date show the high fat Ewos diet to have proven advantages over the Clark diet.

The effect of effluent water from the Summerland Hatchery on the Lower Summerland domestic water supply from Okanagan Lake was investigated by an outside Consultant to the Ministers of Health and Recreation and Conservation. As a result of this study, cleaning wastes from the ponds will be removed for alternate disposal.

Two fish culturists were added to staff at the Fraser Valley Hatchery (Abbotsford); one fish culturist was hired for Summerland Hatchery. In mid-March, J. G. Terpenning left his position as Superintendent of Hatcheries to accept a position as Administrative Assistant in the Department of Recreation and Conservation.

Site preparation for a new hatchery at Abbotsford was completed in late 1974. Tenders for the new hatchery will be let in January 1975.

INVENTORY PROGRAM

Considerable time was spent developing a framework for the inventory program. Near the end of the year, the fisheries and wildlife groups adopted identical guidelines for such a program.

Stream inventory was doubled (two 2-man crews instead of one) with the majority of work being done in the Stuart and Nass systems in northwestern British Columbia. Lake inventory was increased slightly, with most work being done in the Cariboo and Prince George areas.

Assistance was provided to regions in their summer wildlife inventory work and to the Forest Service in implementing the Computer Assisted Resource Planning (CARP) Program. This involved three activities: (1) inventory and data processing; (2) development of models to help evaluate management and research strategies; (3) development of models to assist with regional planning and the development of long-term objectives. Initial CARP work is a feasibility study of the use of computer techniques for resource planning.

WILDLIFE MANAGEMENT

In 1974 the 28 wildlife management areas of the Province were divided into 201 management units. These are geographically defined areas, with different species, populations, and recreational opportunities associated with each. This move was designed to allow more intense and refined wildlife and recreational management. As with the fisheries management program, most specific wildlife management activities are conducted by, and thus reported on, by regional management staff. Headquarters staff is involved with co-ordination of these activities and provincial policy development.

SPECIAL HUNTING SEASONS

A limited entry hunting season on grizzly bear (Toba and Bute Inlets), Mountain goat (near Terrace), and Mountain sheep (near Keremeos), was instituted. Nonresident hunters were not eligible to participate in a public draw for special licences to hunt in these areas.

PROVINCIAL PREDATOR MANAGEMENT COMMITTEES

A Provincial Predator Management Committee was formed in 1974 to develop and implement new predator management policy. The Fish and Wildlife Branch, Department of Agriculture, B.C. Cattlemen's Association, B.C. Wildlife Federation, Federation of Naturalists, and the Federation of Agriculture were represented. Similar Regional Advisory Committees have been formed to solve local predator problems, to reduce unnecessary livestock losses, and to seek improved distribution of livestock. The F & W Branch, however, has the prime responsibility of maintaining and protecting all wildlife, including carnivores.

WATERFOWL, UPLAND GAME BIRDS, AND RAPTORS

With the preservation and management of marshes recognized as the key to continued high population levels of waterfowl, the Branch has continued to pursue a policy of preserving wetlands through negotiation, agreement and purchase. Intensive habitat management was conducted on some areas under Branch control.

Policy and regulations were developed for raptorial birds. The new policy required that all populations of raptorial birds be protected in their wild state.

Particular measures are taken to protect the Peregrine falcon and other species endangered elsewhere. The taking of any raptorial bird from the wild is prohibited, unless a specific permit has been issued by the Branch.

Work was begun on a Provincial policy dealing with the capture and possession of live animals. A policy dealing with the care of animals in zoos and game farms will be prepared in 1975.

FUR MANAGEMENT

An Advisory Committee was formed to support the Federal-Provincial Humane Trapping Committee, at the instigation of the British Columbia Association for the Protection of Fur Bearing Animals. The Fish and Wildlife Branch, B.C. Association for the Protection of Fur Bearing Animals, B.C. Registered Trappers Association, B.C. Society for Prevention of Cruelty to Animals, B.C. Union of Indian Chiefs, B.C. Union of Non-Status Indians, and the Department of Indian Affairs and Northern Development are represented.

Two new staff positions were established in 1974 to develop a fur management program, including trapper education and humane trap promotion.

A Trapper Education course was held in Prince George in November. It was available through the co-operation of Canada Manpower, the B.C. Registered Trappers Association, the Technical Vocational Division of the Department of Education, and the Fish and Wildlife Branch. This was the first course of its kind in British Columbia; additional courses will be held in other areas of the Province in the future.

BIOMETRICS

Questionnaires

The 1973 Hunter Sample and the 1973/74 Steelhead questionnaire were completed. Work on the 1974 Sample and 1974/75 questionnaire was begun.

The Cache Creek report has been completed. A committee was formed to review the Cache Creek Check and Hunter Sample programs in light of changing information and data requirement of the Branch.

Data Storage and Retrieval

Fish and Wildlife became involved in a joint Federal-Provincial task force to develop a program for storage and retrieval of waterfowl counts. A data storage and retrieval program and survey format for the North-West Sport Fish Capability Survey was completed. This survey is being expanded to steelhead on Vancouver Island.

New Programs

A new hunter licensing program proposal was given approval and design is continuing by a consultant supplied by the Department of Transport and Communications. This program, based on a five-year term "basic" hunting licence, is expected to be implemented April 1976.

A procedure for evaluating region enforcement activities and programs is being tested in Smithers.

Data Services Committee

This is an interdepartmental committee, chaired by ELUC, to facilitate exchange of data between resource departments. To date, an initial Resource Data Bibliography has been completed and a method of geo-coding proposed.

URBAN RECREATION PROGRAM

Recreation Land Green Belt Encouragement Act

The purpose of this Act is to provide relief from taxation for approved recreational lands. The Branch has been involved in the preparation of the guidelines and regulation for this Act. The responsibility for administration of the Act will soon be transferred to Parks.

Public Conservation Assistance Fund

The Public Conservation Assistance Fund helps organizations financially in their conservation activities, provided that the clubs helped contribute labour, material, and some of their own money.

$50,000 in the 1974/75 Fiscal Year.
19 projects approved out of a total of 30 submissions.
Total of moneys requested was $121,854.96.
Types of projects included fry feeding, waterfowl rearing, stream rehabilitation, and facilities for the care of injured animals.

HABITAT PROTECTION

Pollution Control

Concern for the integrity of streams used for placer mining resulted in the Department of Mines and Petroleum Resources and the Fish and Wildlife Branch designating areas where placer mining is acceptable or unacceptable.

Literature searches of the effects of sewage and chlorine on fish continued, in order that accepted levels of contaminants in effluents and of dilution factors can be revised.

Liaison

The Fish and Wildlife Branch and the Interdepartmental Liaison Committee of the Department of Highways reviewed construction proposals in the Lower Mainland, Vancouver Island, and northern areas.

The Secretariat of ELUC continues to receive Branch input concerning special resource use studies and development proposals.

In 1974, all regions co-operated with the Forest Districts to start preparation of Resource Folios. This system will establish and identify all resource values and constraints before forest harvest planning begins. The resource folios contain information on topography, soils, vegetation, fishery streams, wildlife use, and recreation.

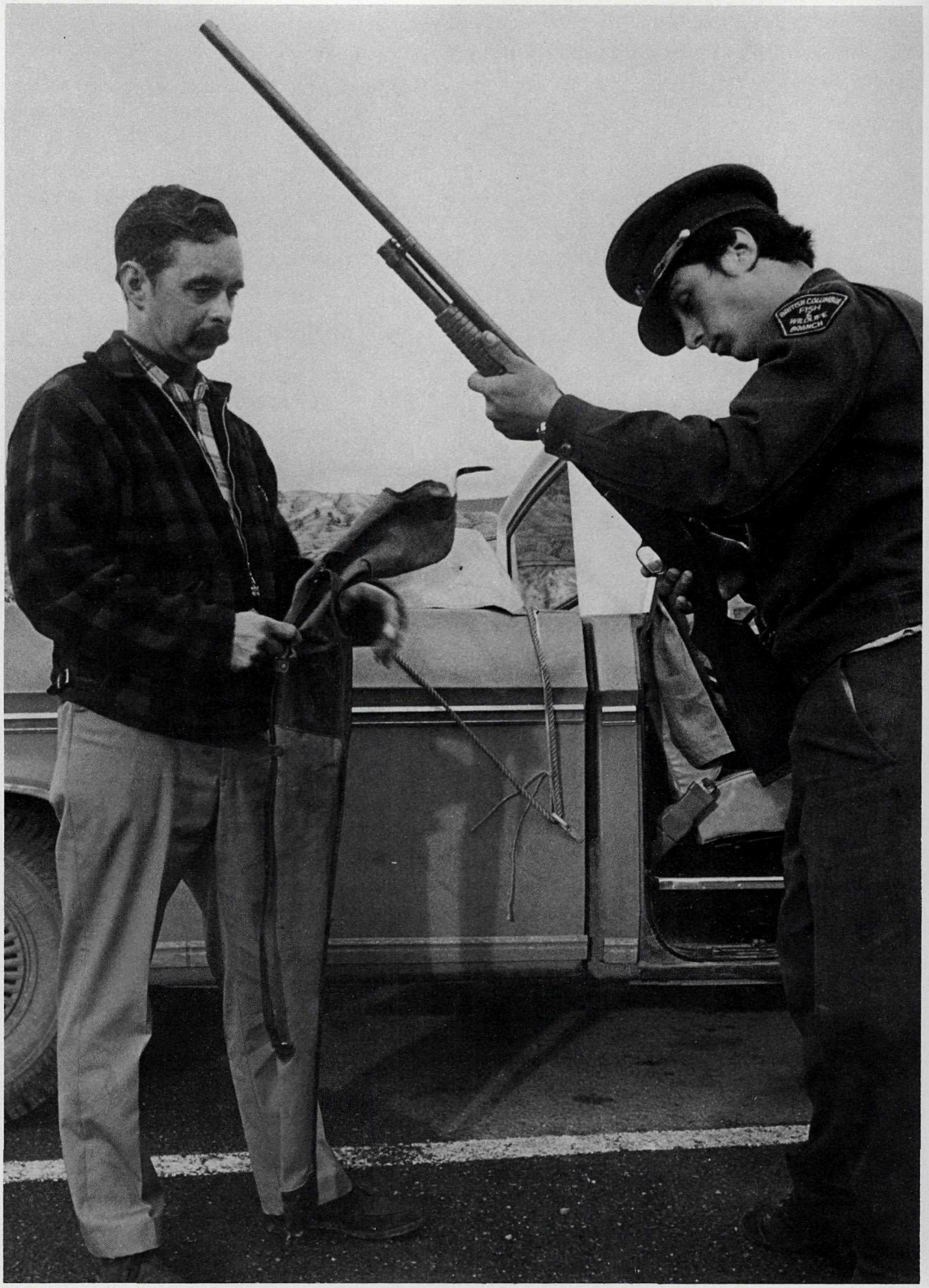
Hydro-electric Development

The Branch is involved in planning studies, reviewing the work of consultants, and drafting guidelines for the assessment of wildlife values affected by hydro projects.

B.C. Hydro funded a study by the Fish and Wildlife Branch, the Federal Fisheries Service, and the International Pacific Salmon Fisheries Commission on the effects of the Kemano II development on fish and game populations.

A survey of steelhead fishermen was made at the site of the John Hart II Dam on the Campbell River.

A water licence has been granted to B.C. Hydro and Power Authority for the construction of a 700 mw dam on the Pend-d'Oreille River. Negotiations were initiated to determine the location of the access road and the land required to relieve wildlife losses.


BRITISH COLUMBIA
FISH
& WILDLIFE
BRANCH

PESTICIDES

On-site pesticide use inspection was increased. The Branch is now better represented on the Interdepartmental Pesticide Committee, the Forest Pest Review Committee, and the Aquatic Weed Control Committee.

The effects of aquatic weed herbicides on fish were studied, in co-operation with the Water Investigations Branch and Environment Canada. A brief outlining Fish and Wildlife Branch concern over present and future use of herbicides and insecticides was submitted to the B.C. Royal Commission of Inquiry into the use of herbicides and insecticides.

Special Studies

Field studies of minimum flow requirements of streams containing fish were begun; from these, minimum flow standards may be set for streams faced with excess water withdrawal.

Information on the effects of forest management policy on fish, wildlife, and recreation was assembled for a specially commissioned Task Force on Forest Policy.

Various critical wildlife areas are being used for coal exploration and mining activities. Mapping was begun in order to provide a basis for protecting them against these activities. The attitude of the Department of Mines and Petroleum Resources has been favourable.

Field surveys and aerial waterfowl counts were done along Coast estuaries. This information is needed for current site-specific development proposals and for future systems of coastal zoning.

ENFORCEMENT

Conservation Officers are involved in resource-use planning (logging, hunting, fishing, mining), water and land pollution prevention, and policing activities. In 1974, 25 new Conservation Officers (Enforcement) positions were established—the largest increase in Branch history. Most new enforcement staff were to set up two-man districts. New offices were opened in Tofino, Gold River, Pemberton, Mackenzie, and Atlin.

Court Actions

At the end of November, prosecutions had increased by 197 over 1973 figures. This is a continuation of the trend over the past three years and can be related to staff increase and use of auxiliary Conservation Officers.

Observe, Record, and Report

A program was developed to encourage citizens to observe, record, and immediately report wildlife violations to Conservation Officers or police. This program was well received as a means of enabling citizens to participate in the protection of their wildlife resources.

Hunting Casualties

In 1974, there was only one fatality and two serious hunting casualties compared to two and five respectively, in 1973.

INFORMATION AND EDUCATION

With regional Information and Education staff becoming fully operational this year, the major change in the Information and Education section was the shift from

a centralized type of programming to a regionalized approach with the headquarters function assuming a supportive and co-ordinating role. As a reflection of this change, a major Information and Education office was established in Vancouver, where both services and Provincial media contact were more readily available.

A second event which shaped a large proportion of this year's activities was the decision to make the hunter training component of the Conservation and Outdoor Recreation Education program (CORE) a compulsory pre-requisite for obtaining a hunting licence. Groups affected by this requirement were all those who had not held a licence subsequent to their 14th birthday and all 14-year-old applicants. The reason for selecting this group was that it established a system for the eventual training of all licensed hunters. With the announcement in early April of an October effective date for this requirement, there was an immediate Province-wide demand for CORE programs.

Preparation for this anticipated demand had begun early in the year. Final revisions were made to complete program reorganization begun two years previously. Additional resource materials such as a new series of species brochures and new administrative and record forms were completed and published. New policies were established for the Province-wide development and operation of the program with special attention given to regional adaptation of these policies. Finally, a strategy for implementing the program on as broad a basis as possible was devised and responsibilities divided throughout the Province.

With program organization complete, regional Information and Education staff returned to their respective regions and began a Province-wide series of orientation seminars for CORE instructors. These seminars introduced new program materials and policy, offered training in teaching and audio-visual techniques and identified program potential throughout the Province. The seminars were closely followed by a series of instructor courses operated under a new instructor qualification policy. Over 1,000 new instructors were recruited during this phase, with a dramatic shift toward school and college involvement. The result of this whole process was the qualification of almost 5,000 students between April and the end of November—traditionally a slow time for CORE programming. In addition, the program was expanded into schools, colleges, recreation centres, and adult education programs throughout the Province.

CORE program development left little time available for other types of Information and Education activities, but a great deal was also accomplished both in the continuation of existing programs and in experimentation with new forms of communication. One reason for this was the fact that contacts developed through expansion of the CORE program led to opportunities for other activities. Some of these were:

1. Programming with media such as radio, television, and newspapers continued as in previous years, but was greatly facilitated by the location of production facilities in the new Vancouver office. Two new TV program series were completed and aired; one, covering each section of the CORE program for CBC's "Bob Switzer Show" and another, covering a number of fish, wildlife, and environmental issues for CBC's Hourglass "Focus" program. Both series were recorded and added to our growing video-tape library. News item clips were also produced and distributed; public service announcements were produced but not completed in time for use in 1974.

2. The construction and erection of information and regulatory signs continued throughout the Province. All signs are now produced according to a standard format. Display production increased substantially to meet commitments to both major Provincial shows and conferences and as a service to regional In-

formation and Education staff for local use. A large "mall" type of display was constructed and used extensively throughout the summer in shopping centres and major outdoor shows. This display created a miniature "wildland" with live animals such as deer and Canada geese and a backdrop of trees and rough cedar structures; for this reason it was extremely well received although its use was limited by the need for extensive staff involvement.

3. A variety of publications was produced ranging from information pieces to the hunting regulations synopsis. A new environmental awareness program was initiated to complement the CORE program. Audio-visual support material for both CORE and other educational programs was produced or purchased and distributed to regional offices.

A final event of 1974 which had an important effect on the Information and Education section was the creation of a Departmental Information and Education Branch. This new branch was designed to provide Information and Education services on a Departmental basis and support existing programs in other branches. R. L. Cameron, co-ordinator of Information and Education for the Fish and Wildlife Branch, was named director of this new branch. The Information and Education Centre in Vancouver, having assumed broader media communication and services roles, was transferred from the Fish and Wildlife Branch to the new Information and Education Branch. As all these events occurred near the end of 1974, the exact relationships between the Fish and Wildlife Information and Education Section and the new Information and Education Branch has still not been completely described at the time of writing this Report.

ADMINISTRATIVE SERVICES

LAND ACQUISITION

Several areas critical to wildlife management in British Columbia were acquired in 1974:

Purchase From Branch Funds

(1) *Newgate*—10 acres inside the area of the Gordon Earl Range purchased in 1973.

(2) Three water licences on Mission Creek to ensure continued quantity and quality supply of water essential to fish spawning.

Purchase by Outside Sources

(1) *Mud Bay*—145 acres of estuarine marsh associated with the Serpentine and Nicomekl Rivers. Funding—Green Belt, The National Second Century, and the Nature Conservancy of Canada.

(2) *Antlers' Saddle*—282 acres of vital winter and spring range adjacent to Highway 97, north of Summerland. Funding—Green Belt.

(3) *Tofino*—145 acres of upland within the Tofino Waterfowl conservation. Funding—Green Belt.

(4) *Delkatla Slough*—120 acres of meadowland contiguous with Delkatla Slough as part of Delkatla Slough Waterfowl Sanctuary. Funding—Green Belt. Additional acreage was purchased but will be assigned to other users.

(5) *Osoyoos Lake*—Approximately 30 acres of wetland purchased by the Okanagan-Similkameen Parks Society as part of the Osoyoos Conservation Area for protection of a unique environment and one of the few wintering areas for waterfowl on a major Interior migration route.

(6) *Grand Forks*—Approximately 475 acres of very important mule deer and whitetail deer spring/winter range purchased by the National Second Century Fund of B.C. Land has been leased to the Fish and Wildlife Branch.

LICENCES AND PERMITS

Revenue by Source

	1969/70	1970/71	1971/72	1972/73	1973/74
	$	$	$	$	$
Firearms licence	.....	.....	.....	.....	10,241
Resident hunting licence	604,906 ($4)	623,988 ($4)	615,745 ($4)	620,974 ($4)	676,642
Nonresident hunting licence (other than Canadian)	182,800 ($25)	179,450 ($25)	166,225 ($25)	175,475 ($25)	183,750
Nonresident hunting licence (Canadian)	1,995 ($15)	1,995 ($15)	2,715 ($15)	2,265 ($15)	3,660
Deer-tag licence	173,544 ($1)	177,581 ($1)	162,451 ($1)	151,505 ($1)	172,447.50
Moose-tag licence	329,058 ($6)	319,545 ($6)	311,636 ($6)	330,114 ($6)	415,078
Elk-tag licence	56,080 ($5)	51,090 ($5)	44,380 ($5)	45,530 ($5)	53,950
Mountain goat-tag licence	14,938 ($2)	14,751 ($2)	12,976 ($2)	10,480 ($2)	11,585
Mountain sheep-tag licence	12,280 ($5)	12,985 ($5)	13,215 ($5)	13,275 ($5)	14,490
Caribou-tag licence	24,290 ($5)	26,585 ($5)	28,540 ($5)	31,580 ($5)	38,740
Grizzly bear-tag licence	26,545 ($10)	28,160 ($10)	22,670 ($10)	25,080 ($10)	28,710
Black bear-tag licence	8,136 (50¢)	8,970 (50¢)	10,677 (50¢)	10,407.50 (50¢)	11,812
Cougar-tag licence	.....	1,795 ($5)	2,244 ($5)	2,295 ($5)	2,985
Nonresident game bird licence (Canadian)	.....	.....	.....	.....	.....
Big-game trophy fees (nonresident)	328,436	324,570	298,820	280,725	298,385
Resident angler's licence	610,128 ($3)	639,552 ($3)	642,651 ($3)	667,821.50 ($3)	746,239
Resident steelhead angler's licence	10,856 (25¢)	10,700 (25¢)	48,717 ($2)	54,087.31 ($2)	60,124
Resident senior citizen angler's licence	.....	.....	.....	2,684 ($1)	13,913
Nonresident anglers	257,000 ($10)	261,070 ($10)	249,870 ($10)	238,640 ($10)	266,426
Nonresident angler's licence (Canadian)	67,986 ($3)	72,486 ($3)	78,753 ($3)	84,684 ($3)	98,960
Nonresident angler's (short-term)	165,882 ($3.50)	168,151 ($3.50)	163,103 ($3.50)	157,001 ($3.50)	161,067.50
Nonresident steelhead angler's licence	11,995 ($5)	10,495 ($5)	9,620 ($5)	9,655 ($5)	10,605
Nonresident angler's licence (minor)	20,731 ($1)	20,908 ($1)	19,388 ($1)	17,780 ($1)	17,326
Resident trapping licence	11,665 ($5)	10,880 ($5)	10,360 ($5)	12,543 ($5)	13,322
Guide-outfitter, registered guides, and small game and angling guides	12,405 ($15, $10, $5)	29,400 ($50, $5, $15)	29,136 ($50, $5, $15)	28,170 ($50, $5, $15)	27,250
Resident fur trader's licence and royalty on fur	37,040	36,793	29,671.24	37,700.50	38,281.30
Fines imposed under the *Wildlife Act* and *Firearms Act*	31,094	35,282	38,181	58,062.50	87,477
Miscellaneous revenue	18,049[1]	8,132	6,916.50	10,140.21	16,223.99
Subtotal	3,017,838	3,075,314	3,018,661.24	3,086,590.52	3,474,890.19
Less commissions on sale of licences	109,347	157,972	142,912.91	129,779.27	155,403.85
Totals	2,908,492	2,917,342	2,875,748.33	2,956,811.25	3,319,486.34
Less Wildlife Review				29,542.11	19,808.95
Total	.....	.....	.....	2,927,269.14	3,299,677.39
Less audit adjustment	.....	.....	.....	.....	318.75
Total	.....	.....	.....	.....	3,299,358.64

[1] Includes subscriptions to *Wildlife Review*.

In 1974 the Fish and Wildlife Branch began planning to change the hunting licence system from a manual to computerized operation, with the aid of system analysis of the Data Centre. 1977 is the target date for this change-over.

The price structure for licences was revised for the 1974/75 Fiscal Year. Most licence fees were increased, with greatest increases made in nonresident hunting and fishing fees. At the same time, the nonresident trophy fee system was replaced by a species licence system.

Below is a comparison table showing number of licences sold and revenue received from April to December. The number of licences sold decreased, but total revenue received increased $2,207,955 over 1973.

HUNTING AND ANGLING LICENCE SALES

Comparison for the Period April–December 1973 and 1974

B.C. RESIDENT HUNTING

	1973		1974		Plus or Minus	
	Number	Value	Number	Value	Number	Value
		$		$		$
Senior citizen[1]	.....	.....	5,553	5,553	5,553+	5,553+
B.C. resident	162,648	650,587	134,993	944,702	27,655—	294,115+
Black bear	19,749	9,874	9,080	36,309	10,669—	26,435+
Caribou	5,764	28,820	3,369	33,685	2,395—	4,865+
Cougar	134	670	190	1,895	56+	1,225+
Deer	162,113[2]	162,113[2]	111,374	445,295	50,739—	283,182+
Elk	9,375	46,875	7,196	71,955	2,179—	25,080+
Grizzly bear	1,292	12,920	537	18,795	755—	5,875+
Moose	60,633	363,798	46,834	468,292	13,799—	104,494+
Mountain goat	4,251	8,502	1,916	28,720	2,335—	20,218+
Mountain sheep	1,615	8,075	890	22,250	725—	14,175+
Total licences[2]	427,574	1,292,234	321,932	2,077,451	105,642—	785,217+
Firearms	8,800	8,800	13,711	13,711	4,911	4,911
Bow	.....	.....	857	2,571	857	2,571
Special Areas						
Lower Mainland[1]	.....	.....	3,215	16,075	3,215	16,075
Creston (pheasant)[1]	.....	.....	80	400	80	400
Limited entry hunting[1]	.....	.....	113	565	113	565
Totals	8,800	8,800	17,976	33,322	9,176	24,522

NONRESIDENT HUNTING

	1973		1974		Plus or Minus	
	Number	Value	Number	Value	Number	Value
		$		$		$
Canadian resident (non-B.C.)	221	3,315	931	2,745	170+	570—
Nonresident	6,784	169,600	4,488	336,050	2,296—	166,450+
Nonresident game bird[1]	.....	.....	263	6,575	263+	6,575+
Black bear	2,824	1,412	891	35,640	1,933—	34,228+
Caribou	1,634	8,170	1,061	106,100	573—	97,930+
Cougar	191	955	13	1,300	178—	345+
Deer	.....	.....	483	24,150	483+	24,150+
Elk	739	3,695	417	41,700	322—	38,005+
Grizzly bear	1,439	14,390	482	144,600	957—	130,210+
Moose	5,341	32,046	3,249	324,900	2,092—	292,854+
Mountain goat	1,302	2,604	793	73,900	563—	71,296+
Mountain sheep	1,129	5,645	660	165,500	469—	159,855+
Wolf[1]	.....	.....	242	18,150	242+	18,150+
Trophy fees	.....	298,385	(3)	(3)	.....	298,385—
Totals	21,604	540,217	13,379	1,281,310	8,225—	741,093+

	1973	1974	Plus or Minus
	$	$	$
Total hunting revenue—Resident	1,301,034	2,110,773	809,739+
Total hunting revenue—Nonresident	540,217	1,281,310	741,093+
Total hunting revenue—Combined	1,841,251	3,392,083	1,550,832+

B.C. RESIDENT ANGLING

	1973		1974		Plus or Minus	
	Number	Value	Number	Value	Number	Value
		$		$		$
B.C. resident	243,040	729,120	243,488	1,217,238	448+	488,118+
Senior citizen	13,374	13,374	18,581	18,581	5,207+	5,207+
Steelhead	24,076	48,152	18,321	54,796	5,755—	6,644+
Totals	280,490	790,646	280,390	1,290,615	100—	499,969+

NONRESIDENT ANGLING

		$		$		$
Canadian resident (non-B.C.)	32,787	98,361	38,262	191,303	5,475+	92,942+
Nonresident (annual)	25,766	257,660	17,188	257,820	8,578—	160+
Nonresident (three-day)	45,436	159,026	31,591	189,441	13,845—	30,415+
Canadian resident (non-B.C.) and nonresident steelhead	1,881	9,405	1,799	71,950	82—	8,545+
Special lakes[1]	.....	.....	1,178	17,670	1,178+	17,670+
Special rivers[1]	.....	.....	984	24,600	984+	24,600+
Minors[1]	17,178	17,178	.....	.....	17,178—	17,178—
Totals	123,048	541,630	91,002	698,784	32,046—	157,154+

	1973	1974	Plus or Minus
	$	$	$
Total angling revenue—Resident	790,646	1,290,615	499,969+
Total angling revenue—Nonresident	541,630	698,784	157,154+
Total angling revenue—Combined	1,332,276	1,989,399	657,123+

TOTAL ANGLING AND HUNTING REVENUE

	$	$	$
B.C. resident	2,091,680	3,401,388	1,309,708+
Nonresident	1,081,847	1,980,094	898,247+
Grand total	3,173,527	5,381,482	2,207,955+

[1] This licence newly introduced 1974.
[2] Includes nonresident figures, but these are negligible.
[3] Prepaid now by higher fee for species licences.

PLANNING AND EVALUATION

In 1974 the Fish and Wildlife Branch began the process of Program Planning and Budgeting. The planning section was initiated in December of 1973 with the appointment of a Planning Officer. Initially, the section changed the budgeting procedure to a system where budgets were identified with long-term programs. To further improve the system, the section has begun work on a planning manual for the Branch.

In October 1974 a Planning Assistant was appointed to develop program evaluation methods, to ensure the best allocation of Branch resources, and to research public attitudes, options, and use of fish and wildlife resources. Management information on these resources can then be developed, in terms of present management practices and demand on the resource by outdoor recreationalists, naturalists, historians, general interest groups, and concerned individuals.

RESEARCH AND TECHNICAL SERVICES

FISHERIES

Objectives of this section include (1) researching factors that regulate fluctuations in sport fish populations; (2) assessing the possibilities of integrated resource management through research in multidisciplinary resource studies; (3) researching and developing fisheries protection and management techniques; recently, resource-user studies have been initiated.

RESEARCH

Trout Production and Resource Conflicts—Loon Lake Project—From 1949–1954, 50 per cent of the anglers at Loon Lake were non-B.C. residents. In recent years this has dropped to 25 per cent. The effort of individual fishermen has increased, however, for the catch has remained between 30,000–60,000 fish.

Studies have shown a change in the trophic state of the lake over the last few years. Major sources of nutrient input include natural run-off, cattle manure, chemical fertilizers, and probably septic tank fields. Relative importance of these factors is not yet known. Fish are larger now; studies of zooplankton and phytoplankton communities over the last four years should also show changes due to increased nutrient levels.

Escapement studies of inlet and outlet streams reflect the relatively poor produtcion in 1971 and the increased fishing pressure recently.

Spawning and rearing habitat appear to be limiting trout production in Loon Lake. Because of this, an artificial system for producing rainbow trout was introduced. When intial problems were corrected, survival and growth rates increased to a high level.

Screens were placed on the inlet streams to prevent fry, juvenile, and adult trout from entering irrigation pipes and ditches. They have proven very suitable for small gravity flow diversions; significant production losses of under-yearling trout have been prevented.

Fisheries Management and Forest Harvesting

(1) *Slim-Tumuch Watershed*—The Fish and Wildlife Branch, Fisheries and Marine Services, Department of the Environment, B.C. Forest Service, and a Prince George forest products company are continuing a study to determine the effectiveness of fisheries protective measures in an area that is being logged. The stream phase of the study is complete; an interagency report will be available in the spring of 1975.

(2) *Haney Research Forest*—A study is being conducted jointly with the Institute of Animal Resource Ecology at UBC to assess the effects of clear cutting on a small resident cutthroat trout population. Water quality and quantity data have been collected for several years by the Faculty of Forestry.

Stream Sedimentation and Salmonid Egg Survival Studies—Success of salmonid reproduction may be impaired by suspended sediment loadings and subsequent sediment deposition in streams. Studies show that the higher the sedimentation level, the lower the survival of trout eggs. These studies will provide a basis for better management-protection guidelines.

Water Management Investigations—Ellison, Wood, and Kalamalka Lakes—The Fisheries Research Section, in co-operation with B.C. Research and the B.C. Water Investigations Branch, completed a report on the assessment of fishery resources in the lake basin. This section also represented the Branch on a public participation task force and a management alternative evaluation committee. A series of recommendations for sports fish and water management were made as a result of the fishery resource assessment. They were modified through public involvement, then included in the final joint report "Kalamalka-Wood Lake Basin Water Resource Management Study" to be published by the Queen's Printer about April 1975.

Reservoir Fisheries Investigations

In autumn of 1973, B.C. Hydro and the Fish and Wildlife Branch planned a study of resource potentials in the Williston Reservoir watershed above the Bennett Dam. The study is co-ordinated by the ELUC Secretariat. Field studies in 1974 were focused on reservoir fishes, rearing environments, and recreational angling. These first studies show that the northern Findlay reach of the reservoir has greater abundance of fishes than the southern Parsnip or east-west Peace reaches, although lake whitefish are two to five times more abundant in the Parsnip reach.

A Careers '74 study shows that anglers regularly fish the Peace, Parsnip, and Findlay reaches, concentrating on creek mouths. Most anglers prefer to catch rainbow trout, although arctic grayling make up 60 per cent of the catch, rainbow trout 21 per cent, Dolly Varden 10 per cent, and mountain whitefish 8 per cent.

Technical Services

There is increasing demand for fisheries technical services as Regional and Head Office capabilities expand. In 1974

(1) a field method for determining optimum acceptable minimum stream flows for salmonoids was designed; it will be tested in several streams in 1975;

(2) standard specifications for gill nets used by Fish and Wildlife Branch were developed with other agencies;
(3) computer programming and analyses services for regional creel survey data were provided; advice on statistical analyses and experimental design was provided for regional and Water Investigations Branch personnel;
(4) technical witness services were provided for an appeal of a court case under section 33 (2) of the *Fisheries Act*. The case was dismissed on a technicality.
(5) the technician for technical services spends much of his time processing and aging fish scales. The capability of this function has been increased by adding one regular technical and changing the job responsibilities in the original position.

Fisheries Resources Enhancement Program

The head of the Research Section represents the Fish and Wildlife and Marine Resources Branches on the joint Federal-Provincial Biological Research Working Group. This group is developing research that will eventually double the number of salmonid and anadromous gamefish on the Pacific Coast. The Provincial research proposals are to

(1) develop and test steelhead stock assessment, fish culture, and habitat improvement techniques;
(2) update inventory on major steelhead streams;
(3) assess commercial interception of steelhead;
(4) determine esuarine use, survival, growth, dispersal, and distribution of anadromous gamefishes.

In the 1974/75 fiscal year, the Research Section also undertook three enhancement projects:

(1) Compilation of an annotated bibliography of anadromous gamefish stream ecology:
(2) Compilation and review of enhancement techniques epplicable to anadromous gamefishes.
(3) Development of a computerized stream inventory data retrieval system for Vancouver Island, incorporating all known Federal and Provincial stream inventory data for the Island. The computerized data management and retrieval system will be used, in a trial run, by fishery managers.

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WILDLIFE

The Wildlife Research Section conducts both basic and applied wildlife research and provides technical services for wildlife management staff. Activities in 1974 were as follows:

RESEARCH

Studies are being done on

(1) the effects of logging on moose in the Salmon River area near Prince George, the effects of logging on blacktail deer in the Nimpkish River valley on Vancouver Island, and the use of small, recently reclaimed strip mines in southeastern British Columbia by ungulates,

(2) the production and nonconsumptive use of blacktail deer in a forest area near Vancouver, the physical fitness changes associated with hunting on Vancouver Island, and the diversity of urban wildlife in Vancouver and Victoria,

(3) the development of intensive wildlife management methods. Evaluation of a habitat management program for big game winter range is being done in the East Kootenays.

TECHNICAL SERVICES

Technical services are involved with the production of graphics, identification of parasites and diseases, completion of literature searches, analysis of food habit, advising on forensic matters, identifying plants, and preparing specimens.

In the future, Wildlife Research and Technical Services will develop Provincial programs to provide unity and direction to wildlife research.

In 1974 the staff expanded from one biologist to two, and from one technician to three.

CRESTON VALLEY WILDLIFE MANAGEMENT AUTHORITY

The annual operation and maintenance budget for the Creston Valley Wildlife Management Authority now exceeds $200,000, provided by the Canadian Wildlife Service and the Fish and Wildlife Branch. These organizations contribute to the

Management Authority Trust Fund by an annual grant. The Management Authority also received appropriated money through the Department of Recreation and Conservation and Ducks Unlimited (Canada), which contributed heavily toward the dyking program.

Unusually high spring run-off water damaged the Corn Creek Dykes, Leach Lake, and Six Mile Slough. Ducks Unlimited (Canada) provided assistance in the repair of Corn Creek Dykes, but because of high water, other repairs will be done in spring 1975.

Careers '74 students were employed for maintenance and operation of public-use facilities, habitat development for upland game birds, flood prevention, and office support services.

Construction on Canadian Wildlife Service interpretation facility, located in Corn Creek Marsh, was completed. It will be operated by Canadian Wildlife Service, in co-operation with Creston Valley Wildlife Management Authority.

Development began on West Meadows, a Federally owned farm to be managed in co-operation with the Management Authority.

VANCOUVER ISLAND—REGION I

FISHERIES MANAGEMENT

The fisheries management team on Vancouver Island is working to develop an intensified management program in order to maximize fish resources for both consumptive and nonconsumptive uses. To this end, we have identified the following objectives and report the following progress:

Objective 1—To inventory and map the distribution of Vancouver Island's sport fish resource and habitat.

Species distribution data within watersheds was collected; physical habitat was analysed. Inventory work was done on the Nimpkish, Gold, Keogh, Kokish, Cluxewe, Quatse, Tsulquate, Kakwichan, Klinaklini Rivers, and associated tributaries.

Objective 2—To plan and develop a fisheries management program on Vancouver Island; to maximize the benefits of management activities.

The evaluation of lake stocking study (second year of three) will result in stocking plan for southern Vancouver Island lakes. Target date is April 1976.

The second year of three-year study on the interactive ecology of coho salmon and cutthroat trout is now complete. Results show that coho populations may suppress trout populations.

Some areas on Vancouver Island's east Coast are not easily accessible; Region I personnel have been researching and developing areas where improved access would benefit consumptive and nonconsumptive users without damaging the fish resource.

A questionnaire was sent to 1,000 randomly selected Vancouver Island steelhead fishermen to determine their angling preferences and desires. Results of the questionnaire will form part of a steelhead management plan for Vancouver Island.

A fisheries technician is working on the Cowichan River brown and steelhead trout. The history of the two species is being collected and general harvest information is being analysed.

Objective 3—To improve fish habitat on Vancouver Island to enhance sport fish populations.

Improvement work was done on 40 stream tributaries to lakes in the Victoria area: Spawning areas were improved and debris and log jams preventing fish migration were removed; a barrier on the Millstone River was removed by the Nanaimo Fish and Game Protective Association, with technical help from fisheries personnel. Salmon and trout now ascend the lower falls on this river.

Objective 4—To provide expertise on fish habitat protection in order to maintain the fishery resource.

Guidelines were developed to evaluate subdivision locations. A study to assess the amount of water withdrawn from selected streams on southeast Vancouver Island and to determine impacts of water withdrawal was done. Various recommendations for fish habitat protection were forwarded to the Forest Service, Pollution Control Branch, Water Rights Branch, Department of Highways, and regional districts.

WILDLIFE MANAGEMENT

Much time was spent organizing, developing, and completing analysis for a large Careers '74 program. Final interpretations and report writing will continue into 1975.

Data was collected on the Tahsis, Tsitika, Klaskish, Stranby, Megin, Nisnack, and White River watersheds. An intensive study was again conducted at Northwest Bay. It integrated relative deer densities, deer distribution, ground and overstory vegetation, logging history, and will eventually relate to the predator study currently being conducted by the Dewars. At the same time, a hunter check was done.

Big Game

Moose—The first moose survey was conducted in the lower Klinaklini River valley.

Goat, Grizzly—A goat-grizzly study was conducted in the Sim, Ahnuhati, and Wahkach watersheds, in co-operation with B.C. Forest Products; an extensive goat survey was conducted in the Klinaklini River watershed. A mountain goat collected in Knight Inlet was autopsied and the first case of contagious ecthyma in a British Columbia mountain goat was recorded.

Cougar—The Dewars' cougar study has progressed from a population study to one describing family group relationships.

Deer—The Nimpkish deer work is continuing, with the study of winter range and associated nutrition near completion. A management model for blacktail deer is being developed in conjunction with UBC.

Elk—Accumulated elk data has been summarized; plans have been made for an elk management program. This may provide the basis for an elk permit system in 1976 or 1977.

Waterfowl

Geese—An additional 25 Canada geese were released into the Nimpkish area by Canadian Forest Products. This region has also developed plans for a captive goose flock on land, donated by the Nanaimo Water Board.

Hunting

The past hunting season had one of the lower success ratios on record. Weather was extremely mild, with little snow; as a result, deer did not move into the accessible areas until the end of the hunting season.

Liaison

Experimental training of forest crews to collect wildlife, fisheries, and hydrological data was initiated in 1974; it will be expanded in 1975.

Through an integrated meeting of regions bordering the Coast, a descriptive set of species protection guidelines was developed for inclusion in existing B.C. Forest Service guidelines.

The Tsitika report was completed by consultant H. Paish, with minimal input by the task force. It is currently being reviewed.

HABITAT PROTECTION

Summer students hired through Careers '74 began a resource inventory data collection which included the following:

(1) Nine major watersheds were examined to determine forestry-wildlife interactions and to develop five-year development (logging) plans. The information will be used to determine the future of blacktail deer habitat.

(2) Data on vegetation, climate, waterfowl use, benthic organisms, land dispositions and per-cent use of 30 Lower Mainland estuaries were collected.

(3) Preliminary studies on stream bank ecology were done to identify factors influencing susceptibility of buffer strips to wind throw.

(4) Permanent Habitat Protection staff were assisted in processing non-forestry interagency referrals and short-term studies.

(5) Distribution, abundance, habitat use, and effects of logging on Coastal Mainland grizzly bear and mountain goat were studied.

Staff

Three new Habitat Protection Technicians were hired in July, two assigned to Campbell River and Alberni Districts and the third stationed in regional office at Nanaimo.

A meeting of regional staff was held in September to discuss problems associated with the forest industry. Tentative species-specific protection guidelines were discussed and drafted; these should be available in early 1975.

Resource Inventory

Resource inventory and unit area management planning of such things as fish and wildlife capabilities, recreational use, accessibility, degree of existing development, and habitat composition were high priorities. These will be done in conjunction with the regional fisheries and wildlife management sections.

Fish resource data for a flood control proposal of the Courchan River were compiled.

At present, resource folio information includes known fish and wildlife values; a 1975 summer program should enable us to provide input into most folio areas.

Liaison

Meetings were help periodically with B.C. Forest Service personnel to discuss policies, guidelines, and operational procedures.

Preliminary guidelines for subdivision development were drawn up in co-operation with the Department of Highways, the regional districts, and other agencies concerned with subdivisions. The guidelines included protective measures to deal with problems of restricted public access, in-stream activities, bank erosion, disturbance of streamside vegetation, sewage facilities, and water withdrawals.

Arrangements were made with the Lands Branch to receive referrals on all land-use applications, including log booming and sorting leases. This Branch has developed guidelines to discourage development or booming activities on estuaries and intertidal zones. Recommendations have been made, in conjunction with Fisheries and Marine Services, Special Services, and Lands Branch, to restrict booming activities within these areas.

In 1974, interagency referrals handled by the regional office continued to increase:

Forestry referrals including folios	412
Subdivisions	103
Land applications	173
Pollution Control Branch applications	75
Water licences	225
Mineral exploration and placer mining	50

Additional referrals from the Highways and Transport Departments and B.C. Hydro were also handled.

In 1974, Mines Branch designated certain areas for placer mining; on Vancouver Island, these centre on the Malahat-Otter and Sooke Land District and the Renfrew Land District. As a result, the number of placer referrals has decreased from 1973.

Investigations

The problems of chlorinated sewage outfalls to fresh water, particularly in the Village of Lake Cowichan discharge to the Cowichan River, have been studied. Alternatives such as dechlorination and the use of ozone as a disinfectant have been recommended.

Bear problems associated with municipal and industrial garbage dumps remain unsolved.

Regional staff reviewed Department of Highways plans for widening the Island Highway, constructing bridges, installing culverts, and gravel removal applications. Recommendations were made on plans for sensitive areas.

A proposal to build a domestic water supply dam on the Chemainus River was investigated.

INFORMATION AND EDUCATION

Conservation and Outdoor Recreation Education Program

About 2,043 students took part in the CORE Program: 83.6 per cent graduated, 12 per cent failed, and 4.4 per cent did not complete the course.

Staff spent approximately 75 man-days training new instructors and updating procedures for existing instructors. One hundred and thirty-three new instructors graduated from this course, bringing the number qualified to 325.

Information Services

Eighty-nine presentations were made to schools, service clubs, industrial establishments, naturalists, and Fish and Game Clubs.

Special film and slide presentations in remote rural communities reached about 2,000 people.

Special displays designed for large urban centres depicting various aspects of Branch activities reached an estimated 30,000 people.

Liaison with local press, radio, and TV media has been established and maintained.

Sign posting of all Branch projects with descriptive information is under way and will continue in 1975.

Education Services

Student involvement in Fish and Wildlife management projects has been extensive. One Junior High School class has "adopted" a small lake to experience management techniques under Branch supervision. Some 5,300 Grades V to VII students have been introduced to Wildlife Conservation education through school field trips; about 1,000 Boy Scouts were provided with an introductory course in Conservation Outdoor Recreation. A number of schools have now included the CORE program as part of their curriculum.

Public Participation

Public involvement in the Fish and Wildlife management decision-making process has been introduced experimentally through formation of a local Advisory Council. This system will continue in 1975.

Paid Access Pheasant Hunting

A study project designed to provide information on the possible values of such programs was operated on a 600-acre farm at Qualicum, in co-operation with the landowner and with other Branch sections.

COAST-MAINLAND—REGION II

FISHERIES MANAGEMENT

Staff

A new fisheries technician now works in Chilliwack on the Chilliwack-Vedder River watershed.

Fisheries Inventory

Fisheries inventory studies were done at Lillooet Lake, Lillooet River, Harrison Lake and tributaries; in the Lytton and Squamish areas; and in the Chilliwack, Homathko, Southgate, Teaquaham, and Quatum River drainages.

Commercial and Private Fish Ponds

Burnaby headquarters and district offices processed six applications for Commercial Fish Pond Licences and 17 applications for Private Fish Pond Permits.

Fisheries Habitat Protection

The Regional Habitat Protection section was expanded in 1974, with the fisheries sections involved in investigation and formulation of recommendations for referrals and problems directly affecting fishery values.

Referrals and problem areas included Dakota and McNair Creeks, Cheakamus River, Mossom Creek, and Nathan Creek. Department of Highways referrals concerned the Cheakamus River, White Creek, and Gibsons and Langdale Creeks. Water Rights Branch referrals: Fishtrap and Bertrand Creeks. Provincial Parks Branch referrals—Rolley Lake, Phelix Creek, Hicks Lake, and the Skagit River valley. Problems handled included Ouellette Creek, Mossom Schoolhouse, Scott, Ladner, and Anderson Creeks.

Research

Water chemistry investigations were done at Coquihalla, Silverhope, and other creeks to obtain baseline water chemistry data over 12 months.

Habitat documentation and adult spawner distribution studies were done in the summer at Coquihalla River and Silverhope Creek.

A tagging and diver observation program of winter steelhead under the direction of the Fish and Wildlife Branch and the Steelhead Society of B.C. was done on the Vedder-Chilliwack River. It was funded by the Provincial Government Public Conservation Assistance Fund.

Habitat Improvement

A number of potential habitat improvement areas were investigated including Hastings Creek, Salmon River, and Gravelpit, Carpenter, Judson, and Laxton Lakes.

Spawning grounds were constructed for cutthroat trout at the outlet of Ruby Lake in the Sechelt area; short-term manipulation has resulted in increased numbers and distribution of spawners. There were 15 spawners in 1968; there were 150 in 1973. In 10 years, there could be an optimum number of 500 spawners.

Fish Culture

Rearing ponds for steelhead continue to be operated at Watercress Creek Pond (12,000 summer-run juveniles of Coquihalla stock) and Salwein Creek Pond (18,000 winter-run juvenile of Vedder River stock).

Student involvement in fisheries projects provided considerable baseline data. Projects included a fisheries inventory of the Stein River valley; a lake angler use and success study at Squamish, Pemberton, Lillooet, Bridge River, Harrison, and Mission; a low-flow study in the Surrey-Langley area to develop a method of determining minimum water flows for fish; a summer-run steelhead research program in Silver-Hope Creek; a sea-run cutthroat inventory in the Sechelt Peninsula; a general stream and lake inventory in the tributaries to Squamish and Gates Rivers, River of Golden Dreams, Sunrise and Hicks Lakes.

Planning

A number of watershed plans were started or completed in 1974. They will lend direction to fisheries management within the region.

Regional guidelines for anadromous fish management were completed. They will direct management of steelhead and cutthroat trout within the region.

Under the Fisheries Resource Enhancement Program, sponsored by Federal Fisheries and Marine Services, plans for inclusion of steelhead and cutthroat enhancement were developed. This program is aimed at improving conditions for Pacific Salmon.

WILDLIFE MANAGEMENT

Waterfowl

Waterfowl hunting success within the Lower Mainland region appeared normal, although the total number of hunters has decreased from previous years. Waterfowl hunting interest in the Lower Mainland may be declining because of increased licence and equipment costs, reduced opportunity, and changing social attitudes to hunting.

The Wood Duck Nest Habitat Improvement Project, started in 1973 with the aid of Ducks Unlimited (Canada) and local fish and game organizations, was monitored during the summer of 1974. Approximately 1,100 wood ducks were successfully produced during the 1974 hatching season.

Canada Goose Program—The Canada Goose flock established in the Lower Mainland Region in 1973 has increased to a total population of approximately 1,300 birds. Further releases of birds are planned for areas near Chilliwack and Abbotsford. Equipment was purchased to prevent the geese from damaging agricultural crops.

Big Game

Big game hunting success was substantially reduced from the 1973 season. There was a normal to good yearling-adult ratio; poor hunting success may have been due to unseasonably mild weather conditions throughout the hunting season. Big game remained at higher, inaccessable areas until after the season closed.

Grizzly Bear—Fifteen grizzly bear permits were available in Managament Area 3: eight hunters applied for them, seven used the permits they received, and three grizzlies were taken.

California Bighorn Sheep—Past guide returns for Management Area 4 were researched to determine the annual harvest of sheep within specific drainages of the management areas. Key sheep ranges were inventoried to assess adult-lamb ratios and potential cattle-sheep grazing conflicts.

Inventory Programs

Inventory was done on key deer herds, coastal grizzly bear, and mountain goat. Wildlife inventory was done on Lillooet and Harrison Lakes, Stein, Chilliwack, Nahatlach, Birkenhead, and Upper Stave watersheds; Phillips Arm, Phillips, Squamish, and Elaho Rivers.

Special Programs

Stein Watershed Study—A moratorium has been placed on the Stein River in order to provide for development of a multiple-use resource plan. The Stein is the last major unlogged watershed in southwest British Columbia.

The results of the 1972/73 Carpenter Lake Range Improvement Project were examined and assessed.

Serpentine Wildlife Management Area; Pitt Polder Public Shooting Ground—Preliminary engineering studies on the control water levels of these areas were done, in co-operation with Ducks Unlimited (Canada), the Canadian Wildlife Service, and various interest groups throughout the Lower Mainland.

HABITAT PROTECTION

Inventory, data, methods, habitat classification, development of an inventory, data storage, and retrieval system continued.

A Wildlife Habitat Classification System using forest cover and topographic criteria is being developed.

Training and Public Information

Habitat protection staff appeared on the "Bob Switzer Show" on CBC to explain the role of the Habitat Protection Section, spoke to Forestry students at BCIT, participated in a short course at UBC on logging practices, and held a short course, with Federal Fisheries representatives, on methods of collecting and preserving water samples.

Liaison

Okanagan-Similkameen Parks Society—Habitat protection for various fish and wildlife species were discussed.

ELUC Secretariat—Development of inventory techniques and methodologies were discussed.

A proposed *B.C. Petroleum Corporation oil refinery* was discussed with various agencies.

B.C. Forest Service—The Habitat Protection Section co-operated with Forest Service in development of a 40 chain mapping system using transparent overlays showing different components to be applied to all five-year plan areas and resource folios. B.C. Forest Service road building guidelines were reviewed and updated. Resource Folio mapping began on Two Mile, Mill, Siwash, and Silverhope Creeks, and East Anderson River.

Forest Industry—Habitat personnel meet regularly with several forest companies to discuss and inspect development plans in various watersheds. These areas include Cattermole Timber; Blackwater, Grey, and Rogers Creeks; Upper Stave, Mamquam, Southgate, Quatum, Upper Lillooet, Seymour, Capilano, and Coquilem Rivers. Logging-roads inspected were Silverhope Creek, Flat Creek, Toquart-Chapman Creek, and Indian River. A 2,500-acre slash-burning area near Skwawka River was inspected. In the North Creek area, a survey of deer populations relation to cut block boundaries was done. Existing resource information on the Stein River study was assembled. A resource folio was completed on Squaqua Creek. Log-handling practices on the Harrison and Fraser Rivers were reviewed; Fish and Wildlife Branch concerns were explained to Lands Branch and Federal Fisheries.

B.C. Hydro and Power Authority—Gas pipe-line and submarine power cable crossings in Roberts Bank area, crossing Fish and Wildlife Branch reserve, were opposed. Alternate routes were suggested.

Pollution Control Branch—A water quality study of Sakwi and Weaver Creeks were discussed with PCB, IPSFC, and CWS.

Department of Highways—The Cheakamus River canyon and Coquihalla River proposed Langdale to Sechelt Highway site, were inspected.

Parks Branch—Dump site and culvert installations in Birkenhead Lake Provincial Park were inspected.

Habitat protection personnel met with the Technical Planning Committee, The Greater Vancouver Regional District, Surrey Municipality, the Technical Planning Committee Meeting of Sunshine Coast Regional District, and the Langley City mayor and council concerning planning and development in the Lower Mainland region. Field inspections were done on Coleman and Hastings Creeks, and Gates River.

Interagency Referrals Completed During 1974

Department of Highways	50
Pollution Control Branch	107
Lands Branch	31
Water Rights Branch	212
Municipalities	31
Department of Mines and Petroleum Resources	38
British Columbia Forest Service	331
Miscellaneous	43

ENFORCEMENT

Prosecutions

There were 383 prosecutions during the year, resulting in 375 convictions, five withdrawals, and three dismissals. This respresents a decrease of 99 from the previous year. The drop in the number of prosecutions is probably related to the decrease in the number of hunters in the field, because the added cost of licences and the sparse distribution of animals during the warm, dry fall.

Staff

A new district office was established in Pemberton. A second Conservation Officer was added to staff in the Powell River and Chilliwhack Districts.

INFORMATION AND EDUCATION

The first year Region II had an Information and Education Officer was 1974. Work was done in continuing and improving Branch programs and in developing future programs. In addition, the establishment of a major Information and Education Centre in Vancouver resulted in involvement by the Lower Mainland Region in a number of activities of Provincial status.

CORE Program

New instructional materials were developed and instructors were updated on program changes and additions. Updating seminars were held in Vancouver, Haney, Chilliwack, Burnaby, Richmond, Boston Bar, Lillooet, Pemberton, Sechelt, and Powell River during the early summer months. Instructor training and assessment programs were held in Burnaby, Chilliwack, and Squamish.

A series of 11 half-hour presentations, primarily about CORE, were produced by the Information and Education Section for CBC's "Bob Switzer Show."

Permanent and summer staff spoke to rod and gun clubs, naturalists, and school groups about CORE.

CORE course attendance was over 500 in the fall months; much time was spent in program co-ordination.

Information Services

The B.C. Wildlife Federation, the Federation of B.C. Naturalists, and several groups of outdoor educators were given information about the Fish and Wildlife Branch.

Slide shows were developed describing Branch activities and concerns. They were used in conjunction with films and nature walks in smaller Provincial park campgrounds and summer youth camps within the region.

Careers '74

Five summer students were hired: one CORE assistant; three research personnel to develop an environmental awareness program; one photographer to add to the regional and headquarters photo collection and to develop CORE slide packages; one Resource Interpreter to act as a roving naturalist; and assistant CORE personnel.

URBAN RECREATION

A Regional Recreation Co-ordinator was hired in February 1974. The immediate objective was to develop quality hunting on public and private lands in the Fraser Valley. Sportsmen were encouraged to organize themselves and become involved in land and wildlife husbandry as a part of this program.

Urban Hunter Management

An advisory committee of representatives of Richmond, Delta, Surrey, and Langley municipalities was established. A Standard Firearms By-law was developed and adopted; a Special Licence Hunting Area Program was established. Under this program, hunters in the four municipalities must possess a Special Area Hunting Licence. "No Shooting Boundaries," as defined by municipal by-law, were posted, enforcement capabilities were increased, and the local office stayed open on week-ends to handle complaints and distribution of an information brochure to hunters.

Summer Outdoor Recreation and Fishing Program

This program provided disadvantaged children with a quality outdoor recreation based upon sports fishing. The children were from the Kingsway Branch of Children's Aid and the Boys Club of Vancouver. Three hundred and twenty-three children and 30 adults took part. There were 19 outings, ranging from three-day camping and fishing trips, to fishing, hatchery excursions, and nature walk trips. Cost to the Branch was $2,200.

The Information and Education Section also provided transportation for members of the Golden Rods and Reels, a senior citizens club, for five club excursions.

KAMLOOPS—REGION III

Regional offices moved from the Government buildings complex to larger offices in Valleyview.

FISHERIES MANAGEMENT

In general, fishing was good throughout Region III in spite of increasing fishing pressure. New fisheries are being developed to keep pace with growing demand.

Habitat Improvement

Lake aeration—In 1974 a windmill for lake aeration and winter-kill prevention was erected at Walloper Lake. Windmill operations at Bleeker, Black, and Walloper Lakes were monitored. Three other mills, donated to the Branch by Nicola Valley Rod and Gun Club, were operating at Corbett, Centre, and Edna Lakes.

Lake outlet screening—Barriers to prevent losses of adult trout through irrigations systems were completed on Six-Mile, Jacko, Tunkwa, Rocky, and Knouft Lakes in 1974.

Water storage—A water storage dam and reservoir were constructed on Jacko Creek inlet to Tunkwa Lake.

Lake rehabilitation—Three lakes in Region III were rehabilitated in 1974 using Antimycin-A (Fintrol). Lakes treated were Trapp, Richie, and Napier adjacent to Highway 5 south of Kamloops. In total, 11,065 acre-feet of water were treated.

Fisheries Inventory

North Thompson River Drainage—Thirty-one streams and five lakes between the headwaters of the North Thompson River and Avola were surveyed in detail by Careers '74 students.

Angler surveys—An intensive creel survey was carried out on four lakes in the Kamloops Region, using six Careers '74 students.

Environmental studies—Meetings and field surveys were held with Government agencies involved in the Thompson River Study; final report will be issued in 1975.

Research—The environmental effects of Squozin, an unregistered pesticide, are being researched at UBC. It may prove invaluable for intensive fisheries management.

Staff—A fisheries technician was added to the staff.

WILDLIFE MANAGEMENT

Habitat Improvement

Prescribed burning was carried out with the Forest Service on 80 acres of deer winter range north of Kamloops Lake.

Two logging areas, to be used to improve wintering conditions for deer rather than to obtain maximum sustained yield of wood fibre, were approved by the Forest Service and management plans are being developed.

B.C. Forest Service, the Fish and Wildlife Branch, and a private logging company designed cutting permits to improve winter deer range south of Kamloops Lake.

Student crews collected seeds of wildlife browse species for planting in logged or burned areas. Some were seeded in the fall, some will be seeded in spring 1975, and others will be stored for future use.

Research

The co-operative research study of deer-cattle interactions continued, in the fourth year of a five-year study.

Summer students completed a survey of nonconsumptive use of wildlife in the Kamloops area. It showed that there is high year-round interest in wildlife; many people felt that hunters interfere with their opportunity to see and enjoy wildlife.

Inventory

Inventory of wildlife winter ranges continued; aerial surveys of deer winter ranges were done in the southern part of the region. Aerial surveys of moose showed high productivity and good populations on winter ranges in Management Area 14. In Wells Gray Park, populations and productivity remained low because of deteriorating range conditions. Ground and air surveys of deer in Management Area 4 showed that numbers of deer on the spring ranges had increased from the previous year. The survival of deer to yearling age was also high in most areas.

Spring drumming counts of ruffed grouse showed lower than average breeding populations of this species.

Hunter Surveys

In 1974 the numbers of hunters decreased, success was slightly reduced, and a lower harvest of nearly all species of big game, upland birds, and waterfowl resulted. Extremely mild weather was blamed for the poor hunting season.

HABITAT PROTECTION SECTION

Tentative arrangements were made on special considerations to cutting areas above 5,500 feet or in known caribou range.

Much time was spent handling logging referrals; the resource folio system should streamline this function.

Special Studies

A "low flow" stream study is being done in consultation with Water Rights Branch, with salmon rivers being given special attention.

Land-use studies are being done on the Adams River watershed and an area south of Bonaparte Lake.

Department of Highways is now providing monthly summaries of pending subdivision proposals so that input can be gathered prior to receipt of the final plan.

ENFORCEMENT

A second Conservation Officer was appointed to Merritt, Clinton, and Salmon Arm. Auxiliary enforcement officers were used in most districts.

Prosecutions numbered 484, with 70 per cent being for not having an angling licence and for having loaded firearms in vehicles. Three charges of obstruction were successfully prosecuted.

INFORMATION AND EDUCATION

Interpretative display shelters were built at a number of sites to illustrate points of interest or give public information. Displays were set up in conjunction with local functions such as "Salute to Sockeye" and Kamloops Sportsmen's Show. Signs and periodic news releases helped maintain public awareness of Branch activities.

Six hundred and fifty students became qualified in the CORE Program; instructors were trained or updated.

OKANAGAN—REGION IV

FISHERIES MANAGEMENT

Extensive Canada-B.C., Okanagan, and Kal-Wood studies show that more than half of the fishing effort in the region occurs on the larger lakes; in particular, on Okanagan Lake. As a result, most work done in 1974 involved protection and enhancement of the Okanagan Lake fishery.

Okanagan Lake

An intensive creel census was completed. Shore spawning kokanee were enumerated and mapped. Rainbow trout were sampled and tested for DDT and mercury; the contaminants do not have any effect on spawning success. Tests show that carp are uncontaminated, tasty, and a potentially valuable market species, although yield is too low to support a year-round industry.

At Powers Creek, a fishway of stone steps was blasted into bedrock.

At Mission Creek, an Alaska Steeppass fishway was built, a storage dam, and attendant water rights were purchased to provide an additional 1,000 acre-feet of water, and 3,000 cubic yards of silt and clay were removed, with assistance from Water Resources Service and Black Mountain Irrigation District.

A study of the effects of flood-control channeling of Trout Creek was made; incubation boxes were recommended to make up for losses.

The plankton *Mysis relicta,* an important link in the trout food chain, was discovered for the first time in Okanagan, Christina, Pinnaus, Kalamalka, and Skaha Lakes after transplant to these lakes a decade ago by the Branch.

Routine Management

Stocking lists and regulations were prepared; winter and summer limnological conditions were studied; fish and their habits in various lakes were analysed. This year a method for collecting and assessing data was designed, so that a management plan can be worked out for each lake in the region listed in the Gazetteer of Canada. A windmill compressor was installed at Yellow Lake in co-operation with West Kootenay Power and Light Company.

WILDLIFE MANAGEMENT

Waterfowl and Game Birds

The Lands and Water Resources Branches gave permission for habitat improvement work to proceed at the north end of Swan Lake. Ducks Unlimited constructed a network of channels for waterfowl and enhanced pheasant habitat in the adjoining field, with help from local clubs.

Big Game

The first Limited Entry Hunt of California Bighorn in the Ashnola area was held in the fall; it was moderately successful.

The subject of reintroducing cattle to grasslands was discussed informally and on-site inspections were done with members of the Grazing Division. In the future, reintroduction of cattle will be controlled by the Fish and Wildlife Branch.

The nutrition of California Bighorn sheep will be investigated in co-operation with the Okanagan Game Farm.

Five important winter range areas for deer were chosen for intensive management. Mapping of cover and vegetation types began; sites for regular observation of wildlife and for monitoring habitat and wildlife use were chosen. District Lots 2898 and 2898A, in the Antlers Saddle area, were purchased by the Crown for wildlife management purposes.

A winter feeding program for sheep, deer, and game birds was designed in conjunction with the South Okanagan Sportsmans Association, which has received a Conservation Assistance Fund grant for the project.

Predator Management

A Regional Predator Management Advisory Committee was formed in December; regional control policy was set and persons for contact and reporting were established.

Careers '74

In the Grand Forks Environment Unit, a vegetative and topographical map of the area was completed, a plant collection of 61 species was compiled, an open-site macro plot was established at Overton Creek and Morrissey Creek, old fences on the northeast boundary were removed and new fences were built, and clear cut openings were made in selected aspen groves.

In the Ashnola area, an ungulate winter range rehabilitation was partially completed.

At Peachland, posts for a deer-proof fence were installed along a 2-mile stretch above Okanagan Lake Park.

In the Vaseux Range, greasewood was pruned to 3 feet in height and fertilization was done, a Russell fence around the Bighorn sheep watering hole was partially completed.

A cabin was built at Short Creek.

A 2,600-foot snake fence was built at the north end of Swan Lake.

A source book of historical wildlife and fisheries information for the Okanagan Region was completed.

HABITAT PROTECTION

The Provincial Water Rights Branch, Department of Agriculture, Fish and Wildlife Branch, and Fisheries Service of Canada formed a committee to determine minimum water-flow requirements of fish in streams.

Waterworks improvements caused a large volume of silt to be deposited in Mission Creek, which threatened to destroy an estimated 350,000 spawned Kokanee. A complete investigation was conducted and a report was submitted to the Deputy Ministers of Recreation and Conservation and Water Resources.

Crown Zellerbach and the Fish and Wildlife Branch initiated a folio plan for Tree Farm Licence No. 9. The B.C. Forest Service endorsed this approach.

Damage to Blythe Creek, a tributary of the Kettle River, was partially rectified by the offending private logging company after a clean-up order was issued by the B.C. Forest Service and Fish and Wildlife Branch.

An experimental "mark-to-cut" selective logging program was conducted in Tree Farm Licence No. 8 to enhance deer winter range and natural forest regeneration.

ENFORCEMENT

In 1974, there were 11 permanent Conservation Officers, one full-time auxiliary officer, and six part-time auxiliary officers. Vernon, Kelowna, Penticton, Grand Forks, and Princeton are now manned by two permanent officers.

Night Patrols

Night patrols were initiated and special patrol work has been increased. These additional patrols and growing public awareness of wildlife and fisheries values have resulted in increased numbers of complaints in all districts.

Four air-ground hunter checks were done; no violators were found. This system is valuable in covering areas of chronic complaints of night hunting, for a single light aircraft can cover a large area in a limited time.

Special Patrols

Areas checked by blitz tactics include the Kettle River drainage, the Lumby-Monashee area, and the South Okanagan. A contact violation ratio of 8 to 1 actionable circumstances per 1,000 hunters contacts resulted. Fall hunting pressure was below normal because of prolonged summer-like temperatures.

The Ashnola Bighorn limited entry hunt was specially patrolled. During the open season, one Conservation Officer and one auxiliary successfully patrolled the entire area on horseback.

A mounted patrol of the Ashnola district began under the auxiliary Conservation Officer program. The public received helpful information and assistance; information was obtained on recreational use of the area; regular Conservation Officers were assisted during the limited entry Bighorn Sheep season.

INFORMATION AND EDUCATION

A full-time Information and Education Officer was hired in early 1974. Conservation activities and environmental education were promoted on local TV and radio programs, a number of ecology classes were taught in secondary schools, field trips were conducted with youth group leaders, a workshop for Scout leaders was held, and Provincial camp-sites were visited during National Wildlife Week to discuss wildlife management with campers.

The South Okanagan Sportsmans Association winter feeding program for deer and mountain sheep was filmed in co-operation with the B.C. Wildlife Federation.

The section initiated a Regional Information Bulletin for distribution within and outside of the Branch.

New CORE courses were started in Keremeos, Cawston, Princeton, Penticton, Kelowna, Vernon, Lumby, and Osoyoos.

KOOTENAY—REGION V

FISHERIES MANAGEMENT

Prior to 1974, most of the activities of fisheries personnel was related to habitat protection. In 1974, more emphasis was placed on management related matters with the establishment of a regional habitat protection function.

Habitat Protection

Coal activity in the Elk and Flathead Valleys increased, with little input from the Fish and Wildlife Branch to avert potential problems.

Stream inventory, creel census, and rainbow fry assessment were conducted on the Arrow Lakes system. Most of this work is being carried out in anticipation of another dam on the Columbia River at Revelstoke.

Management Highlights

A program for producing rainbow trout at Meadow Creek has been established, with first production expected in 1975. Meadow Creek kokanee fry production exceeded all previous years' records: 10 million fry were produced in the system and egg to fry survival was 35 per cent.

Final plans for the Inonoaklin River fishway were completed. Construction should begin in late 1975.

A Special Lakes Licence on Kootenay Lake was successful in reducing fishing effort at Balfour. A safe level of harvest for burbot at the Balfour fishery has been determined. Kokanee fishery catch at Balfour exceeded any previous years despite reduced effort.

More gravel was introduced at Gerrard. A record run of Gerrard rainbow trout was observed in 1974.

Research began on the early life history of Lardeau River rainbow trout.

Future Plans

Broad direction for the next few years includes Arrow Lakes work, continued Kootenay Lake rainbow and kokanee production, stream management, and East Kootenay small lakes management.

WILDLIFE MANAGEMENT

A Habitat Protection Biologist was added in the Kootenay Region; the Regional Wildlife Biologist is also involved in wildlife habitat protection and enhancement programs conducted by the Regional Land Co-ordinator.

Wildlife Habitat Protection

Communications with the Forest Service improved through the development of forest resource folios. Subalpine forests of the Salmo-Creston were studied; logging plans were revised to accommodate wildlife requirements.

Co-ordinated planning of range use by domestic livestock followed an extensive field trip to Oregon and two exchange visits to the East Kootenay by wildlife and range managers from Oregon. Little progress was made on the St. Mary's, Grasmere, and Packham's units, although communications and joint planning activities increased.

The Springbrook project is an intense bio-physical resource inventory program to stimulate integrated public resource management. Support was provided by the ELUC Secretariat and supplemented by permanent and summer staff.

Environmental damage due to mineral and coal exploration decreased in 1974, although these activities continue to impair valuable wildlife, recreational, and fisheries habitats. Affected areas are Upper Elk, Line Creek, and Flathead valleys, and the Fording and Wheeler Creek Watershed.

Hydro-electric developments resulting from the Columbia River Treaty continued to take their toll on wildlife as the Libby Reservoir reached full pool and as the Mica Reservoir began to fill.

Hearings were held on the Pend-d'Oreille 9-mile dam site; the Branch focused on the location of the main haul road and compensation for the loss of critical white-tail deer winter range.

Planning and surveillance of pipe-line and transmission-line projects have been less than adequate, with the resultant loss of wildlife habitats.

Progress has been made with the Forest Service Engineering Division to include fish and wildlife values in road locations and design. Certain access roads will eventually be destroyed in order to maintain important wildlife and recreation habitats.

Land alienation application referrals decreased. Land application referrals are now the responsibility of the Regional Land Co-ordinator.

Agricultural land reserve plans were reviewed for all Kootenay Regional Districts. The Land Commission rejects the East Kootenay land reserve plan in favour of a single Agriculture Land Reserve. The expansionist philosophy of the Department of Agriculture continues to impair important wildlife, forestry, fishery, and recreational lands that are marginal for agriculture.

Executive staff of the Departments of Highways and Recreation and Conservation toured the southern Kootenay Region. Attention was focused on land use in the Arrow Basin and the Pend-d'Oreille, the Gerrard Bridge issue, flood-plain subdivisions, overgrazing and forest succession in the East Kootenay, and open pit coal-mining and exploration in the Elk, Fording, and Flathead Valleys.

Land Acquisition and Management

Active management projects continued on Bummers Flats and the Bergenham property. Flooding due to unsually high water caused some damage to dykes, fences, and the cultivated field.

Communications were established with the Band Manager of the St. Mary's Indian Reserve and the Chief of the Lower Kootenay Reserve to advise in range management and land use programs.

Species Management

The Kootenay Region wildlife management program was reorganized and established as part of the region's 10-year plan. Grizzly, goats, and caribou man-

agement reviews and plans are nearing completion. Elk, bighorn, moose, and deer outlines are being organized, with a priority on an elk management review and plan.

A temporary elk-feeding program began in early January. High quality grass-alfalfa hay was distributed to 14 sites in the Rocky Mountain Trench and Elk Valley; about 1,500 elk used the hay regularly.

Aerial counts were low in most units in the winter, due to milder-than-average winter conditions. Juveniles of all species increased over most of the East Kootenay. Recruitment rates, however, remained below normal; they are critically low for whitetail deer and mule deer between Fort Steele and Fairmont. Bighorn herds in the Rocky Mountain Trench continued to recover from the die-off of the 1960's.

Eight sharptailed grouse were captured for the National Bison Refuge in Boise, Montana, with the aid of the Branch.

Elk continue to damage hay stacks, orchards, and irrigated fields in the east, central, and west Kootenays. The Point V-Bar Ranch near Skookumchuck was acquired by the Land Commission for integrated management because of this problem.

Hunting Seasons

Big-game seasons continued to be conservative in the East Kootenay. A special elk season at Robson was successful; with more than 20 elk taken.

The special pheasant season on the Creston Flats was opened for the second consecutive year since 1968. About 85 per cent of the landowners opened their lands to hunting, compared to about 50 per cent in 1973. Two hundred and sixty-six daily $5 permits were sold and a total of 128 pheasants were bagged.

Deer harvests were lower than average in the West Kootenay despite liberal seasons and moderately abundant populations.

A gradually increasing whitetail deer population and light harvests for the two or three years resulted in severe orchard damage and high highway losses in the Creston District in 1973/74.

An extension of the hunting season from January 1 to February 16, 1975, was instituted on either-sex whitetail deer near Creston.

Predator Management

The Kootenay Region Predator Management committee held its first meeting. Individual problem animals in agricultural areas will be controlled; individual predator species management plans will be developed.

Careers '74

The following projects were done: A thorough 20-year review of grizzly management in the Kootenays; a study of elk winter feeding sites; an inventory of sharptailed grouse population; a study on the effects of Christmas-tree management on forage production and big-game use; an expansion of the Creston Pheasant Project; a review of Kootenay elk management.

Conferences and International Programs

A North American Wild Sheep workshop was attended in Missoula, Montana. The Wildlife Management Institute will publish the results of the workshop as a guideline for North American mountain sheep protection, management, and research.

REPORTS AND PUBLICATIONS

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WARKENTIN, W. J. 1974. 1973/74 Classified Big Game Counts in the East Kootenay. B.C. F. W. Br. report. 10 pp. typed .

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LAND MANAGEMENT

In 1974, three major properties came under intensive management, two were completed and maintained, and new programs in wildlife land management were instituted.

LAND ACQUISITION AND MANAGEMENT

With ELUC approval, Bummers Flats, Premier Ridge, and Bar 40 at Newgate were acquired by early 1974. Annual management plans were immediately formulated.

Successful management plans on Wolf Creek and Bull River were instituted in 1974.

The Point V-Bar Ranch and the Lost Creek and Steeples Ranch were acquired by the Land Commission, with consent from the Department of Agriculture. It is not known yet who will be responsible for the land.

Early in 1974, a Public Involvement and Management Committee was set up by the Fish and Wildlife Branch; all management plans receive input from the Committee.

Late in 1974, the land acquisition program was expanded to include land for fisheries management. No acquisitions were completed.

RESERVES

An inventory of land reserved for wildlife was conducted under the Careers '74 program.

WATERFOWL DEVELOPMENT

All waterfowl developments and Ducks Unlimited (Canada) projects (except the CVWMA) were absorbed by the land management function. The Ducks Unlimited projects on Bummers Flats and the development on Elizabeth Lake were completed in 1974. Final planning, approval, and water-licensing for the Waterfowl Oxbow project on the Kootenay River was completed; construction will begin in mid-1975. This project will be financed entirely by Ducks Unlimited. Management of the Reed Lakes development (now complete) has been turned over to the Kimberley Wildlife and Wilderness Club.

Libby

The Fish and Wildlife Branch was represented on the Libby Preparation Committee, which will continue into 1975.

Conflicts

A major obstacle to wildlife management (both habitat and species) is agriculture. The Department of Agriculture has not been co-operative in wildlife management pursuits in this region.

Habitat Protection

In the Kootenay area, 300 miles of productive valley bottom lies under hydro-electric reservoirs; the Kootenay and lower St. Mary River are overburdened with pulp-mill and mine wastes, many of the forest areas are over committed to the logging industry; many grazing areas are over committed and abused. In the Elk and Flathead valleys, three open pit mines are in operation with three more planned in the immediate future. Concurrent with hydro-electric development and industrialization, a web of transmission-lines is forming over the area.

There are two Habitat Protection staff members in Region V, working almost entirely on logging protection. Folio planning for logging is developing; a small number of folios are complete. Between 500–600 cutting permits were processed during the 1974 fiscal year.

The remaining Pend-d'Oreille will be flooded by the 7-mile dam project, with B.C. Hydro reluctant to mitigate for the loss.

ENFORCEMENT

Four addition permanent Conservation Officers were hired in this region, making seven of the districts two-man districts. Conservation Officers are involved with enforcement duties, investigating land applications, timber cutting referrals, pollution control applications, and logging enforcement activities. They assist with game checks, lake surveys, control and removal of nuisance animals, special patrols and checks in the Cranbrook, Kimberley, Flathead, Robson, Creston areas, and in the Alberta and United States boundary area.

Fourteen Auxiliary Conservation Officers were employed throughout the region for a total of 536 man-days.

Population increases in the area and increases in leisure time resulted in an increased interest in hunting. There were no hunting accidents reported in this region during the past year. One cougar attacked a human in the Fernie area.

INFORMATION AND EDUCATION

CORE Program

From May to August, Information and Education staff travelled 20,000 miles, set up 21 programs, and qualified and retained 180 instructors. Over 1,000 students have been qualified.

CORE has been accepted by the Kootenay Council of Scouting as part of the scouts prescribed requirements for several of their badges.

General Information and Education

News releases, talks programs on radio, and letters to the media were produced and distributed by the information section.

The role of the Fish and Wildlife Branch was explained to tourist booth personnel working for the Tourist Bureau.

A newsletter was started; it will be produced on a regular basis in 1975/76.

Sites

The Bergenham property was explored and the location of the new house, parking area, and interpretation shelter were discussed with Parks Branch and the Bergenhams.

Bummer Flats ranch was visited, photographed, and picnic tables and interpretation sites were laid out, in co-operation with the Land Management Section.

CARIBOO-COAST—REGION VI

FISHERIES MANAGEMENT

Opossum shrimp (*Mysis relicta*) planted in Canim in 1968 survived and sizeable numbers were uncovered in 1974. It is hoped this added food supply will benefit growth rate of kokanee.

Rehabilitation of Rail Lake using "Antimycin" was not successful because of rapid breakdown of chemical and inadequate mixing. Coarse fish population was, however, materially reduced and a healthy introduction of yearling rainbow should provide good fishing for two to three years. Blue Lake, successfully treated in 1973 with same material, was planted with yellowstone cutthroat and a 1976 opening is planned.

Creel census crew on Dean River indicated a significant increase in fishing pressure reflecting in large measure a great increase in nonresident campers. Catch limits have been reduced, roe banned, and a fly-only area proposed in order to balance a growing demand with a somewhat fixed supply.

HABITAT PROTECTION

Habitat Protection Section has been largely involved with resource referrals with those from Forest Service being paramount. Considerable time has been spent on high elevation logging and development of a suitable folio referral system. However, future problems are evident. If the Nazko cannot be logged, there seem few alternatives but to go back and remove many of the leave strips from areas logged in past decades. If this happens, all the planning for resource referrals will have been in vain.

ENFORCEMENT

Implementation of dual districts at Quesnel and Alexis Creek materially improved enforcement coverage as reflected in fines and prosecutions. More per-

sonnel coupled with an improved radio network increased efficiency in resource protection.

An animal control officer was appointed to fill a long-standing vacancy as for many years the District Conservation Officer at Williams Lake had filled a dual role. The person in this position will work closely with a regional committee representing interest groups to formulate and implement realistic programs.

SKEENA AND PRINCE GEORGE—REGIONS VII AND IX

During 1974 the Prince George Region was divided into two regions: Skeena and Prince George. Management activities are therefore reported in two sections.

FISHERIES MANAGEMENT

Carp Lake Project

The fisheries potential of the Carp Lake Watershed is being studied. Stream and lake water levels, temperatures, lake sounding, and lake plankton and stream insect populations are being measured. Rainbow trout were measured, tagged, and released. Stomach and parasite samples were collected from approximately one quarter of the trout sampled. Creek surveys were conducted regularly. Parks Branch was given a report on trout producing capabilities of various tributaries, so park development will not damage this valuable fishery.

François Lake—The 1973 assessment of a declining fishery was continued in 1974; a report will be completed in 1975.

Portions of the Stuart, Trembleur, and Takla drainages were inventoried. This information will be used in resource folios.

Careers '74 crews did stream clearance on Tabor, Purden, and Aleza Creeks to improve access for spawning rainbow trout, detailed stream evaluation of Corkscrew Creek, did an intensive gillnetting program of Stoney Creek on the degree of predation by Squawfish on juvenile rainbow trout (results indicated a negligible predation problem), and creel survey checks at high-use and stocked lakes.

A portion of the upper Sinkut River was rechanneled, following washout of a large beaver dam. Portions of Stoney Creek between Tachick and Nulki Lakes were also rechannelled to provide a deeper channel and more contained flow.

One Island Lake and Coplin Lake were inspected, to evaluate stocking success.

Watershed protection—Inspection patrols of the road north from Fort St. James to Johanson Lake and B.C. Railroad construction north of Fort St. James were completed. Reports were prepared, outlining fisheries conflicts due to poor stream crossings.

Logging and road construction on the west side of Williston Reservoir and south of Vanderhoof in the Finger and Tatuk Lakes drainages were inspected and

recommendations were made. Stream crossings on the Teardrop and Mossvale roads east of Fort St. James were checked.

Many Fort St. John residents objected to an application for the establishment of a fishing lodge on the Chowade River. A report outlining the objections to this lodge was sent to the Lands Branch and the Minister of Recreation and Conservation.

WILDLIFE MANAGEMENT

Management

Routine classified game counts were conducted in Management Areas 20, 21, 22, and 25. Big-game populations were heavily concentrated in lowland and subalpine habitats because of record snowfall in the winter 1973/74. Deer and moose populations were in healthy condition and production was normal.

Analysis of Cache Creek data and hunter sampling showed decreasing hunter success. Hunting seasons in the Prince George Region were adjusted and closures on hunting of antlerless animals were introduced in restricted areas about urban centres.

An experimental regional hunter check station program was introduced in 1974.

Inventory

The survey of northern guides and outfitters continued in 1974. Inventory information was gathered in the summer months by Careers '74 students. By 1975, an inventory atlas of wildlife in Northern and North Central British Columbia should be complete.

Wildlife and Recreation Studies

A furbearer study was proposed to detail the ecology of, and impact of logging on, the pine marten. A computer analysis of annual trapline returns was begun in conjunction with the Department of Animal Science, University of Alberta, and several local trappers.

Radiotelemetry investigations of moose movements in the Salmon River Valley were proposed and adopted as a regional management priority.

Annual returns of licensed guides and outfitters were collated for computer analysis. Preliminary investigations into the feasibility and needs to establish quotas on harvest or hunting licences were also begun.

A co-operative venture with the ELUC Secretariat to assess the recreational values of wildlife in the Williston Reservoir was adapted. This study is sponsored by the Secretariat and B.C. Hydro; the field operation is administered by the Management Section of the Fish and Wildlife Branch, Prince George.

HABITAT PROTECTION

This was the first year of operation of the Habitat Protection Section in the Prince George Region. Work responsibilities to the Fish and Wildlife Branch and to other Government agencies, Crown corporations, business and regional development bodies were developed; good working relationships were established.

Until June 1974, staff consisted of the regional biologist and one technician. A second permanent technician arrived in late June. At the end of 1974, most water-licence applications and Pollution Control Board permit applications were still being handled for the Skeena Region through the Prince George office, as well

as a small number of logging and mining referrals, land leases, and others from the Burns Lake District. This will likely continue into 1975.

Referrals were investigated, screened, and commented on: 1,050 referrals were received, with 402 from the Forest Service, 354 from the Lands Branch, 83 from the Pollution Control Branch, and a significant number of referrals from the Department of Highways and the Department of Mines. One hundred and forty-four water-licence applications were given for domestic purposes. Other referrals came from the Environmental Protection Service, Federal Department of Public Works, B.C. Hydro, CN Rail, Westcoast Transmission, various petroleum and gas exploration companies, the Special Projects Division of the Lands Branch, Parks Branch, and the Department of Agriculture. More frequently, the Fish and Wildlife Branch is being asked for input at early stages of plan development, before plans are set and great sums of money are spent.

Habitat Protection staff began identifying areas within the bottomland of the region where high fish and wildlife recreational values conflict with social and industrial development.

Habitat Protection staff studied the interaction of cattle with game (primarily moose) and forestry in the Maxan Lake area. Two years of data have been collected.

Initial clearing work was done on the Wren Community pasture area. Cattle are scheduled to begin using these lands in 1976. Planning was done for the establishment of another community pasture about 10 miles southwest of Hixon.

Establishment of the Agricultural Land Reserves in 1974 has caused concern for the maintenance of fish and wildlife values; some extremely critical winter ranges could be lost.

A break in a Westcoast Transmission main oil-line poured 140,000 gallons of lightweight volatile crude oil into the Salmon River and down the Fraser River. Environmental damage to fisheries, waterfowl, furbearers, and other animals was minimal. Two improper uses of chemical sprays were investigated, one involving mosquito spraying without a proper licence, the second involving careless use of herbicides along a railroad right-of-way.

Through the spring run-off period, three major washouts of fills occurred on logging roads. With the recent placement of a Water Rights Investigator in Prince George, these problems should be minimized in the future.

The Habitat Protection staff participated in several meetings with Water Rights, Department of Mines, and the Pollution Control Branch regarding the problem of placer mining. Several placer leases were inspected.

Newly proposed hydro transmission-lines are a growing concern. The existing rights-of-way for the lines now create ecological deserts in the winter and are barriers to animal movement from summer to winter ranges. B.C. Hydro is investigating other methods of line-clearing used in the United States.

ENFORCEMENT

Enforcement responsibilities for the Skeena Region now centre at Smithers; enforcement in the northeast section are now covered by the Prince George Region.

Two Senior Conservation Officer positions were established in the Prince George and Fort St. John offices. Two-man districts were created at Vanderhoof and Fort St. John and one-man districts were established at Valemount and Mackenzie. These new recruits spent the first six months of 1974 learning administrative procedures, the geography of the region, and regional nuisance animal problems.

Enforcement activities were publicized through the news media prior to the hunting season. The prolonged mild fall weather caused a marked reduction in hunter effort and success. The number of violations was not high, but the types of offences were unusual. There is an over-all public awareness and favourable reaction to increased fish and wildlife resource protection.

INFORMATION AND EDUCATION

During 1974 the Prince George Information and Education Section was staffed by one Information and Education Officer, one part-time office clerk, and two summer students. Responsibilities extended through Regions VII, VIII, and IX until late in the year, when a position was established at Smithers to cover Region VIII.

CORE Program

New CORE instructors were trained and existing instructors were given refresher courses. Approximately 1,400 students completed the CORE program in 1974 in the northern region. The CORE program is now used in a number of schools.

Licence Regulations

The new compulsory CORE requirement for obtaining hunting licences was misunderstood by some licence issuers, resulting in many people circumventing the new regulations. Clarification of instructions for the next licence-year should solve these problems.

General Information and Education

A total of 66 talks and slide shows was given to schools, service clubs, pulpmills, 4-H Clubs and camps, Junior Forest Wardens, Boy Scouts, Brownies, Camera Clubs, the Canoe Club, Rod and Gun Clubs, the Snowmobile Association Convention, Naturalist Clubs, hospital outpatients, a Metis village, and a school at Kelly Lake.

SKEENA—REGION VIII

The new Skeena Region was officially created on April 1, 1974, with headquarters in Smithers. Prior to this, staff consisted of one Senior Conservation Officer, five Conservation Officers (Queen Charlotte Islands, Prince Rupert, Terrace, Smithers, Cassiar), one fisheries biologist, and two half-time stenographers. By the end of 1974, staff had increased to 22 permanent members with the addition of biologists, technicians, enforcement officers, clerical help, and an Information and Education Officer.

Much of this first year was spent familiarizing new staff members with the geography, fish and wildlife resource, people, and problems of the region.

One major and continuing concern is hunting and fishing by Indians both in and out of season. Many of the 12,000–15,000 Indians of the Northwest still rely heavily on the fish and wildlife resource of the region for food. Until Indian rights are clarified, we will continue to control hunting and fishing without depriving those in need of sustenance. Meetings have been held with the Native Brotherhood and the different Band Councils to attain this goal.

FISHERIES MANAGEMENT

Steelhead inventory was carried out in the Zymoetz, Kispiox, Katwanga, Babine, Suskwa, Bear, Kitimat, Lakelse, Kitsumkalum, Ecstall, and Kloiya Rivers. Spawning areas of Stephens Creek were surveyed in detail.

An analysis of the effect of the Skeena commercial fishery upon the Skeena steelhead population was initiated; a report is near completion.

Creel census of Tyee, Ross, and Round Lakes indicated fair fishing success and low fishing pressure.

A steelhead angler-use survey was carried out on the Zymoetz, Kispiox, and Bulkley Rivers during September, October, and November. Although the majority of fishermen interviewed were disappointed with their success, they were in agreement with our restrictive regulations on these rivers.

Surveillance of B.C. Rail extension from Fort St. James to Dease Lake continued. Although major environmental damage continues, it has been difficult to prove and stop. However the frequency of requests from B.C. Rail construction officials for guideance is increasing.

Massive and sudden rains during October caused severe flooding and scouring in the Telkwa and Zymoetz Rivers. Road, bridge, and natural gas-line repairs added to habitat disruption.

WILDLIFE MANAGEMENT

Evaluation continues of the proposed Kamano II impoundment area as wildlife habitat.

Strong support was added to the now successful recommendation to legalize limited trapping of wolves.

A Regional Predator Control Committee was formed; a Predator Management Officer was appointed.

HABITAT PROTECTION

Forest industry—Heavy involvement in forestry referrals, five-year development plans and resouce folio preparation has indicated the lack of fish and wildlife inventory information.

We are urging the Forest Service to reduce the rate of wood extraction from many coastal watersheds. Logging on some goat, grizzly bear, and caribou ranges continues; attempts have been made to control this. Hand-logging operations on the smaller Queen Charlotte Island threaten seabird colonies.

With the co-operation of the Forest Service and T.V.L. No. 1 managers, logging in the Meziadin watershed has been temporarily stopped, so more information on salmon, trout, and grizzly bear populations can be gathered.

A study of winter range requirements of the Sitka deer on the Queen Charlotte Islands was initiated in the summer of 1974.

Referrals of residential lease applications, grazing permits, clearing of agricultural land, tailings disposal ponds from Atlin to the Queen Charlotte Islands were handled.

Mining—Over 200 known orebodies are in various stages of development or exploration; little has been done to date in terms of habitat protection.

ENFORCEMENT

One hundred and thirty-five prosecutions were conducted, with 131 convictions and four dismissals.

Two new Conservation Officer districts were created with officers at Hazelton and Atlin; a second Conservation Officer was placed in Terrace.

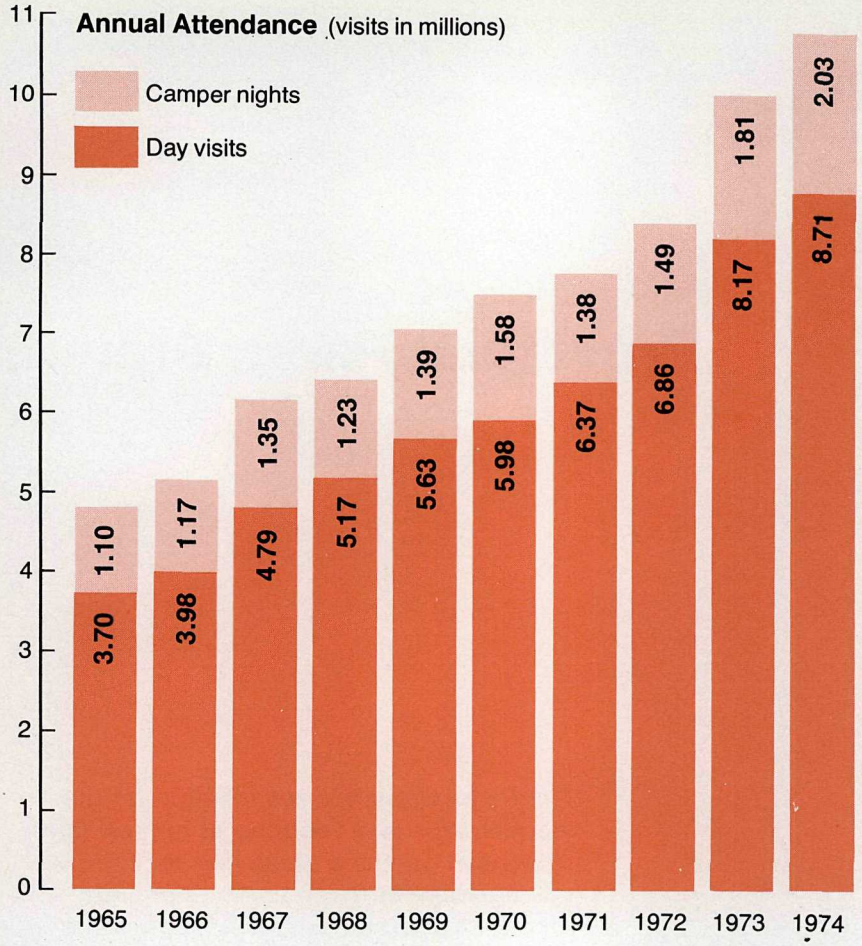
Meetings between Fish and Wildlife Branch officials from Skeena Region with counterparts from Alaska and the Yukon resulted in a useful exchange of ideas and joint patrols of the Taku and Stikine Rivers.

Some progress was made in reducing illegal traffic of Peregrine falcons from the Queen Charlotte Islands. Evidence of a well-planned attempt to steal falcon eggs was uncovered.

Provincial Parks Branch

The Parks Branch is responsible for the identification and securing of appropriate Provincial parkland areas and for the management of these areas to provide recreational opportunities based upon a natural outdoor setting. This management is designed to satisfy current recreational and aesthetic demands while still maintaining the natural attributes of park areas for the enjoyment of future generations. In addition, the Branch also provides interpretive programming and park security to enhance this outdoor experience.

To meet these responsibilities, the Parks Branch must examine and predict public recreational needs, evaluate the capabilities of potential park areas, recommend the acquisition of appropriate areas for park use, and develop park management plans to satisfy both public demands and park capabilities. The Branch must also maintain liaison with other agencies involved with public recreation in order to ensure that the Provincial park system is developed as a complementary part of over-all public recreation opportunities throughout the Province.


Annual Attendance (visits in millions)
Camper nights
Day visits
0
1
2
3
4
5
6
7
8
9
10
11
1965
1966
1967
1968
1969
1970
1971
1972
1973
1974
3.70
1.10
3.98
1.17
4.79
1.35
5.17
1.23
5.63
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6.86
1.49
8.17
1.81
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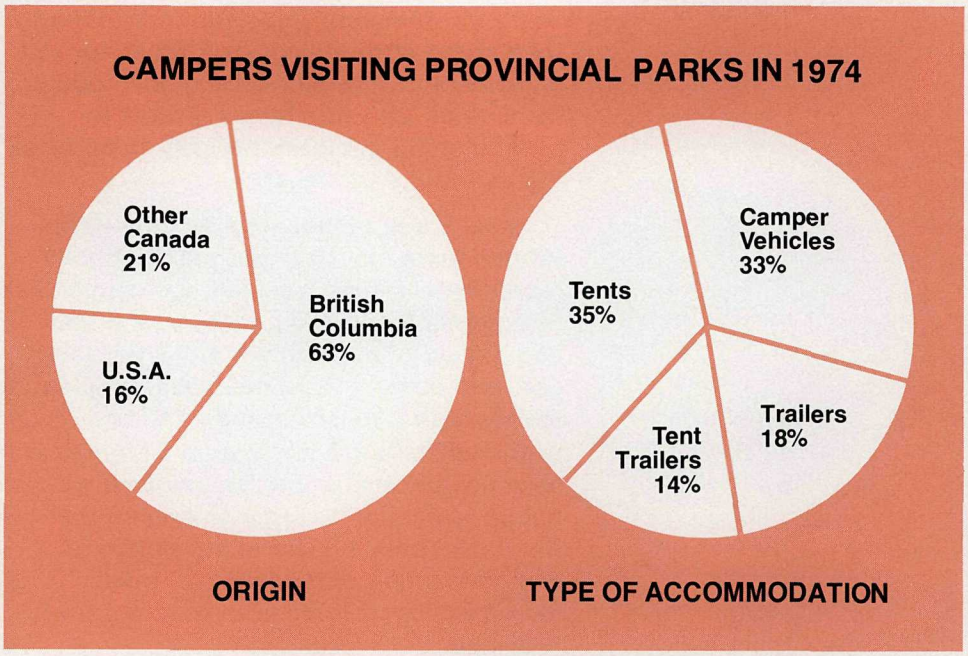
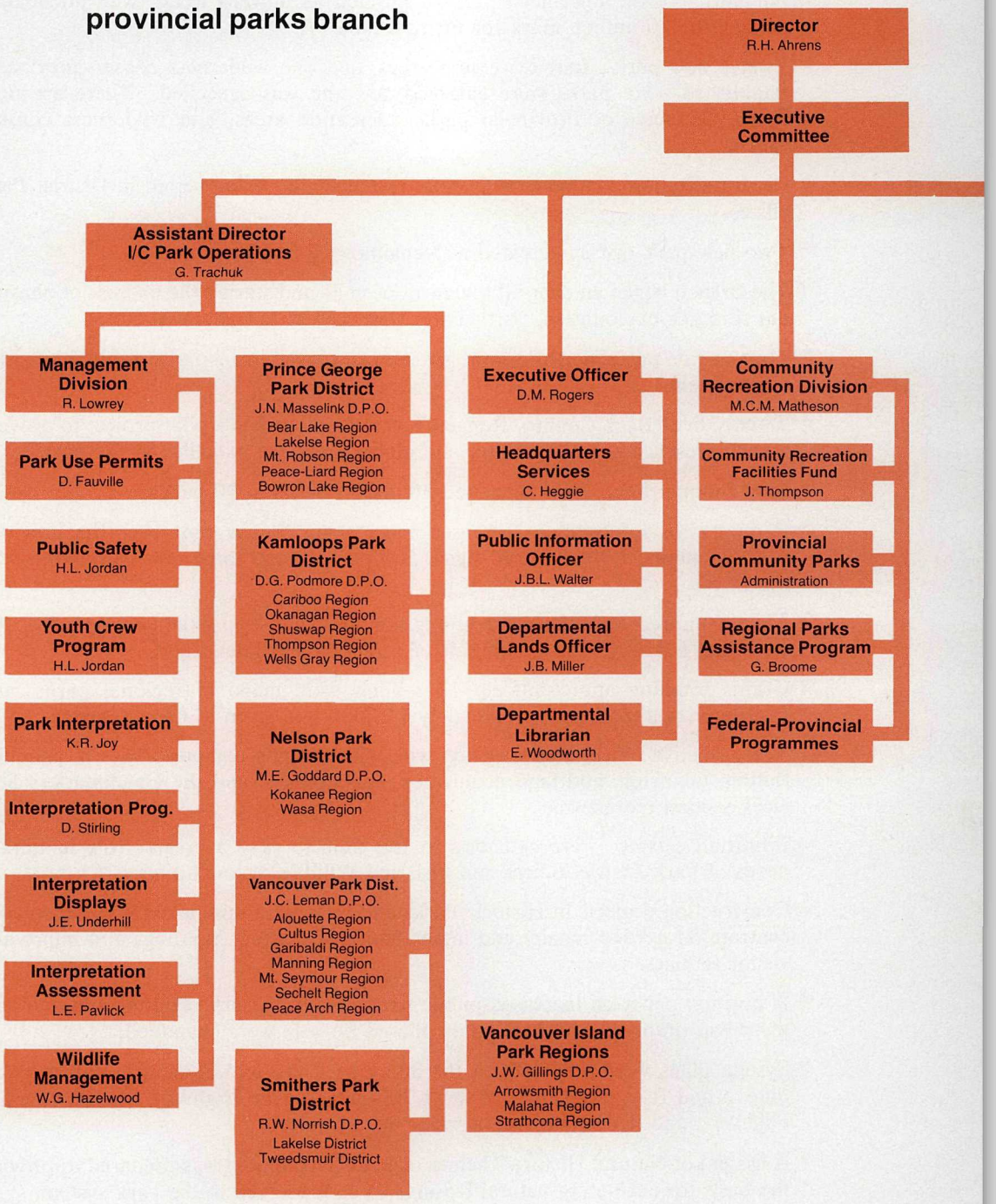
2.03

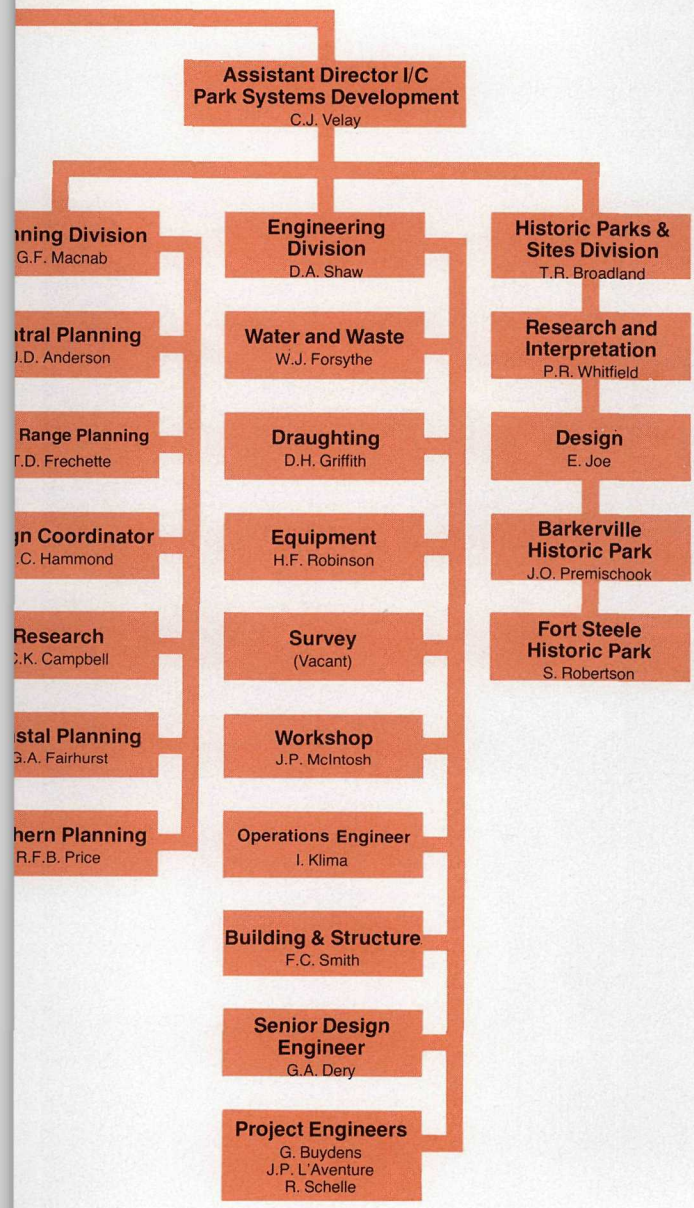

CAMPERS VISITING PROVINCIAL PARKS IN 1974
Other Canada 21%
British Columbia 63%
U.S.A. 16%
ORIGIN
Camper Vehicles 33%
Tents 35%
Trailers 18%
Tent Trailers 14%
TYPE OF ACCOMMODATION

1974 HIGHLIGHTS OF THE PROVINCIAL PARKS BRANCH

- Popularity of the Provincial parks continued its upward trend, with attendance passing the 10 million mark for the first time.
- Twelve new parks, four recreation areas, and one wilderness conservancy were established. Six parks were enlarged and one was cancelled. There are now 9,433,933 acres of Provincial parks, recreation areas, and wilderness conservancies.
- Decentralization continued with more responsibility being vested in District Park offices.
- Two new park districts created at Nanaimo and Smithers.
- The Branch began an over-all review of permits and started the process of phasing out resource exploitation, particularly with respect to mineral claims.
- Thirty-seven patrolmen and eight gatemen employed in 17 parks resulted in better enforcement.
- Twenty-five "Back Country Rangers" were employed as a pilot project to provide a park presence in back country and alpine areas not patrolled in the past.
- Fifty summer naturalists welcomed 300,000 visitors in 30 parks.
- Requests for information increased more than 30 per cent over the previous year; 21 maps, 2,000 ski-trail signs, 500 posters, and three new pamphlets were produced.
- Three hundred and fifty-eight grants amounting to approximately $17,500,000 were made through the Community Recreation Facilities Fund.
- Grants totalling approximately $1 million were made to regional parks, and assistance to a total of approximately $15,000 was given to Class C parks.
- The executive office, a new section with wide-ranging responsibilities in administration, financing, and land acquisition, was created, and the Headquarters Services Section reorganized.
- Librarian services were extended to full time to play a greater role in library needs of Park District offices and Fish and Wildlife regional offices.
- Construction projects in Historic Parks and Sites were minimized in order to concentrate on needed repairs and maintenance of existing buildings and improving visitor services.
- A position paper on increased public participation in park planning and management was prepared. Private lands offered for sale were examined.
- System plans were prepared for the Sunshine Coast and Squamish Valley. Volumes I and II of the Report of the 1,700-mile Alaska Highway, Stewart–Cassiar Highway, and highway travel corridor were received.
- A system of Natural History Themes of British Columbia was prepared to provide the basis for evaluating natural features to be preserved in the park system.
- Site development plans were prepared for 15 construction projects, with several of the designs aimed at innovative approaches to camping. Concept and preliminary master plans were prepared for another 15 projects.

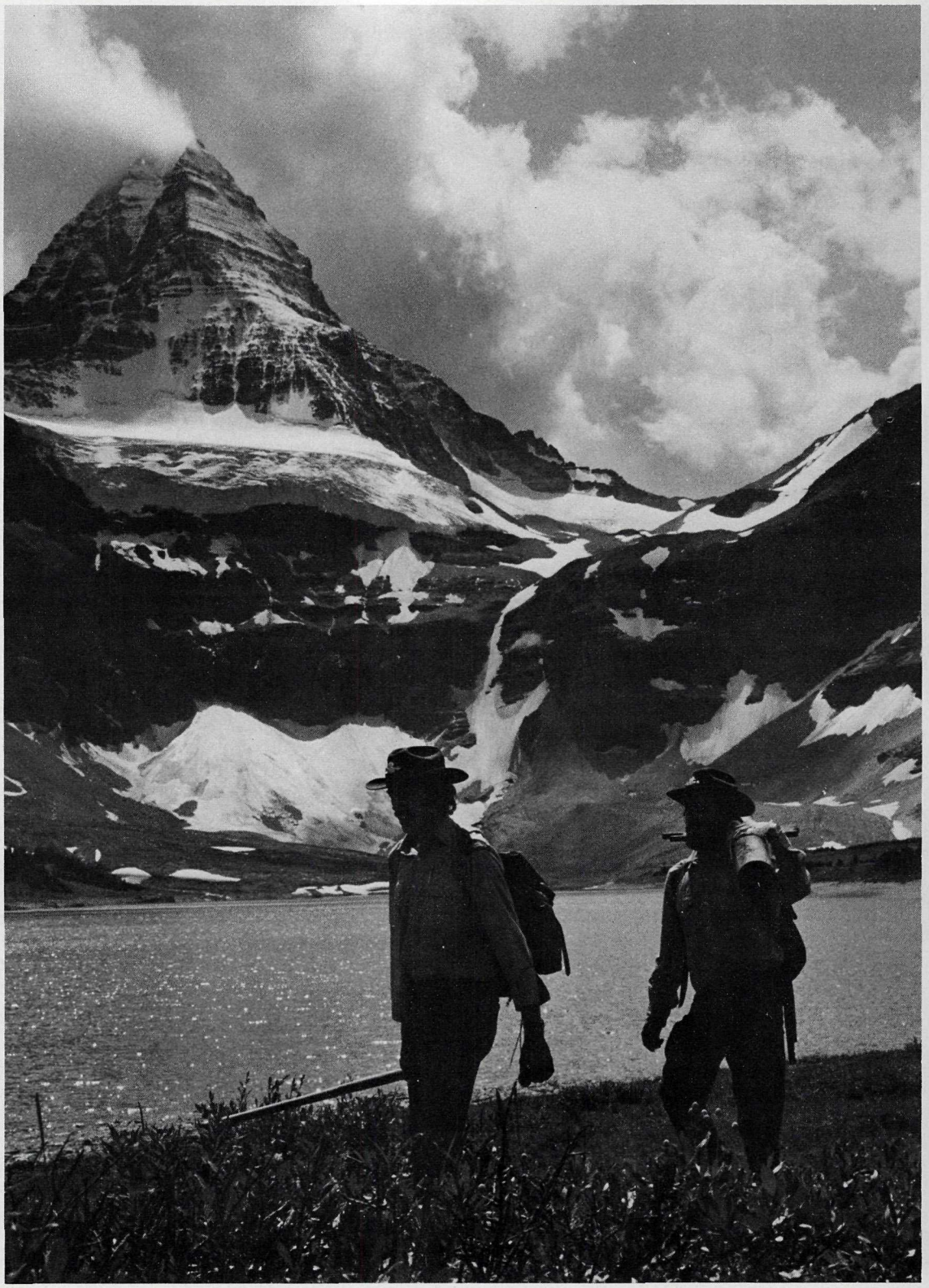
provincial parks branch

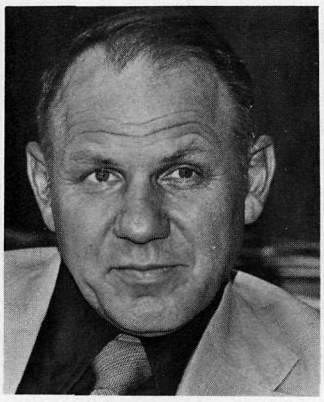




The Parks Branch is presently undergoing transition from a largely centralized organization to a more regionalized type. Under this new organization planning, development, and programming will be determined on a regional basis along with traditional maintenance and operating functions. Park regions are consistent with Provincial resource management regions.

The head office structure is divided into Park Systems Development and Park Operations functions, each under the guidance of an assistant director. The Park Systems Development group includes the Planning and Research Division, the Engineering Division, and the Historic Parks and Sites Division; these sections provide the planning and guidance for park development. The Park Operations group co-ordinate programming of each of the six park regions and provide security and interpretation services. In addition there is a headquarters services section to provide administrative support and a Recreational Facilities and Regional Parks Division which includes the administration of the Community Recreation Facilities Fund, Regional and Class C parks, and the *Recreational Land Green Belt Encouragement Act.*





Bob Ahrens,
Director.

Provincial Parks Branch

Again in 1974, major funding for the Parks Branch capital development program was accorded through Bill 114, an Accelerated Park Development Fund which provided $5,000,000. The total of all funding in support of the Provincial Parks Branch was just under $17,400,000. The Careers '74 employment program through the Department of Labour saw $2,100,000, largely in work force, applied to operation and maintenance of Provincial parks. This funding was vital to upkeep of the park system.

Facility development consisted of a wide variety of small-scale projects throughout the Province with the exception of the Cypress Valley Project near West Vancouver. There, completion of the access highway, ski-slope preparation, and work on basic services of sewerage, power, and water absorbed nearly one-quarter of the $10,350,000 funding for facility development. Campgrounds at Green Lake, Purden Lake, and Sasquatch Parks, and Skagit Recreation Area were among the larger-scale developments.

Awarded grants for 358 projects under the Community Recreation Facilities Fund amounted to $17,600,000 for 1974. By the end of 1974, $32,042,026 had been committed via the fund.

Tallied park visits for the first time exceeded 10 million for the developed Provincial park. A total of 10,746,000 visits were counted, an increase of 11.2 per cent over 1973, with use from within Province proportionately greater.

Twelve new parks were added to the Provincial park system. While these take in only 3,589 acres, they are highly attractive and valuable waterfront multi-recreation parks. French Beach Park, Ruckles Park, and Mansons Landing Park are notable examples. Two park properties were donated and three prospective donations were being negotiated by the end of the year. Fifteen land purchases for park were negotiated but the major expenditure on park land buying in this year was on behalf of National and Regional Parks. By the end of 1974, a total of 241 properties in Part I, and five ownerships in Part II of the Pacific Rim Proposed National Park had been acquired by the Province.

The Youth Crew Program of park-support work and training for 15 to 17-year-olds, included, for the first time, a crew of girls. The enthusiastic effort and strong performance of the girls' crew gave clear indication that a more equitable oppor-

tunity for employment should be accorded young females under this program, hitherto for males only.

No significant changes in park legislation, regulations, or Parks Branch organization occurred in 1974. However, an organizational structure and recommended staffing level for the regional and district offices of the Branch was worked out with, and approved by the Public Service Commission.

In the course of the year, 103 temporary continuous employees, with varying but in some cases lengthy service with the Parks Branch, were accorded permanent positions in the Branch establishment. The staffing of the new Skeena and Vancouver Island Park Regions commenced with appointment of Park Region Managers to these units.

The program of natural history interpretation in parks was significantly increased to 50 summer naturalists giving service in 30 parks.

The year 1974 saw marked increase in the involvement of the Provincial Parks Branch in regional resource management committees, and resource allocation assessments being conducted through the Secretariat of the Environment and Land Use Committee. While these involvements taxed the limited staff, the increasing emphasis on detailed analysis of potential resource uses before allocation to particular purposes, and improved co-ordination of the efforts of resource-using agencies is welcomed by the Branch.

R. H. AHRENS, DIRECTOR

During 1974 it was a year of continued development of Provincial park facilities, substantial expansion of the system and staff, commencement of the decentralization of the administrative function of the Branch, and consolidation of gains realized in recent years. Popularity of the Provincial parks continued its upward trend with attendance passing the 10 million mark for the first time. To the end of November, 8,540,000 day visits and 2,000,000 camper nights were recorded. These figures show a slight increase over the 1973 totals of 8,170,000 and 1,180,000.

Summary of Provincial Parks and Recreation Areas Established, Enlarged, Deleted, or Cancelled in 1974

Area	Acres
Twelve new parks established—	
Fossli (Class A, Category 6)	130
French Beach (Class A, Category 6)	145
Gold River (Class A, Category 6)	77
Horsefly Lake (Class A, Category 6)	365
Mansons Landing (Class A, Category 6)	117
Octopus Islands (Class A, Category 6)	162.5
Pennask Lake (Class A, Category 1)	604
Ross Lake (Class A, Category 6)	763.65
Ruckle (Class A, Category 6)	1,200
Shawnigan Lake (Class A, Category 6)	14
Tarahne (Class C, Category 4)	8.5
Westwold (Class A, Category 6)	3.3
Additions to existing parks—	
Big Bar Lake	80
Chilliwack Lake	15.9
Cottonwood House Historic	5.4
Golden Ears	176
Mount Robson	4
Nairn Falls	56
Recreation areas established—	
Fry Creek Canyon	1,360
Kettle River	346
Mansons Landing	130
Octopus Islands	107
Wilderness Conservancy established—Purcell	325,000
Cancellations—Brothers Memorial (Class C)	16

Provincial Parks, Recreation Areas, and Wilderness Conservancies, December 31, 1974

		Acres
249	Class A	5,198,578
6	Class B	3,321,163
66	Class C	27,721
17	Recreation areas	561,355
1	Wilderness Conservancy	325,000
339		9,433,817

LAND ACQUISITION

Fifteen land acquisitions were successfully negotiated. Of particular interest were: Desolation Sound Marine, 97 acres; Tweedsmuir, 402 acres, including 4,000 feet of frontage on the Atnarko River; Otter Lake, 111 acres; Mansons Landing, 117 acres; Cathedral, 40 acres; Naikoon, 493 acres, including 9,400 feet of water-frontage; and Bowron Lake, 73 acres.

These 241 parcels of land have been acquired in the Phase I area of Pacific Rim National Park, 15 parcels are under negotiation, and five have not been dealt with. One property has been acquired in Phase II, seven are under active negotiation, and two have yet to be dealt with. To date, $3.5 million has been expended on acquisition, with 50 per cent of this amount being reimbursed by Federal Canada.

CAPITAL DEVELOPMENT

See regional sections for more complete information.

Nanaimo District—
- Toilet building and picnic shelter—Newcastle Island Marine.
- Trail work and Elk River habitat rehabilitation—Strathcona.

Vancouver District—
- Road, power, water, and sewerage, two chairlifts planned—Cypress.
- Campground/day-use area completed—Birkenhead Lake.
- Two staff houses, trailer court, lodge renovation, administration area road system—Manning.
- Ski area improvements—Mount Seymour.
- Garage-workshop and completion of facilities—Porpoise Bay.
- Workshop—Peace Arch.

Nelson District—
- Facilities completed and design for Interpretation Centre—Kokanee Creek.
- Power and water—Syringa Creek.
- Campground renovation—Champion Lakes.
- High density campground—Nancy Greene.
- Campground—Norbury Lake.
- High density campground—Premier Lake.
- Water and electricity—Kikomun Creek.

Kamloops District—
- Campground—Green Lake.
- Road relocation, picnic ground, first phase campground—Mabel Lake.
- Boat campground—Cinnemousun Narrows.
- Water and power—Paul Lake.
- Major road improvements—Wells Gray.
- Regional workshop Thompson Region—Kamloops.

Smithers District—
- Water, power, and sewerage—Maclure Lake.
- Water, power, and sewerage—Lakelse Lake.
- Trail and access improvement—Tweedsmuir.

Prince George District—
- Campground and day-use facilities—Purden Lake.
- Water and power—Mount Robson.
- Day-use Facilities—Swan Lake.
- Rehabilitation of flood-damaged sites (five)—Alaska Highway.
- Water and service area—Bowron Lake.
- Day-use area and campground extension—Ten Mile Lake.

Historic Parks—

Campground—Barkerville Historic.
Water and power—Fort Steele Historic.
Trail work—Dewdney Trail.
Water—Kilby Historic.

MANAGEMENT

General Administration

Tempo of decentralization speeded up with more responsibility being vested in district park offices. Two new park districts were activated: Nanaimo, consisting of Vancouver Island and the Mainland east of Campbell River; and Smithers, the westerly portion of the Kamloops District. A Park Use Permit Officer was appointed, enabling the Branch to proceed with an over-all review of permits and begin the process of phasing out resource exploitation, particularly with respect to mineral claims. The program of cabin acquisition in Mount Seymour Park accelerated.

Security

Except for a few early in the season, complaints from the public were virtually eliminated, although an increase in hoodlumism is evident. Thirty-seven patrolmen and eight gatemen employed in 17 parks resulted in better enforcement.

Back Country Ranger

Twenty-five patrolmen were employed as a pilot project in back country and alpine areas, providing a park presence in heretofore unpatrolled areas.

Accident Prevention

A plethora of minor accidents and lack of inspecting staff resulted in an increased accident rate.

Youth Crew

Two hundred and sixty-six young people including, for the first time, 15 females, were employed in 15 locations. An information dissemination project about the program resulted in 2,700 applicants, the highest number ever received.

Interpretation

Programs—Fifty summer naturalists welcomed 300,000 visitors in 30 parks. Horne Lake Caves Park cave interpretation program was handled by the Vancouver Island Cave Exploration Group. An experimental community-oriented naturalist program was initiated in the Nanaimo, Vancouver, Prince George, and Nelson Park Districts, oriented toward schools and winter parks use. Naturalists assisted the public during the Adams River and Goldstream River salmon migrations.

Wildlife—A working liaison was established with Fish and Wildlife Branch; park fauna was evaluated. Parks Branch administered the Elk River habitat rehabilitation project.

Assessment—Natural features of parks were evaluated, interpretation of natural values was developed, and interpretive plans were prepared. A major ecological study of Liard River Hotsprings Park was undertaken.

Display studio—Displays for new Mount Robson nature house and half of new Manning display were completed. Twenty-one maps of all kinds, 2,000 ski trail signs, 500 posters, and other items were made, including three new outdoor signs. Three new pamphlets were published.

GENERAL ADMINISTRATION

Executive Office

This is a newly formed section with wide-ranging responsibilities in administration, financing, and land acquisition. Efforts were spent negotiating with prospective donors of land for park purposes. Two such donations were finalized during the year: (Fossli) Park (130 acres) 5,000 feet of lake frontage on Sproat Lake donated by Mr. and Mrs. F. Armour Ford, Port Alberni; and Kettle River frontage (46 acres) donated by Boundary Forest Products Ltd., now known as Pope and Talbot Ltd. Three other possible donations were under negotiation at year-end.

Headquarters Services

This section was reorganized during the year with resultant greater efficiency. A rotary filing system was set up; a stock control program is underway; 2,700 youth crew applications were processed. An accounting and office procedure course was conducted for Headquarters and District staff.

Departmental Library

Librarian services were extended to full time, to play a greater role in library needs of Park District offices and Fish and Wildlife regional offices. A "Thesaurus of Terms of Outdoor Recreation Literature" was developed.

Public Information

Requests for information increased more than 30 per cent over the previous year. New publications describing Manning Provincial Park—Ski Touring Trails, Cypress Provincial Park—Ski Touring Trails, Cape Scott Provincial Park, and Bugaboo Glacier Provincial Park and Alpine Recreation areas were prepared and printed. Completely revised editions of Mount Assiniboine, Thomas S. Francis—Freeman King, and Goldstream Provincial Parks folders were made available for distribution. Nearly all other publications were updated and reprinted.

The Parks Branch portable display was exhibited at a number of outdoor-oriented functions throughout the Province. Information about Branch activities via the media was stepped up.

COMMUNITY RECREATIONAL FACILITIES AND REGIONAL PARKS DIVISION

The Community Recreational Facilities and Regional Parks Division was created in 1974. The Division administers the *Community Recreational Facilities Fund Act,* the *Regional Parks Act,* the *Recreational Land Green Belt Encouragement Act,* and supervises Class C Provincial parks.

The Community Recreational Facilities Fund made 358 grants amounting to approximately $17.5 million during the course of the year.

Regional Park Assistance grants totalled approximately $1 million in 1974.

Assistance to Class C parks included approximately $15,000 in grant funds.

PLANNING

Improvement of User and Resource Information Base

Facilities inventory and basic attendance data were computerized.

In conjunction with the library, classification of library categorization was improved.

Details on profiles, attitudes, behaviour, and information on environmental impact of users at Mount Robson and Mount Assiniboine were provided.

External recreation research by colleges and universities was encouraged.

Basic recreational resource assessment was completed for existing parks and park proposals, including Stein River watershed, Kakwa Lake, Monkman Pass, Purcell Wilderness Conservancy, Anstey Arm (Shuswap Lake), Chilcotin Region, marine park system, Adams River, Prince Rupert area, Elk Lakes, and Top of the World.

A position paper relative to implementing procedures for increased public participation in park planning and management was prepared. Examples of instances where public input was requested include Cathedral and Rebecca Spit.

Recreation and Parks Systems Planning

The examination of private land offered for sale involved a considerable amount of time this year.

Particular attention was given to review of the many properties offered for sale in the Okanagan Valley and Vancouver Island and those made available by B.C. Hydro on the Arrow Reservoir.

System Plans were prepared for the Sunshine Coast and Squamish Valley. Volumes I and II of the Report on the 1700 Mile Alaska Highway Stewart–Cassiar Highway, highway travel corridor prepared by Dr. P. J. Dooling were received.

A system of natural history themes of British Columbia was prepared; it will provide the basis for evaluating natural features to be preserved in the park system.

A proposal for expansion of Cathedral Park was prepared. During late 1974 this report was reviewed by the ELUC Secretariat and it is expected that a decision will be forthcoming early next year.

Service to Parks Branch

Site development plans were prepared for the following construction projects: Cypress Park, Sasquatch, 10 Mile Lake, Swan Lake, Nancy Greene, Shawnigan Lake, Okanagan Lake, Cinnemousun Narrows, Gold River, Pinewoods Flats (Manning Park), Skagit River, Champion Lakes, Premier Lake, Chasm, and Pirates Cove. Arising out of these specific projects were several designs aimed at innovative approaches to camping.

Concept and preliminary master plans were prepared for Niskonlith Lake, Mount Robson Corridor, and Cape Scott. Others in progress include Skagit Valley, Mabel Lake, Ruckle, Carp Lake, Wells Gray, Mount Assiniboine, Conkle Lake, Kokanee Glacier, Monashee, Muncho Lake, Tatlatui, Liard Hot Springs.

Assistance was also given to Management Division on matters of resource use in parks including grazing, helicopter use, mineral claims, rights-of-way, park-use permits.

Interdepartmental assistance was provided on the following: Northeast Study, Northwest Study, Winter Recreation Study, studying potential impacts on recreation (highways, hydro development, pipe-lines). Integrated resource studies (Bella Coola, Adams River, North Island, Nahmint).

Interagency co-operation and assistance was also provided: North Fraser Study, Federal-Provincial marine study (Parks Canada), assistance to regional and

municipal governments (e.g., East Kootenay Regional Park Study, Golden, and Kitsumkalum ski areas).

ENGINEERING DIVISION

For the fourth consecutive year a high level of capital development was maintained. In supplying technical support, direct Division employment reached 73 in July, decreasing to 53 by December. Production was complicated by a move to new quarters in Nootka Court and the mid-May release of the 1974/75 program. Administrative difficulties were further compounded by professional and technical staff resignations and the changing collective bargaining climate. However, by December, immediate vacancies were largely filled and progress had been made in achieving harmony between centralized engineering responsibilities and decentralized district operations. Current emphasis is being placed on more viable design and project teams, improved commitment control, and strengthened planning-management liaison.

Deficiencies in the Division's establishment continued to be underlined by substantial "outside" referrals. Seven consultant firms were retained on 20 major projects, including Cypress waterworks-sewerage-chairlifts-electrical, Mount Seymour and Manning electrical, and Kokanee Creek's interpretation centre architecture. Assistance from other agencies of the Government was increased: The Department of Highways provided parking and utility construction with the Cypress road contracts, Manning road development, Barkerville paving, and various investigations of which Peace Arch portal dominates; the Department of Public Works investigated Fort Steele electrical needs and Manning heating problems; the Water Resources Service investigated Fort Steele's water supply.

Division staff provided substantial administrative technical skills. Electrical jobs included Bowron Lake, Cottonwood House—Historic, Ten Mile Lake, Goldstream, Syringa Creek, Paul Lake, and Skihist. Repair of Peace Arch portal was reviewed with the State of Washington. Wind generation of power was investigated. Bridge inspections and investigations and assorted erosion and hydrological schemes were carried out for Murtle River, Miracle Beach, Brandywine, and Sumallo River. The Cypress program was reorganized and project engineers were initiated to the coastal, central, and northern zones. Capital program reporting and control procedures were refined. Departmental metrication was initiated.

Twenty building assignments were administered. These included completion of 1973 contracts for Manning Lodge renovations and Thompson Region workshop. Working drawings were prepared for own-force construction of a volatiles building, two workshop extensions, and a toilet building. Plans were prepared for the Mount Robson visitor's centre and a standard regional office. Renovation plans for Goldstream's interpretation centre were begun. Contracts were essentially completed for two Manning residences, two Newcastle public service buildings, Porpoise Bay and North Thompson workshops, and Charlie Lake workshop extension.

About 60 individual waterworks and sewerage projects were initiated, mainly for own-force construction. Notable among design assignments were Mount Seymour's sewer system, and Cultus Lake, Lakelse Lake, Kilby Historic, and Kokanee Creek waterworks. Twenty-five successful drilled wells were established by contract for handpump use of future pressure system supply. In addition, seven sanistations were built. Major expansion projects were completed at Miracle Beach, Sunshine Coast, Syringa Creek, Skihist, Paul Lake, Purden Lake, and Kikomun Creek. Manning's water and sewerage systems were extended by contract to serve increased staff accommodation.

The Division continued to provide draughting services for drawing, filing, printing, and distribution of all plans for the Branch, in addition to those directly associated with engineering projects. A major effort was made to establish a system of records suitable for distributing and updating information to the district and regional offices. This included 43 key reference maps which will form the basis for future park status maps. Production of "as-constructed" plans lagged through staff shortages, though some relief was achieved by use of outside firms. The first stage of the micro-filming program was completed.

Although staffing posed some difficulties, Surveys reached a peak employment of 28 persons in seven crews. Twenty-two topographic mapping projects encompassing 1,350 acres were completed of which the most intensive were Trout Lake, Skagit River, Ross Lake, and Skagit-Sumallo junction. In addition, district liaison involved project layouts, road construction control, boundary surveys, minor mapping, utility profiles, and as-built plans. A start was made on metrication with two maps produced in metres. Reorganization planning was completed to provide a more decentralized service to district operations.

The workshop at Langford continued at a high level of park furniture manufacture by returning to the double-shift system. At the summer peak 30 persons were employed. More than 12,000 items in 60 categories were produced. In addition the workshop operated the headquarters vehicle pool, transported finished products, and handled several off-yard jobs. Space limitations, however, continued to inhibit efficient operations and a study to alleviate this and provide a Departmental service is close to completion. Prototype design of several new products was commenced including a bear trap and a new pit toilet structure.

Mechanical services to the Department were decentralized with the introduction of superintendents at Vancouver, Kamloops, Nelson, and Prince George. Similar expansion is planned for Smithers and Nanaimo. The work of this staff in conjunction with its Vancouver headquarters undertook annual inspections of vehicles and equipment serving both Parks and Fish and Wildlife Branches. In addition, it provided direction on repairs and maintenance, operational research, and specifications for new components, conformance control and warranty administration, and technical support for ski-lift and electric power projects.

HISTORIC PARKS AND SITES DIVISION

Four new staff members were added to the Historic Parks and Sites Division.

The Division moved from the Counting House building into larger offices in Nootka Court. Over the year, Divisional staff participated in the Federal-Provincial Parks Conference, the Historic Resources Task Force, the Western Canadian Historic Sites Seminar, the Association of Interpretive Naturalists Regional Annual Meeting, the Canadian Association's Education Programs Seminar, and a British Columbia Museums Association Seminar.

Barkerville Historic Park—Park attendance was down slightly to approximately 200,000. The Souvenir-Refreshment Pavilion was completed and put into operation, 50 new campground units in Forest Rose campground were finished by September, and construction of and renovations to a number of historic buildings were done. Several displays were completed.

Columbia Village Historic Park—The park was inspected and discussed at meetings, but no development actions were taken in 1974.

Cottonwood House Historic Park—This park, on the road to Barkerville, attracted 24,000 visitors in 1974. An Interpretation Centre was started, using an existing log building. Ducks, geese, and chickens were introduced, a potato crop

was planted and harvested, and snake fences were constructed to enclose pasturage for four horses.

Fort McLeod Historic Park—An inspection by Barkerville staff in July preceded a general clean-up of the park; repair to building roofs and foundations were done later in the summer.

Fort Steele Historic Park—In 1974, 295,000 visitors, including 2,500 schoolchildren participating in a newly developed Educational Interpretation Program, visited the park. Finishing, restoration, and landscaping work continued at the park. A Curator of Collections was appointed in October. A third locomotive, a 1921 Plymouth gasoline-powered machine, was donated to the park railway concession by the West Kootenay Power and Light Company. Two new Clydesdale foals were added to the Clydesdale herd. In November the Cranbrook Community Theatre staged a pantomime at the Wild Horse Theatre under a park-use permit. Fort Steele and Victoria staff are working on a comprehensive park guidebook, to be completed by the 1976 season.

Kilby Museum Historic Park—Cataloguing of the collection and assisting the Kilbys in receiving visitors continued. The buildings were repaired and repainted and a deep well was drilled behind the store. Preliminary research toward a master plan for *Morden Colliery Historic Park* continued, but the site will not be developed until a plan is complete. Provincial involvement with planning for the proposed *Klondike Gold Rush International Historic Park* continued, but agreement has not been reached between the Province and Canada on the future status of Crown lands under Provincial flooding reserves for a possible hydro development.

DIVISIONAL PROGRAMS

Heritage structures—The Heritage structures section is researching buildings at Fort Steele for the proposed guidebook, has investigated the Halam House in Nanaimo for the B.C. Historical Association, Hudson's Bay Company building styles for the restoration of Fort McLeod, St. Andrew's Church in Courtenay, and the Emily Carr House, and has advised on restoration of the Peace Arch Portal at Blaine.

Historic Sites Advisory Board Projects—At the request of the Board, reports and planning recommendations were prepared on the O'Keefe Ranch, the Barkerville Theatre Royal, the Keremeos Grists Mill, and Yale; proposals to the Board concerning the Fletcher General Store at Ainsworth and the ghost town of Sandon were initiated.

Historic trails—Clearing work was completed on the Dewdney Trail between Christina Lake and Paterson and on the 1849 Hudson's Bay Company Brigade Trail from Peers Creek near Hope over Manson Ridge into the Sowaqua Valley. Location and recording were completed on the 1858 Harrison–Lillooet Road from Port Douglas to Pemberton, on the 1866 Seymour Arm–Columbia River trail in the Ratchford Watershed, and on the 1806 Hudson's Bay Company Brigade Trail in the Fort McLeod-Carp Lake area. Traces of the 1812 Hudson's Bay Company Okanagan Brigade Trail and historic trails in the Fraser Canyon and Manning Park areas were plotted onto maps. A section of the Dewdney Trail in the Waneta area likely to be affected by highway and hydro projects was located and reported.

History in parks—The Historic Parks and Sites Division in 1974 supplied historical input to the Planning Division's Shuswap, Chilcotin and Squamish-Lillooet studies, and to master plans for Wells Gray Park and Gerrard. Research reports on the West Kootenay Region, Liard Hot Springs, and other park interpretation Division, and preliminary studies were completed for future human history interpretation in Cape Scott and Newcastle Island Provincial Parks. Toward the end

of the year, Historic Parks and Sites staff started planning for a major inventory of historic resources within parks based on priorities set after consultation with other Divisions of the Branch.

STOP OF INTEREST

Over the year, 10 texts were prepared for proposed markers. A subcommittee of the Historic Sites Advisory Board was created in December to review these and future proposals; texts for the Metlakatla Indian Village, the Cassiar Gold Rush, and the Inverness Canney at Port Edward were approved.

VANCOUVER ISLAND DISTRICT

In 1974 the Vancouver Island District was established as a formal administrative unit. It consists of Vancouver Island, the Gulf Islands, and the Mainland coast from Bute Inlet north to Seymour Inlet. District headquarters are in Nanaimo.

Two Assistant Regional Supervisors were posted, one in the Malahat Region, headquartered at Goldstream Park, and a second at the Strathcona Region, headquartered at Miracle Beach Park.

STRATHCONA REGION

Capital development activity of special note was the Elk River Rehabilitation Project in Strathcona Park, funded by Parks Branch, Fish and Wildlife Branch, B.C. Hydro, and Elk River Timber Company. Logging debris was removed along a 7-mile section of the lower Elk River and the adjacent flood-plain to contain the river channel and reduce erosion and high water flooding damage in the valley bottoms.

Valuable wintering range for a declining herd of Roosevelt Elk will be preserved.

Hand-pumps were installed in Ralph River and Buttle Lake campgrounds in Strathcona Park; camping facilities were completed in Elk Falls Park; repairs to the water distribution system were done in Miracle Beach Park.

ARROWSMITH REGION

Routine maintenance and administrative operations were completed. One hundred and thirty acres of land on Stirling Arm of Sproat Lake were donated by Mr. and Mrs. F. A. Ford, of Port Alberni. It will be known as Fossli Park, of Class A status.

Fifteen boys were employed on the Youth Crew at Little Qualicum Park Camp. They worked on a number of construction and maintenance projects.

MALAHAT REGION

Additions to existing park facilities were undertaken on Newcastle Island and at Pirates Cove on Decourcey Island.

Wells were successfully drilled and handpumps installed at John Dean, Matheson Lake, Spectacle Lake, and Beaumont Marine parks.

A loop trail was constructed around Matheson Lake; public toilet buildings were completed in Ivy Green Park and in the Goldstream Park Day Use area.

Two Class A parks were established: *Shawnigan Lake Park* is a 14-acre parcel located on the northwest side of Shawnigan Lake; *Ruckle Park* is a 1,200-acre tract located on the southeast corner of Saltspring Island. Shawnigan Lake will be

developed in 1975 as a day-use area. The Ruckle property will be developed for day-use and walk-in overnight camping.

VANCOUVER DISTRICT

All regions concentrated on the completion of ongoing projects.

ALOUETTE REGION

A highly productive water system was developed in the new campground at Alouette Lake, doubling the camping capabilities of the park. Horse and hiking trails were built in co-operation with the Haney Correctional Institute. The regional office was expanded to accommodate the regional staff.

CULTUS REGION

Most visitors were at Cultus Lake Park, although more of the public are using more remote and primitive sites such as Chilliwack Lake and Sasquatch Parks.

GARIBALDI REGION

Camping and waterfront facilities at Birkenhead Lake were completed. Regional office extension was completed at Alice Lake; maintenance and Youth Crews have expanded and improved the trail system at the Black Tusk. A new shelter will be built in the Diamond Head area and a system of summer and winter trails will be developed.

A new garage-workshop and office building were completed at Porpoise Bay Park. The floats at Princess Louisa Marine Park were reanchored.

A new workshop was completed at Peach Arch Park. In addition, inspection work was carried out on the Peace Arch.

Two houses and a trailer court have been installed at Manning Park for staff accommodation.

In the Pinewoods area, a major road relocation was effected in conjunction with the widening of the Hope–Princeton Highway. The Horseshoe Run on the orange chair was improved. Vehicles, skiers, and groups have increased dramatically at Manning Park and Manning Park Lodge.

In the Skagit Valley recreation area, a new 44-unit campground was completed.

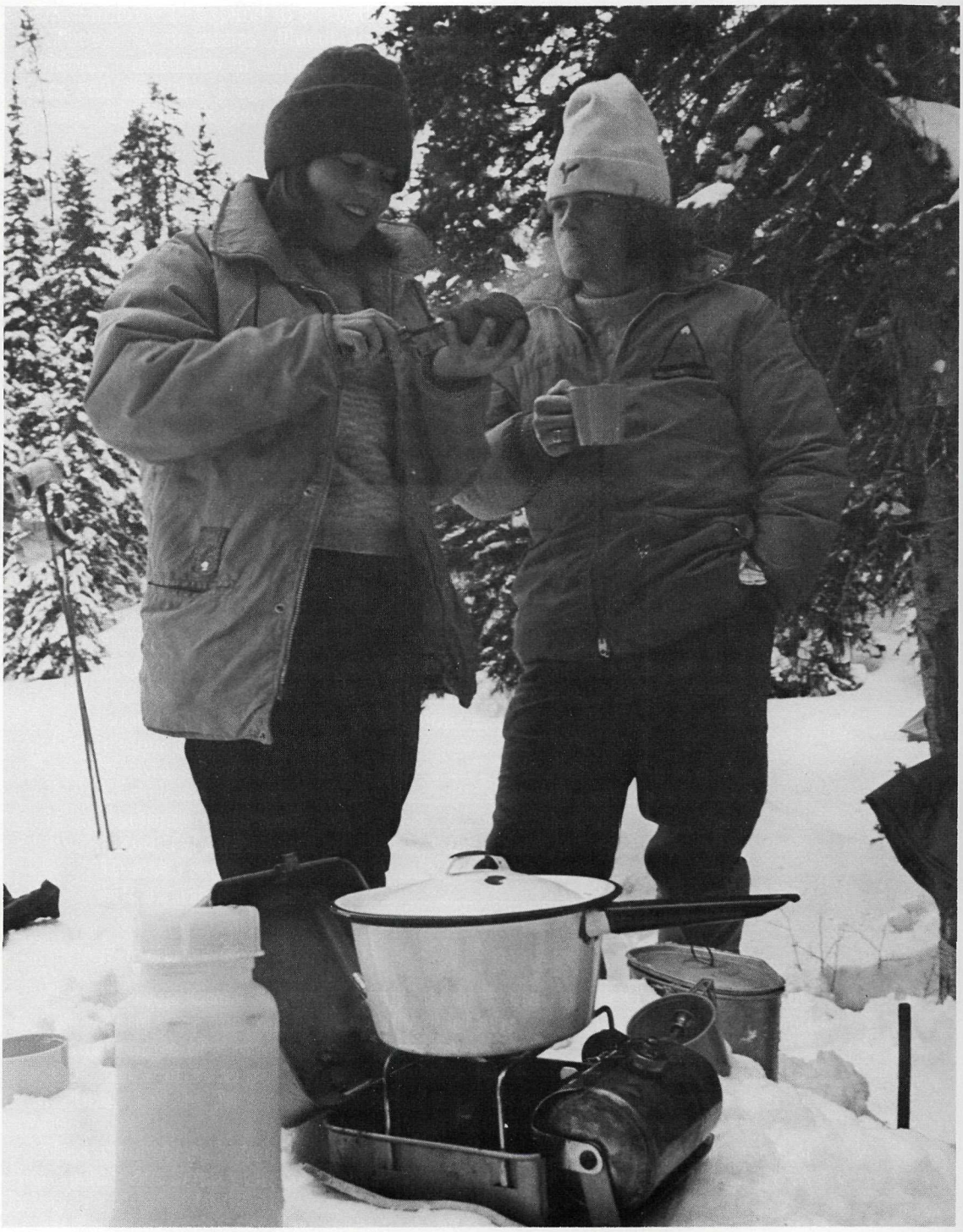
MOUNT SEYMOUR REGION

Slashing was completed in the Mount Seymour Region. A sewer-line from the top of Mount Seymour to the trunk connection at the base of the mountain will be installed. An equipment shelter by the upper parking-lots was built and extensive slope grooming was done this summer on ski runs and toboggan hill.

At Cypress Bowl, slope-clearing operations were completed. Two chairlifts and road, parking, and service year facilities will be operational by autumn 1975.

KAMLOOPS DISTRICT

The continuing decentralization of various headquarters functions has been slow to affect this district. In 1974, staff increased by one position, that of a mechanical superintendent who will service the needs of the Fish and Wildlife Branch and the Parks Branch.



OKANAGAN REGION

District funds (20.8 per cent) were spent in this region. Much of the day-use area in Okanagan Lake Park will be converted to overnight use. The number of available units will be reduced, but appearance, utility, and public enjoyment should be enhanced.

SHUSWAP REGION

District funds (17.1 per cent) were allocated to works at Cinnemousun Narrows and Silver Beach of Shuswap Lake. Building renovations and enlargement were done and minor works at Adams River "Salute to the Salmon" observations area were completed.

THOMPSON REGION

District funding (18.9 per cent) was spent in the Kamloops area. The Paul Lake water system was completed and design problems at Skihist Park were resolved.

CARIBOO REGION

District funds (15.1 per cent) were spent on completion of facilities at Green Lake. Minor additions and improvements were also undertaken at Lac la Hache, Big Bar, and Horsefly Lakes.

WELLS GRAY REGION

District funds (28.1 per cent) were allocated to this region. The construction of a proper regional headquarters was completed in North Thompson River Park. Camp-sites on Clearwater Lake and improvements to the Clearwater Lake Road and Murtle River Bridge were formalized.

NELSON DISTRICT

In 1974, park development and redevelopment were emphasized. Special attention was given to maintenance of a rapidly expanding park system.

The first Girls Youth Crew in the Province worked on trails in *Kokanee Glacier Park,* helped with the maintenance at several parks, landscaped all the grounds at their new camp in *Kokanee Creek Park,* and helped with other tasks associated with Provincial parks. The girls' enthusiasm during work hours and after hours created a high morale, which affected the whole regional organization.

The Boys Youth Crew Program was located at established camps in *Mount Assiniboine, Wasa Lake,* and *Champion Lakes Parks.* A new camp was established at the new *Kettle River Park.* They worked on park maintenance, minor construction works, and trail building.

In the Back Country Ranger Program, rangers were stationed in *Mount Assiniboine, Top of the World, Elk Lake, Bugaboo Glacier,* and *Hamber Parks,* and the new *Purcell Wilderness Conservancy.* The rangers help wilderness park visitors to safely use these back country areas; they complete resource assessments of these new mountain parks.

Major reconstruction of the *Champion Lakes campground* will provide new camp-site pads, trails, improved roads, and an additional 17 camp-sites, bringing the total units to 90. New camp-site construction (22 camping units) and a nature walk were completed at *Nancy Greene Park* in the fall.

In *Kokanee Creek Park;* a boat launching ramp and sani-station were constructed; 35 tables were installed along the beach, all parking-lots and roads were regraded, and landscaping of the day-use complex was completed. Two hundred and twenty trees were planted on the meridians and along the trails and roads.

A major water system was undertaken at *Syringa Creek Park.* A service yard and a sani-station were constructed. Several other improvements were made to trails, stairways, water fountains, etc.

At *Premier Lake Park,* the old campground was redeveloped, the beach was sanded, and tables and six toilets were placed. A new boat ramp will be ready for public use in the spring of 1975.

Deep wells were dug at *Kettle River, Blanket Creek,* and *Premier Lake Parks.* A sewer and power system was installed at *Dry Gulch Park.* Additional power installations were undertaken at *Kettle River* and *Kokanee Creek Parks.*

Day-use facilities were completed at *Norbury Lake Park.*

In *Mount Assiniboine Park,* all but one of the old Alpine Club cabins has been rebuilt. A new parking-lot was constructed at the end of the road in *Bugaboo Glacier Park* and the access road from Canadian Mountain Holiday Lodge was improved.

Trail construction was undertaken around Gibson Lake in *Kokanee Glacier Park,* along the Lussier River in the *Top of the World Park,* and around the lake in *Nancy Greene Park.*

Construction of *Kikomun Creek Park* on Lake Koocanusa continued. An underground power-line to the deep well site was completed, a pipe-line was extended from the reservoir to the service year. A proposed workshop, residence, nature interpretation centre, Surveyor's Lake day-use area, and five drinking fountains were built. Park roads and trails were covered with crushed rock; banks were landscaped with topsoil. Two toilet buildings were erected in the Surveyor's Lake campground and two toilets were erected at the boat-launching site. Four hundred and twenty-five trees were planted around the three large swimming-basins.

At the *Wardner day-use facility,* picnic tables, pump-out toilets, and three sets of steps were installed. The parking-lot was improved, the beach was sanded, and the upper slopes of the beach were topsoiled.

PRINCE GEORGE DISTRICT

In 1974, there was almost a complete turnover in managerial personnel, affecting the following positions: the District Park Officer, the Regional Supervisors in three of the District's four regions, and the Assistant Regional Supervisors on two of the regions.

The Smithers District was split from the Northern District, leaving a much reduced District to be managed out of Prince George.

Administrative responsibility of District and Regional personnel changed radically by the decentralization process of the Branch.

Progress was made in delegating greater operational responsibility to the regional offices. Ultimately, the District Office will control the financial requirements of developing and operating parks and provide such essential services as surveying, planning, facility construction, park interpretative programming, and administrative advice and supervision to the Regions. The regional offices will be responsible for the management and operational organization within the parks in the regions.

In 1974 a District Construction Section and a Planning Section were established.

The District Construction Section will supervise and implement District park facility construction. Projects directed and constructed by this section were:

Purden Lake Park—A campground (78 sites), beach (1,000 feet), and parking-lots (180-car capacity), sani-station, and boat launch site were completed for 1975 opening.

Ten Mile Lake Park—1,000 feet of beach, picnic tables, playing-field, and parking-lot were completed. In the fall, construction was started on a new 50-unit high-density campground designed for overnight use by highway travellers in 1975.

Whiskers Point Park—Restoration of recreational facilities was completed. High water in the spring had caused considerable damage. A serviced loop of 27 camp-sites was 75 per cent completed and electrical service was brought to the park service area.

The District Planner worked closely with the District and Regions on facility design and development of construction projects. Materials and finishes that fitted the surrounding landscape were used.

PEACE-LIARD REGION

Permanent Staff Increased From Two to Three Persons

Park visits dropped nearly 15 per cent in 1974 due to heavy rains and flash flooding along the Alaska Highway north of Fort Nelson. The highway was closed to travel for 10 days in July, with approximately 1,000 tourists stranded at various points such as *Mucho Lake Park*. Much flood damage occurred to the facilities at *Kledo Creek Park* and half of the campground in *Racing River Wayside Park* was washed downstream. Repair work of $10,000 was necessary on the remaining facilities in the parks along this portion of the highway.

Several small construction projects were begun:

Swan Lake Park—Boat-launching facilities, day-use facilities, a well, and a log picnic shelter were built.

Charlie Lake Park—A well and an extension to the Charlie Lake workshop was completed.

Spencer Tuck Park—The parking-lot was enlarged and the boat launch ramp was extended.

Liard River Hotsprings Park—The service yard was improved, living quarters were provided, and a water well was drilled.

Maintenance of parks along 600 miles of the Alaska Highway was planned and supervised in co-operation with other Government agencies. Park-use permits for parks plagued by visitors and residents with a "wild west" attitude toward park resources are being more closely supervised.

Summer park maintenance funds were supplemented by "Experience '74" moneys; auxiliary staff maintained park facilities in the region.

No youth crews operational in the Peace-Liard Region; one will be initiated in *Muncho Lake Park* in 1975.

BEAR LAKE REGION

Camping in Bear Lake Region parks increased nearly 25 per cent over 1973 figures. Statistics were obtained for the first time in *Carp Lake Park*. Improved camping facilities were available in *Whiskers Point* and *Crooked River Parks*. Day-use visitation to the parks was down almost 25 per cent from 1973 due to inclement weather.

In *Crooked River Park*, finishing touches were added to major works that were nearly completed in 1973. At *Beaumont Park*, six pump-out toilets were built.

Students employed under the Experience '74 Program helped assist regular maintenance staff. Special management attention was given to *Carp Lake Park,* a site of outstanding sport fishery. This was the first year of active operations in the park by Parks Branch staff. An archæological survey team from the Department of the Provincial Secretary began a study of the parks prehistoric values in the fall; it will be completed in 1975.

A long-term study of the trout fishery of the lake was begun by Parks Branch and Fish and Wildlife Branch. A total of 11 brush fires caused by careless campers were extinguished by park attendants.

The Youth Crew from *Crooked River Park* maintained a fly camp in *Carp Lake Park,* planted 3,000 seedlings in *Crooked River Park,* assisted in campground maintenance, constructed two cabins and a storage shed, and painted the regional administration buildings. Their educational recreation program included water safety, canoeing instructions, swimming, fishing, organized sports, and field trips to the *Gordon Shrum Generating Station* on the Peace River, historic *Barkerville Park* and *Mount McKinnon Forest Service* lookout tower.

BOWRON LAKE PARK REGION

A winter work program was designed to minimize the use of internal combustion machinery on the canoe circuit during the summer. Boat fuel, supplies, materials, and firewood for the camp-sites were taken by snowmobile over the frozen lakes. This successful program will be applied annually, as weather permits.

Upgrading and maintenance of facilities on the canoe circuit were continued with help from Experience '74. A Youth Crew camp and new service yard were constructed by 15 Youth Crew boys. One cook-house, two bunkhouses, and one small residence were erected. Contracts for a powerhouse, water tank, and electrical installation were completed. Water-line, sewer-lines, and propane distribution-lines were installed. Inside work on the buildings was continued through the winter to make the camp ready for use in 1975.

Park visits remained about the same as in 1973. Large groups (over six people/party) have been discouraged from undertaking the circuit; their social habits have proved very contrary to the wilderness atmosphere of the park. Toward the year's end a number of inquiries were received about cross-country ski-ing the lakes circuit. This type of recreational use of the park will be carefully monitored.

MOUNT ROBSON PARK REGION

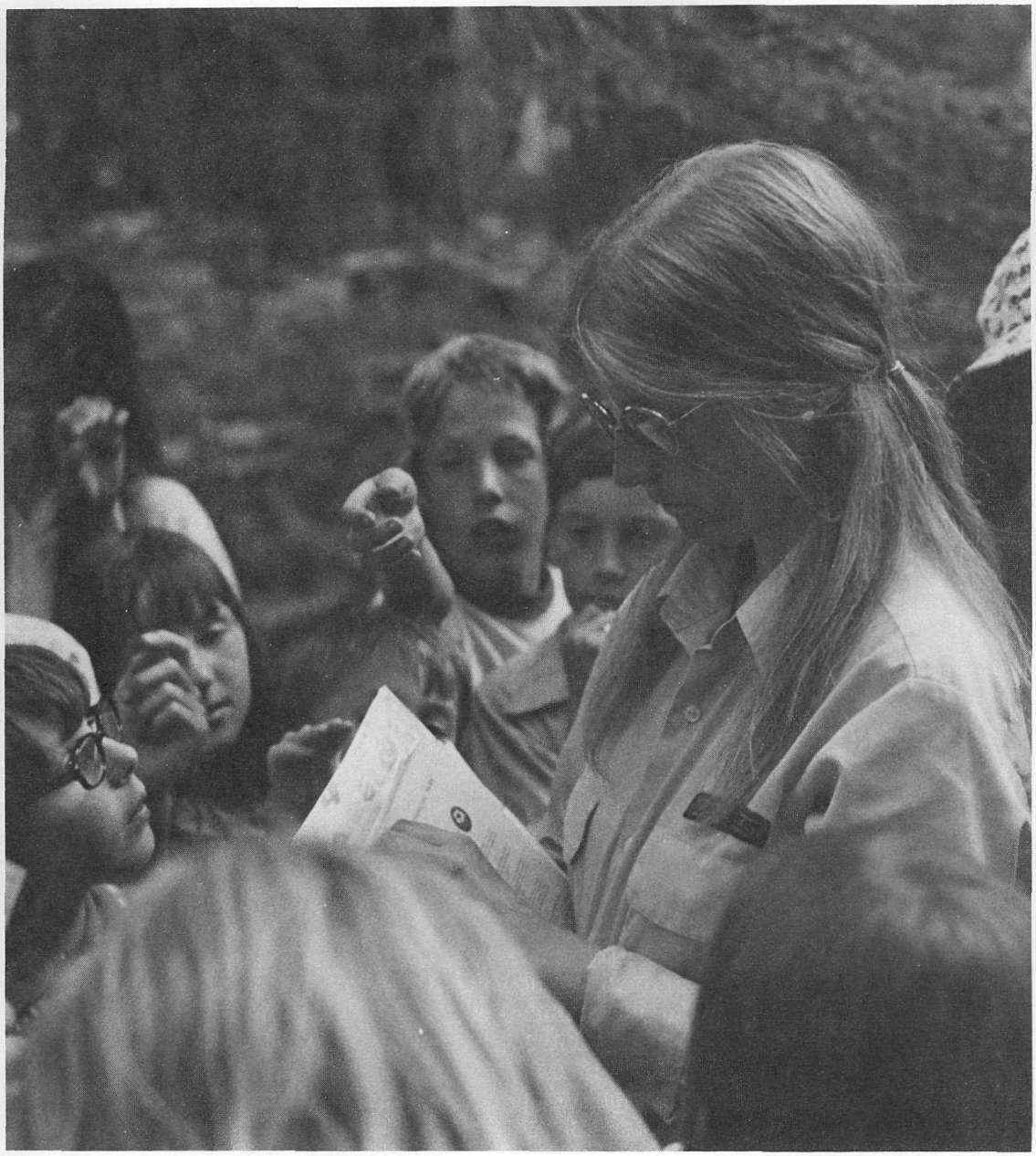
Visitors use of *Mount Robson Park* was similar to previous years, thus management and operations of the park were similar.

Changes in future development and management programs are anticipated. A scenic natural corridor concept along the Yellowhead Highway through the park is being produced. The environmental impact of horse use in the Berg Lake area is being researched.

Facilities at the Park Headquarters were ungraded; several wood corrals, a new nature house, nature trail, pumphouse, west portal entrance signs to the park, and new pit toilets were built.

Parks Branch will take over the maintenance of a scenic highway rest area in the park from the Department of Highways, Department of Highways tables, toilets, and signs were replaced.

A Youth Crew of 35 boys maintained a fly camp in the subalpine area of *Berg Lake.* A smaller, more manageable, Youth Crew will be formed in 1975.



SMITHERS DISTRICT

The Smithers Parks District was one of two new park districts established in 1974. New District headquarters are at Smithers. Major parks and recreation areas in the Smithers District include Naikoon (Queen Charlotte Islands), Tweedsmuir Park, Mount Edziza Park and recreation area, Atlin Park and recreation area, and Boya Lake Park.

Tweedsmuir is a new region, with headquarters in Houston. The activation of this region reflects growing public use in *Tweedsmuir Park* and growing emphasis Parks Branch places on administration of our large wilderness parks.

Four new staff appointments were made to administer the park and recreational area resource.

Much of 1974 was spent becoming familiar with the park and recreation areas resource, surveying, and managing park-use and resource-use permits, forming management plans for *Tweedsmuir Park* and *Naikoon Park,* completing inventory and analysis report for *Naikoon Park,* completing inventory and analysis report for *Naikoon Park,* managing parks and recreation areas along the *Stewart–Cassiar Highway* north of Dease Lake, and managing the problem parks in the Smithers District.

CAPITAL WORKS PROJECTS

Several projects were completed this past fiscal year. All Smithers Park District projects, with the exception of the rail portage, were completing previous unfinished work programs. These projects included:

Babine Region

At Maclure Lake, water in the day-use area of the park was provided, the electrical system down to the toilet building was completed, electrical inspection of of the system was approved in December, and the sewerage system for Maclure Lake Park was completed. The wells begun in 1973 at Topley Landing, Pendleton Bay, and Ethel F. Wilson Parks were completed.

Tweedsmuir Region

At *Rail Portage,* drainage around rail-line was improved, rails and ties were straightened, and a site for a field operations office and residence at *Chikamin Bay* was prepared. At the Youth Crew Camp, two new cabins were constructed, a sewerage system was completed, and the washhouse and kitchen were improved. At *Hunlen Falls Trail,* a new bridge was installed at Turner Lake to give access to Hunlen Falls viewponit. The section of trail from *Stillwater* to the top of "the Dome" was improved.

Lakelse Region

The electrical contract for *Furlong Bay* was 90 per cent completed; the transformer is yet to be installed. A sewerage-line was constructed from the Furlong Bay changehouse to a new tile field well back of the lake. Materials for a new water system at Furlong Bay were purchased for the installation of a major water reservoir in *Lakelse Lake Park* in 1975.

Experience '74

In *Lakelse Region,* 32 people worked on maintenance and minor construction projects for an average of 50 days. In the *Babine-Tweedsmuir Regions* nine people worked on maintenance projects in *Maclure Lake, Driftwood Canyon, Topley Landing,* and *Tweedsmuir Parks* for an average of 60 days.

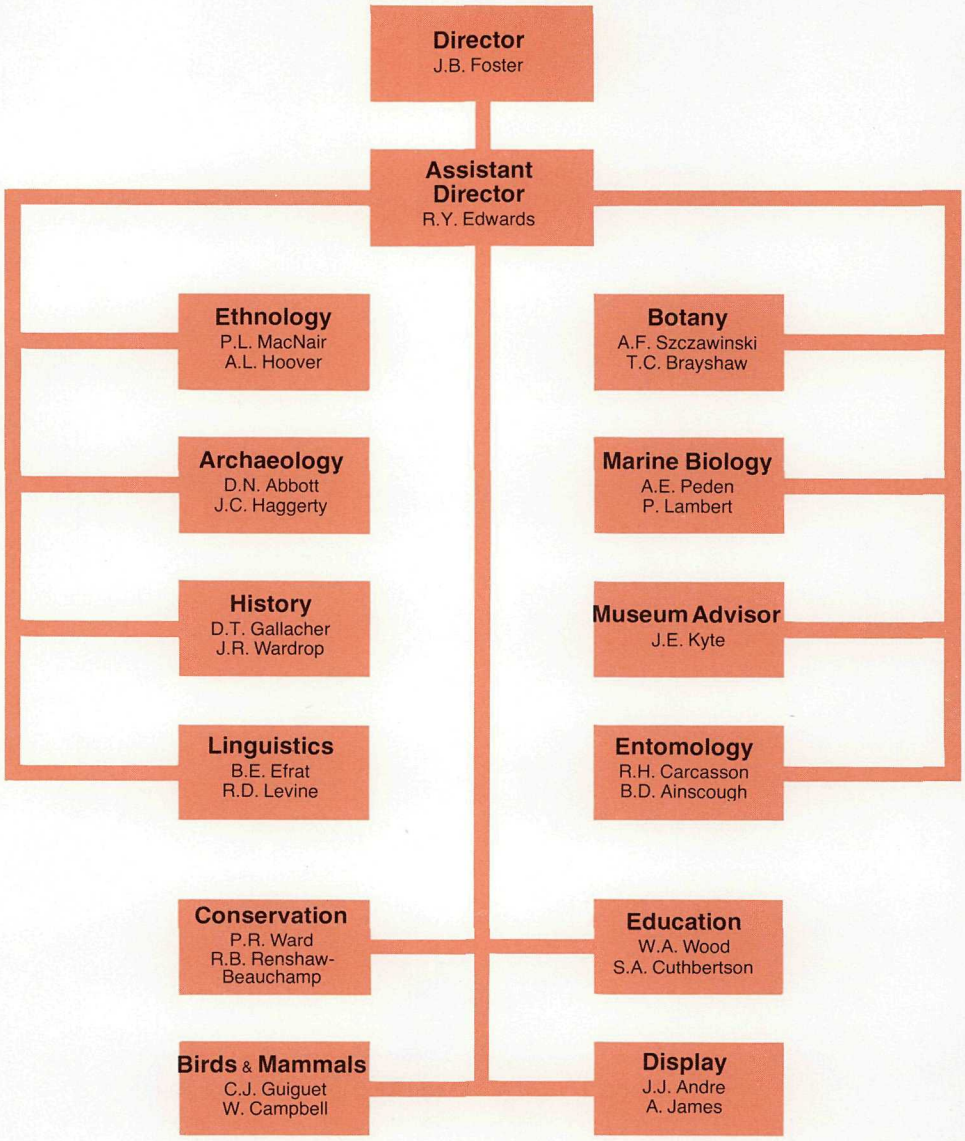
Interpretation

A naturalists program was held in *Lakelse Region* during the spring and summer season. Outdoor naturalist classes with school-children in the *Kitimat-Terrace area* were held in May and June. Schools expressed keen interest in this type of program. During the summer, nature talks and walks were held at *Furlong Bay* for park users.

Provincial Museum

The Provincial Museum Branch is responsible for the collection and preservation of specimens and artifacts which represent the national and cultural heritage of the Province. It is also responsible for research and study of these collections and for making the results of these studies available to the people of British Columbia through displays and publications. Programs of the Museum are designed to provide not only the best possible understanding of this heritage but also the most appropriate and innovative means of relating this knowledge to the public.

provincial museum branch



The Provincial Museum consists of a series of curatorial staff who represent the areas of Ethnology, Archæology, Modern History, Linguistics, Botany, Marine Biology, Birds and Mammals, and Entomology. These curatorial divisions each consist of a senior curator with their assistants and technicians and each is responsible for collection, research, and communication in their respective disciplines.

In addition, there is a division of conservation, responsible for the preservation of the Museum collections and one of display, which is responsible for creating public displays from the collected specimens and artifacts. A division of education organizes educational programs both in the Museum and as an extension of it, and a Museum's adviser provides development assistance to local museums throughout the Province.

1974 HIGHLIGHTS OF THE PROVINCIAL MUSEUM BRANCH

- The number of visitors to the Museum in 1974 was up 30,000 from 1973 for a total of 1,229,798. Of these, 43,000 were school classes.

- Preparation for the Museum Train, a travelling exhibit focusing on British Columbia's "Age of Steam," continued. The train will be comprised of a steam locomotive, a tank car, a boxcar, two flatcars for live steam displays, two exhibit coaches, a theatre coach, and a crew accommodation car.

- Dr. Bristol Foster left the Provincial Museum at the end of September to take up the position of Co-ordinator of Ecological Reserves in the Lands Branch.

- Several archæological projects were carried out in co-operation with native Indian bands. Among these were the major cultural recovery project of the Hesquiat Indian Band, and an important research project being carried out in co-operation with the Songhees Indian Band at the Maple Bank site in Esquimalt. In its first season this was run jointly with the University of Victoria as a field school for Indian students.

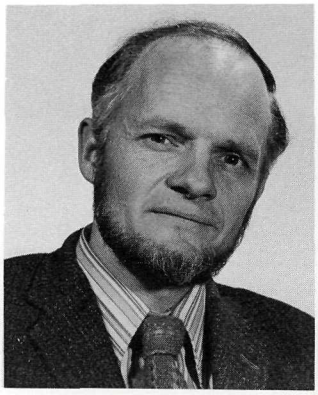
- The Marine Biology Division participated in the Land Inventory Program in which specimens and data were collected from the Upper Skeena River area.

- Major new publications produced by the Museum included a History Gallery Guide Book, and *Field Studies of the Falconiformes of British Columbia* by Frank Beebe.

- The Acquisition Fund enabled the Museum to acquire many historical artifacts, including a $28,000 collection of Indian artifacts returned to this Province from the United States.

- St. Ann's Schoolhouse was donated by the Sisters of St. Ann and opened in May after being moved and furnished through the co-operation of the Greater Victoria Real Estate Board, the Friends of the Provincial Museum, and the Department of Public Works.

A volunteer worker helps a modern schoolboy come to grips with a pioneer's drawknife.



Bristol Foster,
Director.

Provincial Museum

The fiscal year 1974/5 saw the British Columbia Provincial Museum continue to grow and extend its influence. As a museum intended to be provincial in its main focus, the Museum has recently been given the ability to significantly expand its roles as keeper of Provincial treasure, researcher into "man in nature" in British Columbia, and communicator of what we know to the people of the Province. A visitor has described the Museum as "a 12-ring circus, with more going on in each ring than anyone can keep up with." By any standards, it must be considered a lively place.

During the year the Museum almost doubled its permanent staff, mainly by taking on many temporary people who were helping to staff several rapidly expanding projects. Most had been paid from funds supplied by the Federal Government under the National Museum Policy program. Their acquisition brought the Museum staff, exclusive of security personnel (employed by Public Works) and our many volunteers, to about 130.

Against this gain are several major losses. Dr. J. Bristol Foster, Director, resigned in October to take up important duties in the Department of Lands, Forests, and Water Resources. During his term as Director, Dr. Foster guided the Museum through some of the most exciting years in its history, as it grew in importance to achieve the stature of one of the nation's major museum institutions.

At about the same time Mrs. Wilma Wood left her post as Head, Division of Education and Extension. Her enthusiasm and leadership too were a major factor in helping the Museum catch Canada's attention in the early 1970's.

Again the National Museum Policy program supplied generous funds which enabled us to increase our scope and effectiveness, mainly in the fields of education and extension, inventory, and training. In this respect at least two projects have attracted national attention—the educational kits to travel to schools, originated by the Division of Education; and the Division of Archæology's efforts to standardize terminology for describing Indian artifacts.

Through a generous Acquisition Fund, made available by the Provincial Government, the Museum was able to acquire many important objects, most of them priceless as historic and artistic creations of Northwest Coast Indian cultures. Often the objects obtained were in danger of being sold on foreign markets.

In addition, for yet another year the Friends of the Provincial Museum, through the Heritage Court Society, have given an impressive amount of equipment to the Museum, and have helped in other ways. Funds are obtained from the Museum's highly successful Gift Shop which is operated by the Heritage Court Society for the Friends.

Many volunteers donated their valuable time to the Museum. During the year about 150 poured their interest and abilities into such diverse projects as card indexing British Columbia's records of birds, showing children how to make butter, and selling contemporary Indian jewellery in the Gift Shop. Last, though never least to any museum, is the interest shown by many people in donating objects of many kinds to the Museum's collections. If public support is a measure of a museum's success, this Museum is especially favoured, more than it could ever adequately acknowledge.

Dominating the year of the Divisions of Display, Archæology, and Ethnology were the planning, designing, and partial construction of the new Anthropology Gallery which will open in 1975. This gallery will complete the top floor of the Display Building and will leave the entire second floor for the Natural History displays, now getting under way.

The Museum has been known for decades for the excellence of its publishing program. The past year was its most productive to date. Two new handbooks on botany appeared, as did a major work on hawks, a colourful guide to the History Gallery, a small book on the purposes and organization of the Museum, and several informative folders, the first of many designed to extend the messages of gallery exhibits.

The Museum's scientific journal, *Syesis,* is the finest of its kind in Canada. Now in its seventh year, the 1974 issue was sent to scientists and learned institutions around the world. Two supplements to the 1974 *Syesis* were on archæology and ethnobotany.

A few other milestones that come to mind are: Archæology continued to make progress with joint projects involving the Indian peoples in researching their past; Linguistics initiated an ambitious program on many fronts to record, and sometimes to help teach, the native languages of the Province; Marine Biology undertook productive explorations of the sea, using the Museum's vessel *Nesika* to add new names to the list of Canada's marine fauna; senior people in Display, with typical dedication and enthusiasm, and anticipating the need sooon to construct marine exhibits, plunged successfully into learning the art of scuba diving; and the Museum train, its organization, and first years of operation to be the concern of History, began to take shape, and will soon help to take the Museum into many towns throughout the Province.

It was a good year. Most of this report is about what Museum people did. But these activities are but the means to the end of serving people, and this the Museum seems to have done well, touching the lives of more than a million people during the year. The feedback from this contact is the kind that gratifies and inspires, providing the impetus to do even better in the future.

ARCHÆOLOGY

DOUGLAS N. ABBOTT, CURATOR

The Archæology Division is the main storage and co-ordinating centre for data relating to British Columbia's archæological resources. It shares with other institutions the responsibility for protecting those resources and carrying out systematic research upon them with the object of reconstructing the prehistoric adaptations,

patterns, and relationships of cultures in British Columbia. It is custodian of the Provincial archæological collections which are held in trust for the people in general and in particular for the native Indian people of the Province. It is responsible for informing the public regarding that part of British Columbia's cultural heritage which can be recovered by archæological means.

In recent years we attempted to meet these multiple responsibilities largely through outside assistance and with the majority of our staff supported by temporary funds. The outstanding event of 1974, therefore, has been the absorption of most of our staff positions into the public service establishment of the Province. This has enabled us to structure the Division into operational sections for greater efficiency.

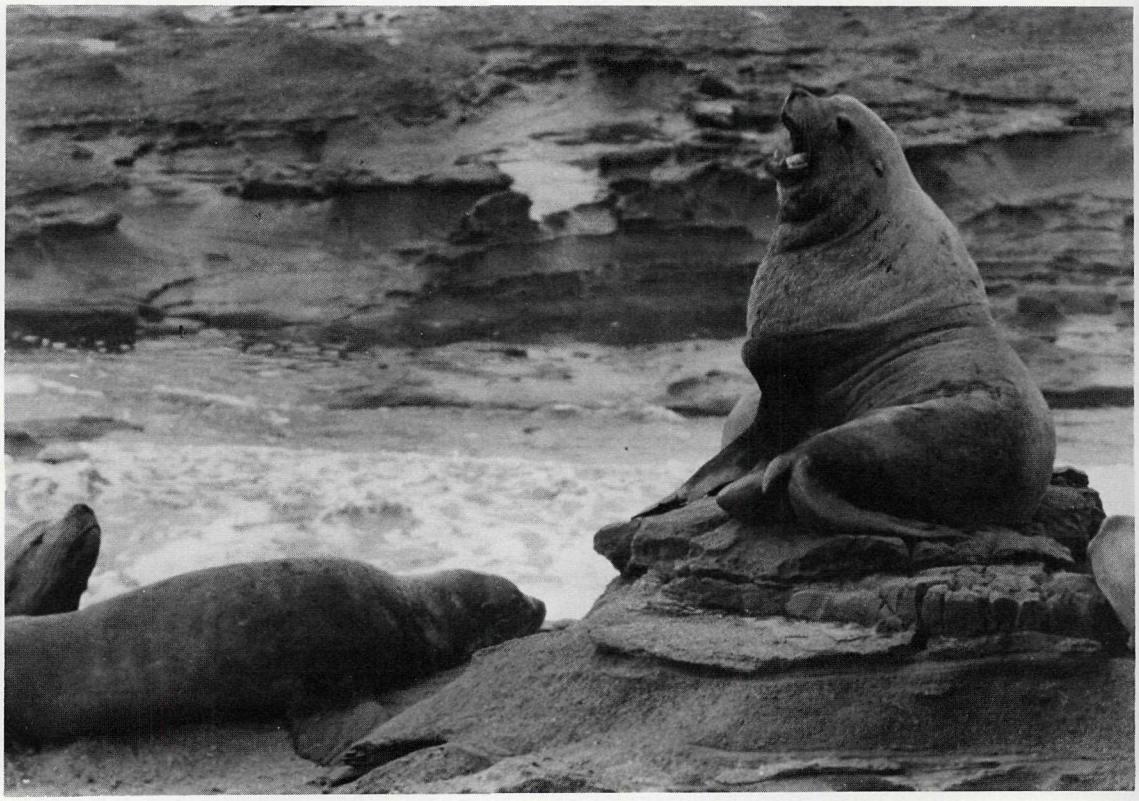
The Systems Section continued research and development of computer applications for archæological data in co-operation with the National Inventory. A feasibility study on data handling techniques is currently being edited. Staff of the section have prepared two editions of a *Guide* and *Dictionary* for the inventory and distributed copies to researchers on this continent and in Europe for comment. Papers on the inventory and our role in it were presented at conferences in Birmingham, England, and Whitehorse, Y.T. The section head made a fact-finding tour on computer applications in archæology to England, France, Germany, and Washington, D.C., in January, and in May attended a meeting in Ottawa to finalize format for the National Inventory of artifacts.

The story line for the Archæology Gallery is complete and we have almost finished editing the text for each of the display sections. Our casting program was almost totally concerned with projects for the new display. The second of the pair of "monoliths" (large vertical sections excavated from midden sites) was taken from Galiano Island early in the spring. Preparation and installation of these continued throughout the year. Field crews also made moulds of several of the unique petroglyphs (prehistoric rock carvings) from 27 sites along the Coast, working closely with the Indian bands. For this work we developed a new moulding technique which has proven so successful that it has aroused a great deal of interest at other institutions. In November we assisted Washington State University to mould several petroglyphs in the Snake River Canyon. The technique was also used to mould key pieces of decorative plaster from the historic Birks Building in Vancouver prior to its demolition.

The Cultural Recovery Project of the Hesquiat Band on the west coast of Vancouver Island continued into its fourth summer of field investigations, once again, at the band's request, under the Assistant Curator's direction. In addition to archæology recovery, the summer's work involved photography of all burial boxes and initiation of a dendrochronological study by which the wooden artifacts and structures may be accurately dated and a climatic history established. Analysis of soils, faunal remains, and other recovered materials continues at the Museum.

At the invitation of the Songhees Band and with their participation, another major excavation was begun at Maple Bank Reserve on Esquimalt Harbour. During this first season the project was run jointly with the University of Victoria as a field school for Indian students and was supported by the Department of Labour's "Careers '74" program, the Museum, and the Archæological Sites Advisory Board.

The Indian Band and their archæologist completed the gravehouse salvage project on the Nakina which we had helped them initiate. They also undertook a major site survey in Atlin territory. At the request of the Archæological Sites Advisory Board the Division organized a site survey along highway construction rights-of-way in northeastern British Columbia.



A young bull northern sea lion (*Eumatopius jubata*) strikes a pose, on Second Beach near Pachena Point, similar to the model which will soon be a feature of the Hall of the Sea in the Museum's Coast Forest diorama now under construction.

BIRDS AND MAMMALS

CHARLES J. GUIGUET, CURATOR

The Birds and Mammals Division is responsible for the maintenance and pertinent enlargement of collections, and disseminating knowledge, in the field of higher vertebrates, including birds, mammals, amphibians, and reptiles. It is also responsible for planning, collecting, and processing material for display, extension, and education. The Division is also active in zoological exploration and the publication of scientific and popular material.

While displays currently demand most attention, with research a close second, the Division continues to be active providing information and identification for the public, professionals, colleagues, and other institutions.

In 1973/74, the Division was assigned 10 students and commensurate expenses for four months under the "Careers '74" program. Aided in this with vehicles donated by the Ford Motor Company, the following projects were carried out:

1. *Northern Inventory*—Two students were assigned to the Secretariat to assist in a northern inventory of birds, mammals, amphibians, and reptiles. Operations were centred in the Bulkley Valley. Series of mammals, birds, amphibians, and reptiles were collected for the distributional record, for identification, and to fill gaps in the Museum's scientific study collections. Transects were established and data

gathered from May through August. Analyses have been carried out and qualitative inventory reports are now being written.

2. Four students, supervised by museum personnel, collected on the Queen Charlotte Islands for 10 days in May to provide specimens of indigenous species of birds and mammals for the proposed *Queen Charlotte Island display*. Scientific-study collecting was also carried out during the period. Series of specimens were collected, including all indigenous species except the scarce Queen Charlotte Island weasel and Saw-Whet Owl.

3. A long-term program of *zoological exploration* dealing mainly with *small mammals* was initiated this year on islands lying between Vancouver Island and the Mainland. Crews using inflatable boats worked the following islands: Saltspring, Sidney, Forrest, James, Darcy, the Penders, Saturna, Mayne, and Galiano. We hope that a number of islands can be explored annually north to the Goletos Channel. A total of 300 small mammals was collected. The bulk of this work was carried out successfully by two students.

4. Four students and the Curator, carried out *small-mammal transplants* from Vancouver Island to Doyle Island on the Gordon Group in Goletos Channel. This exercise is designed to stimulate apparent post-Pleistocene invasions of mice to smaller islands, where observed morphological differences indicate evolution to the species level. Series of mice were snap-trapped from both Doyle and Vancouver Islands and specimens were released alive on Doyle. Hopefully this work will result in some answers to evolutionary processes and distribution of insular mammals on the British Columbia Coast.

5. A *seabird colony inventory* was carried out during the breeding season on islands between Victoria and Campbell River. In total, 100 islands were surveyed and a census of birds, nests, and eggs was taken for the following species; Glaucous-winged gull, double-crested cormorant, pelagic cormorant, pigeon guillemot, and black oystercatcher. Several new colonies were discovered.

6. During the same period, *cataloguing, card-indexing of field notes, specimens* and *compilation of published material* dealing with British Columbia avi-fauna were carried out.

During the year, our taxidermist processed 34 specimens for the initial phase of the Natural History displays. Species to the size of the grizzly bear and sea lion were prepared. Collecting and processing for the Coast Forest, Hall of the Sea, and Queen Charlotte Island areas is almost completed; the Puget Sound Lowlands, including the Fraser Estuary, is yet to be done.

The scientific study material prepared, including skins and osteological specimens, numbered 584. Many of these are "pick ups" donated by the general public, birds killed against windows, telephone, and power-lines, automobiles, and the like.

BOTANY

ADAM F. SZCZAWINSKI, CURATOR

The Botany Division has four main functions—to maintain a herbarium as a filing system for a collection of British Columbia plants which is accessible as a reference for botanical research and from which exchanges with other institutions can be made; to conduct research and to provide facilities for research carried out by outside scholars; to provide information both oral and written, on the results of this research through journals, periodicals, Museum Handbooks and Occasional Papers, and through public lectures; and to advise and assist the artists and technicians of the Display Division on the botanical aspects of displays.

In 1974 the Curator was heavily involved in co-ordinating work with the Environment and Land Use Committee, and with the Ecological Reserves Program. In November he acted as Director. With Dr. R. J. Bandoni, of the University of British Columbia, he revised the Museum Handbook Mushrooms of British Columbia, and with Dr. J. H. Soper, of the National Museum, he prepared a booklet on the Wildflowers of Mount Revelstoke and Glacier National Parks.

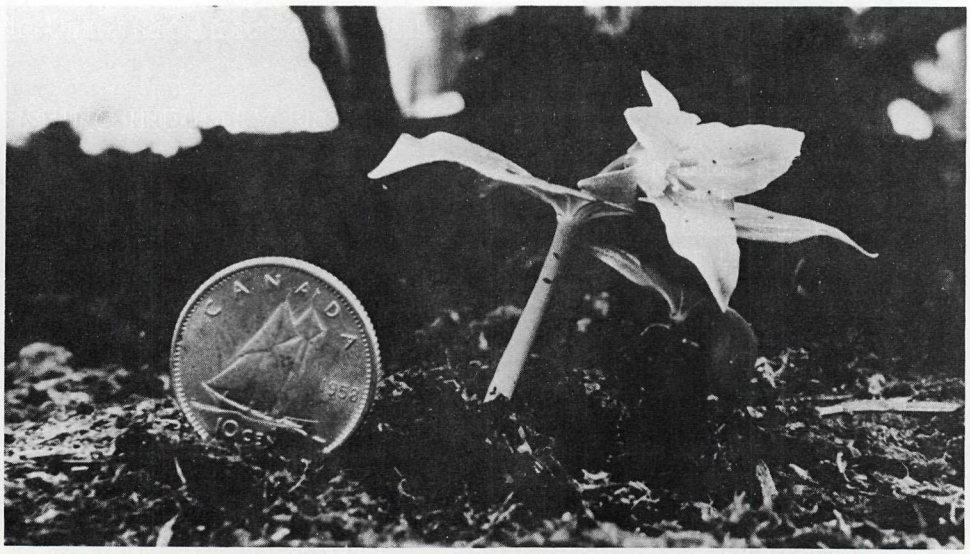
The Division continued its floristic inventory of Northern British Columbia and collected in several remote areas including the northern Cassiar Range, the Liard Plateau, and the Pettitot River area. Collections were also made at Bamfield, Triangle Island, and on the Trial Islands. About 2,000 specimens were collected.

The Assistant Curator, in co-operation with the Provincial Parks Branch, has been studying the floras of Manning and Mount Robson Provincial Parks and a publication on the wildflowers of Manning Park is planned. So far, 1,300 specimens have been collected in this project.

Two technicians completed the multiple collection of the flora of Vancouver Island, collecting 12 replicates of each of 142 species, Dr. Nancy Turner, under contract, continued her work on the ethnobotany of the native people of the Interior.

This year, 5,185 specimens were added to the herbarium bringing the total collection to more than 66,000 specimens. Among the collections received from collectors outside the Museum staff were those of J. Carter (from Kokanee Glacier Provincial Park), G. W. Douglas (from Kluane National Park), G. Mendel (from Kokanee Glacier Provincial Park), R. T. Ogilvie (from Pacific Rim National Park), J. Risse-Sawiski (from Mount Assiniboine Provincial Park), B. Slough (aquatic plants from the Smithers area), and G. Stanley (from the Powell River area).

Research on the catkin-bearing plants by the Associate Director has been completed and a publication on this group is now being prepared as a Museum Occasional Paper. Dr. T. M. C. Taylor, under contract, has been engaged in research on the sedge, pink, and crucifer families for publications in the Museum Handbook series. His manuscript on the sedge family is nearly completed. The very



A dwarf trillium formerly thought to be a separate species but now considered a form of the common *Trillium ovatum*.

large family, the composites, has been receiving the attention of Dr. G. W. Douglas. His voluntary research into this group is expected to result in a Museum publication in 1977.

A study of the moss and lichen flora of the Province is being carried out by an Assistant Curator and a new collection, comprising of some 400 specimens, has been opened to house the cryptogamic material related to this work.

The Division's illustrators have completed the plates for a handbook on the crucifers, and most of the work on another set, those of the sedges, has been done. Meanwhile work has just started on what will be a monumental task, the production of the illustrations for the composites.

The representation of British Columbia plants in the Native Plants Garden around the Museum, continues to expand. A number of additions to the garden, collected in 1974 by the Associate Curator, have been carried over the winter in greenhouses in Victoria and are scheduled to take their place in the garden in 1975.

Among visiting researchers this year was Dr. K. G. Dore, of the Biosystematics Research Institute, Ottawa, who spent some time here in September while studying west coast grasses.

ENTOMOLOGY

ROBERT H. CARCASSON, CURATOR

The Division was established in 1973 to assemble and maintain collections of insects and arachnids as representative of the fauna of the Pacific Northwest as possible. It is hoped that eventually the Division will become an important focus for studies in the systematics and biogeography of the terrestial arthropods of the area.

At the beginning of the year, 100 new insect storage drawers were received making it possible to complete the amalgamation and to incorporate the Coleptera (beetles) and the Hemiptera (bugs). A good start has been made on the rearrangement of the Diptera (flies and mosquitoes) and the Hymenoptera (wasps, bees, ants, etc.). The smaller orders, such as the Orthoptera, Odonata, Neuroptera, and others, remain to be dealt with. The determinations of the Cicindelidæ (tiger beetles) were checked by a visiting specialist.

The collection of Pacific Northwest Uropodine soil mites received attention during the year and now comprises some 3,000 mounted specimens and some 30,000 specimens in spirits. Other groups of soil organisms were collected and roughly sorted with a view to eventually establishing a centre for the study of Pacific Northwest soil arthropods. Some 50 soil samples, collected in various localities by the Divisional staff and by other members of the Museum staff, were received and processed.

The Curator had a successful collecting trip to the Interior and was also able to collect much useful material during a holiday in Alaska. The Curator would like to express his gratitude to the Keeper and staff of the Department of Entomology, British Museum (Natural History), for facilities afforded him for the study of faunal affinities with Eurasia, during a private visit to London.

The Associate Curator had a successful collecting trip to Washington and Oregon.

Much time was spent in the preparation of illustrations for a Museum Handbook on the Butterflies of British Columbia. The Curator acknowledges the fine work of Ron Long of the Biology Department of Simon Fraser University, in pro-

HOHOQ mask by Charlie Walkus.

Carved and painted chest by Vernon Stephens.

ducing several hundred superb colour transparencies of our local butterflies, and expresses his appreciation to Prof. G. Scudder of the University of British Columbia for the loan of the specimens.

Prof. and Mme Henri Bertrand, of Paris, world authorities on aquatic Coleoptera, visited the Division while travelling in this area.

ETHNOLOGY

PETER L. MACNAIR, CURATOR

Several significant projects were undertaken by the Division in 1974. The major undertaking was that of preparing the permanent Indian History exhibit. During the year the objects to be displayed were selected and prepared with the assistance of the Conservation Division. Texts and labels were written. Construction of the house of Kwakiutl Chief Jonathan Hunt, of Fort Rupert, which will be a feature exhibit, was completed.

A project to recatalogue the entire ethnological collection, which consists of some 9,000 specimens, was begun. In time, this will mean that far more accurate and significant information about the collection will be added. Objects were measured in metric units and improved descriptions were written. Early collectors' notes proved an invaluable source of additional information, especially the field records of C. F. Newcombe. Newcombe who collected widely for this Museum in the second decade of this century usually recorded the name of the individual from whom he collected an object as well as information about its specific use. A thorough examination of his papers, held by the Provincial Archives, enabled us to add this important data to our catalogue. In time we expect to computerize our collection data so that it can be shared widely by Indians, students, and scholars across the country.

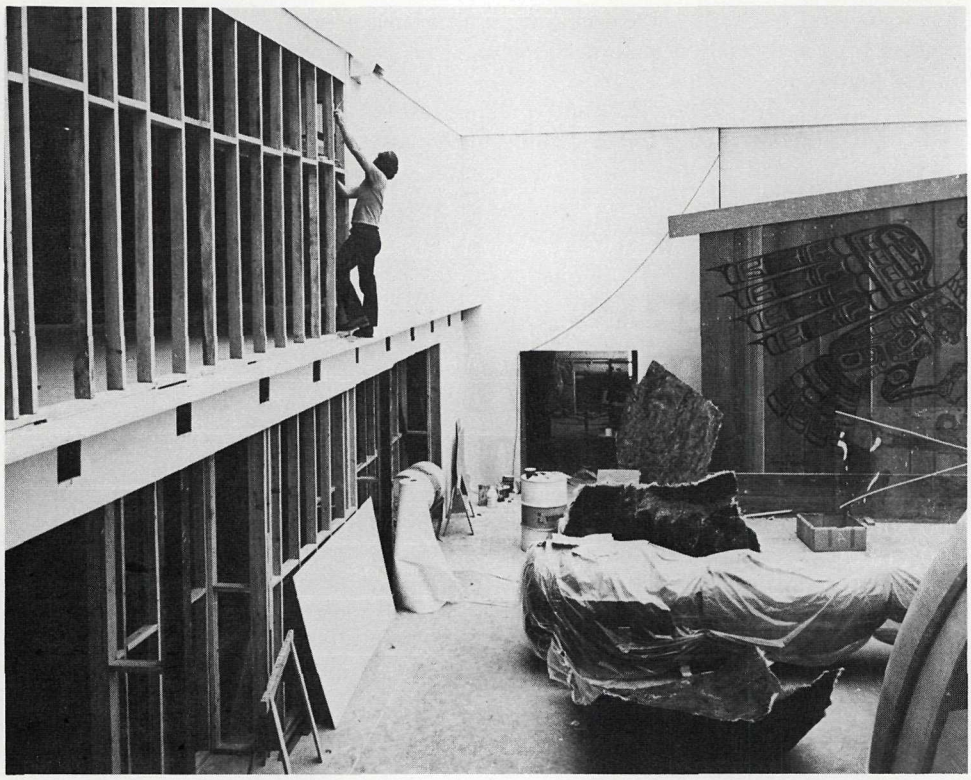
The Provincial Archives were also an important source for further information about our collection of ethnohistoric photographs. Using field notes, published works and, most importantly, Indian informations, some 12,000 photographs of Indian villages, economic activities and ceremonies, were catalogued.

The staff photographer and his assistant helped with this project. In addition to processing public requests, the photographic staff photographed a collection of contemporary British Columbia Indian Art for a proposed catalogue and began the large task of properly photographing the entire ethnographic collection.

The major task undertaken by the Thunderbird Park carving program was the completion of the Kwakiutl house mentioned earlier. After more than 20 years of service, Chief Carver Henry Hunt resigned to carve independently. His contribution to the development of the Museum during his employment has been invaluable and the staff as a whole join in wishing him well in his new venture. Ron Hamilton who was apprenticed to Henry during the past three years also left to return to his home in Alberni. Richard Hunt, Frank Puglas, and Francis Williams continue the carving program.

As in the past, the staff engaged in field work, mainly the recording of Kwakiutl potlatches. Our methods have improved to the point where we can now present the potlatch giver with a written, taped, and photographic record of high quality of his ceremony.

Because of substantial financial support, the Division was able to add significantly to its ethnographic collections in 1974. About 500 objects were purchased, among them several important collections. Without question the most important of these was the Macdonald-Collison collection. Most of the 42 specimens in the



The Ethnology Gallery under construction. It is scheduled to open in July 1975.

Mrs. Alice Paul, of Hesquiat, taping information with the Curator of Linguistics.

collection were obtained in the latter part of the 19th century by the pioneer missionary the Rev. William Henry Collison. In 1876, Collison was posted to Masset on the Queen Charlotte Islands and remained there until *ca* 1890 when he was transferred to the Mainland where he subsequently ministered at Metlakatla and Kincolith. The collection was obtained from Collison's grandson, Dr. J. Macdonald, of Qualicum Beach. The Museum is greatly indebted to Dr. Macdonald and his family who were so determined to have this important collection remain in the Province.

LINGUISTICS

DR. BARBARA EFRAT, CURATOR

In 1974 the Division grew from one staff member in July 1973 to four. This increase has enabled the Division to formulate and effect definite direction for its efforts both within the Museum structure and beyond, with service to the public and to the scholarly community.

The Division has pursued its two museum-centred goals, display and collections. The story-line for the permanent Linguistics display has been finished and the preparation of tapes and graphics is in progress. The display is designed to bring to the visitor's attention some of the fascinating variety of native language structures within the Province. The Division's tape collection has grown, supplemented largely by the field-work of the two curators. Within the next year the Division expects to prepare an ethically and legally valid set of guidelines to protect the privately owned contents of the tapes.

The Division is currently conducting an inquiry into the state of the native languages of the Province—the degree to which each still functions as a means of communication, the number of speakers, the number of dialects, and past and present research conducted on them. Once the information is assessed and priorities for research established, the Division hopes to encourage and direct research into those languages most in need of immediate critical attention. The Division thus hopes to be able to offer a much needed publishing outlet within a linguistic series for grammars in a number of British Columbia languages.

The Division, concerned almost exclusively with the native languages of the Province, is firmly committed to the view that it is only with the co-operation and concerted effort of the Indian people and with renewed interest and revived pride in their own fascinating and valid cultural heritage that much of the imperiled language data will be preserved. Thus, the Division has participated with Indian people in several projects run and designed by Indians themselves. The main native-organized program in which the Division takes part is the Hesquiat Cultural Project for which the senior curator this year helped to gather information on place names and aboriginal land use at the request of the band, as well as supervising the assembling of a Hesquiat colouring book and calendar. Both place-name material and folktales are currently being transcribed from the tapes made for the band's own archives. The Curator also collaborated with Dr. Nancy Turner and the Hesquiat elders on an intensive investigation of the ethnobotany of the Hesquiat area. The continuing and productive co-operation between the band and the professional as well as between the different generations of Hesquiats provides a model of responsible and relevant research which other native groups are starting to emulate. Another such cultural effort to which the Division contributed information and technical know-how was the Saanich Cultural Heritage Project, organized by the Saanich Indian School Board.

The Division has also been taking an active role in workshops sponsored by native groups, such as the one for land claims' field-workers interested in practical alphabets run by the Union of B.C. Indian Chiefs in February, and the workshop and conference, sponsored by the Fish Lake Cultural Centre in Williams Lake, designed to encourage those native people who are producing practical materials in Shuswap, Chilcotin, and Carrier. To the latter conference the Curator contributed a talk on native languages for the school teachers of the area.

With a view to having staff with as diverse native language expertise as possible, Robert D. Levine was appointed Assistant Curator in October. His recent investigation into the structural intricacies of the Skidegate dialect of Haida has led to a request by the Queen Charlotte City system for a series of graded lessons in that language. He has also commended a detailed study into the grammar of Kwakw'ala, southern Kwakiutl. Other staff employed included two summer students—one catalogued Salish language data, and the other collected examples of native language curriculum materials from Canada and the United States.

A division representative was invited to attend the B.C. Native Teachers Association Conference in May and the B.C. Homemakers' Conference in June. In March the Curator gave a Heritage Court lecture at the Museum, "Telling It Like It Is."

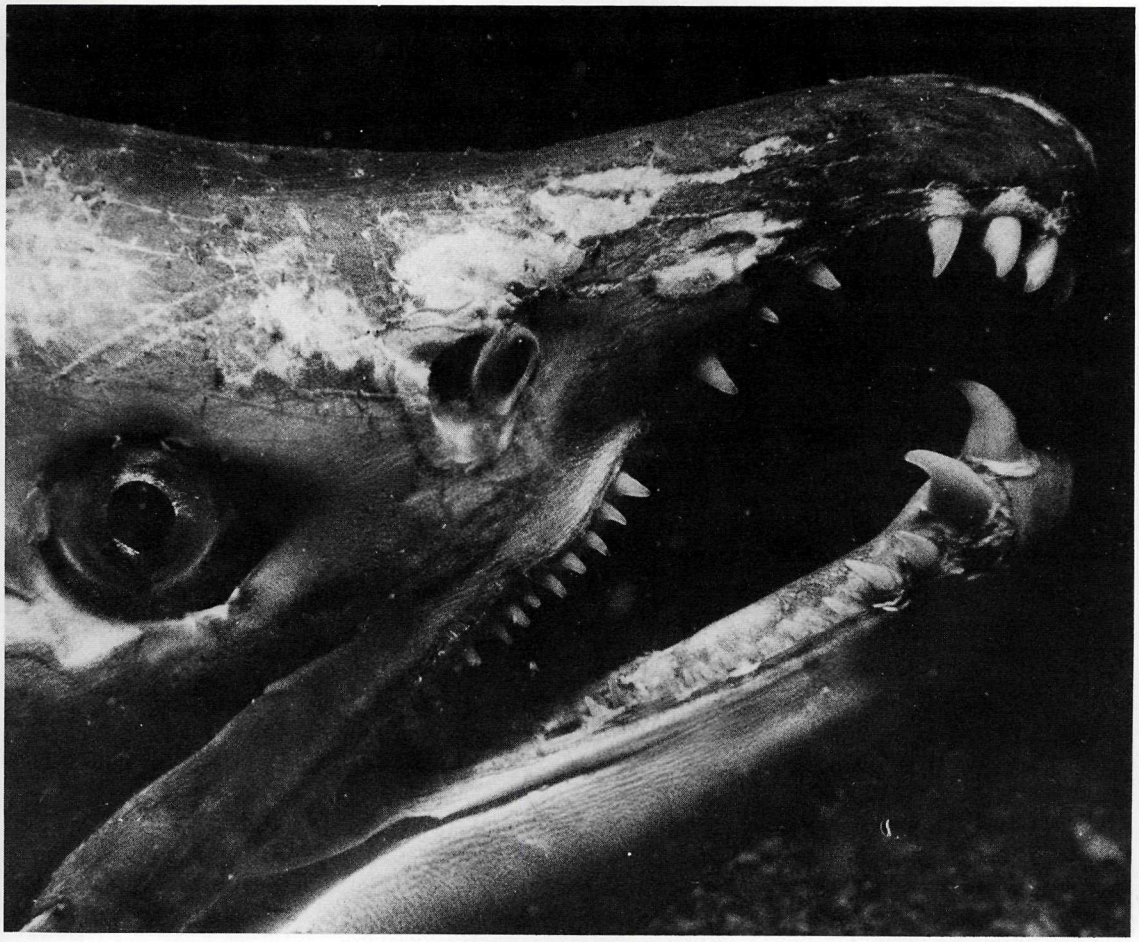
MARINE BIOLOGY

ALEX E. PEDEN, CURATOR

By definition, work in this Division centres on collections of marine life. Without such collections the Marine Biology Division ceases to function as a significant part of the Museum. In contrast to the collections of most other museum divisions, aquatic collections cannot be kept as specimens for public exhibits. Because marine life becomes so altered after preservation, models or photographs must be used to portray living animals for the layman. During 1974, Marine Biology continued a program that has accumulated several thousand underwater photographs; however, it still has only one-third of those required for the planned permanent exhibits.

Preserved marine specimens find their greatest use in research, however museums emphasizing marine biological collections are sadly lacking in the Pacific Northwest. For many marine animal groups, competent taxonomists and quality invertebrate collections cannot be found any closer than California, Ontario, or Washington, D.C. Although, the Provincial Museum has an excellent reputation in display and other curatorial areas and was collecting marine biological specimens as early as 1889, its national and international reputation in curation of marine life has not kept pace. As a partial step to establish stability for collections that are of international, as much as national or regional value, application was made for membership in the Association of Systematics Collections. Such a membership should help to co-ordinate research efforts between institutions and ensure official recognition of international standards for our collections in the marine biology section.

Since quality research or educational programs require accurate knowledge of the number and kinds of organisms encountered in the environment, the Division continues to survey lesser-known areas and animal groups whose species status and taxonomy are in doubt. For example, the Division's summer survey in northern marine waters of the Province indicated 20 per cent of the approximately 125 inshore fish species found were previously unknown from the region. Studies on *Lycodapus* (type of eel-pout) also indicated that current literature had attributed the wrong



Head of male Adams River sockeye salmon.

habitat for one species and provided an excess of species names for another form. These studies also revealed a species new to science.

The Division's participation in the Land Secretariat's Land Inventory Program was also in the spirit of basic exploratory work. Because marine life is so diverse, it is impossible to hire all the experts needed. However, judicious use of contracts will increase productivity as was exemplified by the cûration of polychaete worms and production of identification keys by Mrs. Katherine Hobson. During the year, progress was made toward future handbooks on echinoderms (i.e., starfish) and nudibranchs (sea slugs).

With few museums curating marine life in the Pacific Northwest, the Division is becoming a regional museum for certain animal groups. The American Association of Systematics Collections has strongly urged regional museums for systematic biology to the Canadian National Museum Program. Such synergistic concepts are badly needed to co-ordinate the biological research effort in the Pacific Northwest, therefore, the Division intends to work toward either filling the vacuum or supporting institutions capable of filling this need. Since many agencies work with British Columbia's faunal resources, especially marine life, participation in methods of pooling data and providing sound basis to develop services are needed.

Toward this end the Division must

(1) determine the needs of biologists working on British Columbia's aquatic and marine fauna for identification services, storage facilities for specimens and data, and for information retrieval systems;
(2) plan the growth and development of the facilities to meet these needs;
(3) develop the exchange of specimens with other institutions;
(4) encourage researchers—particularly those from abroad—with specimen loans;
(5) provide, where possible, material support for visiting researchers;
(6) encourage completion of research aquaria in the Curatorial Tower;
(7) support local initiatives for public aquaria as educational and research facilities;
(8) work closely with the Educational Division to create programs which not only satisfy the public's curiosity about marine and aquatic life, but also instil a sense of objective appreciation of how this life interacts with our environment.

MODERN HISTORY

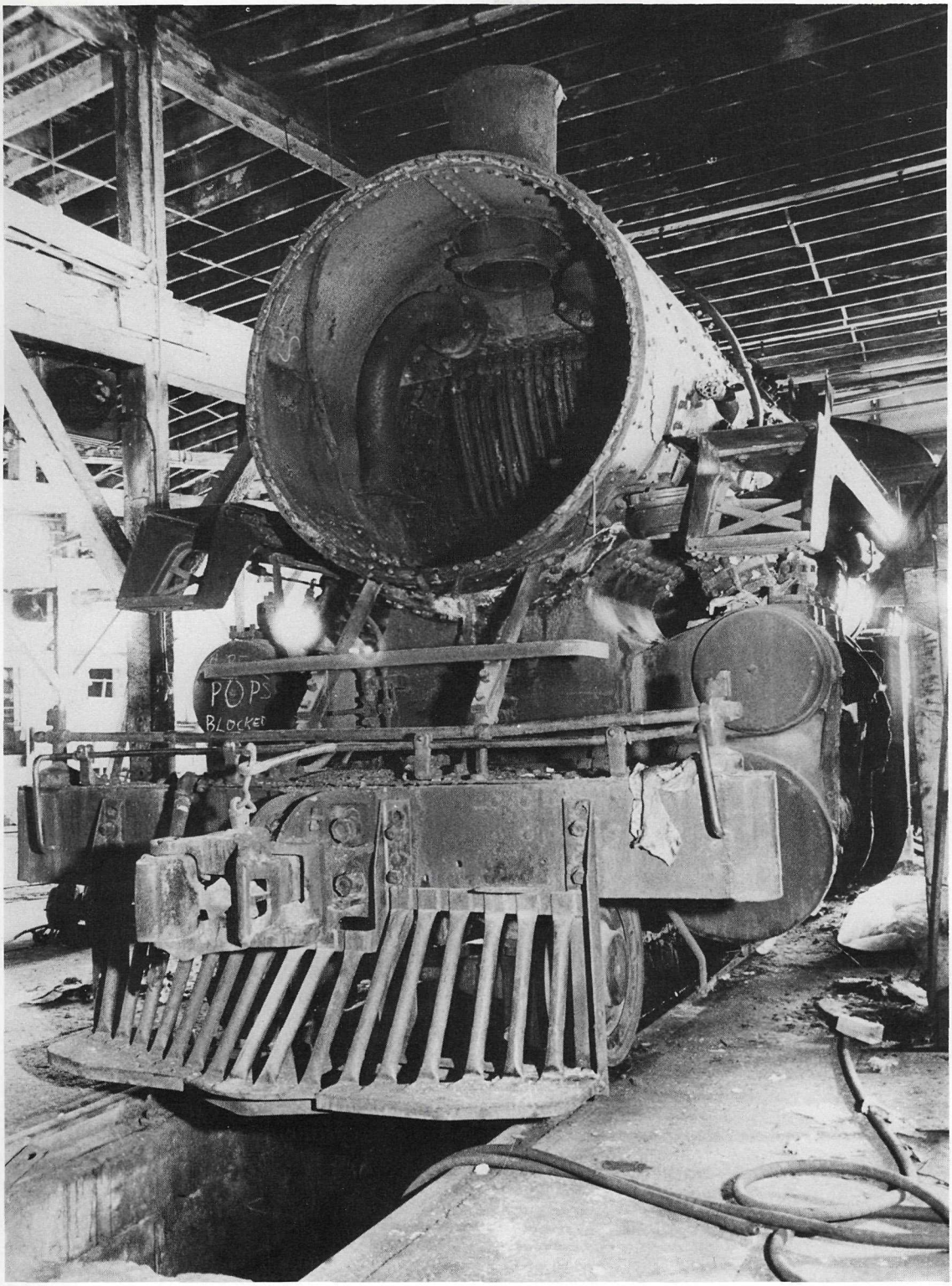
DANIEL T. GALLACHER, CURATOR

Those familiar with the Provincial Museum's organization may wonder if another division—*Modern History*—has been established. Actually, it is simply a new name for the History Division which was created in 1967 to cover human activity in the Province from the years of European contact to the present. Among the hoped-for results of this name change will be a clarification in the minds of persons who make use of our curatorial services; modern history provides sharper definition in the face of the Museum's four divisions concerned with natural history and the three devoted to Indian history. Moreover, the new name will plainly associate this division with the *British Columbia Modern History* exhibits created between 1969–72.

The Division's internal organization was also modified in 1974. Whereas in the past curators tended to study, collect, and interpret essentially in chronological terms, they now concentrate upon specific collections. As well as making for more operational efficiency, this change should bring our staff into closer harmony with their counterparts in other major museums.

Of special note is the emphasis now given to technicians. The rapid growth experienced by all divisions since the late 1960's has had a profound effect upon staff relationships. The traditional pattern of technicians always being subordinate to curators has been upset by the advent of two purely technical divisions, Conservation and Display. Collective bargaining, introduced this year, is bound to alter staff relationships even more. Thus, more emphasis must be placed upon understanding and defining the roles and contributions of curatorial technicians. For this Division, the problem should not be difficult since the recent internal reorganization provdies for a well-defined "technical support section" capable of both assisting curators in the latter's activities and performing independent technical work.

Demand for collections, research, information, interpretation, and services exists in each area defined as a section, and in light of the Provincial Government's current emphasis upon acquiring new historical assets—collections, sites, structures, documents, museums—the Division is being increasingly called upon to assist other agencies which do not yet have the expertise to cope with their ever-growing responsibilities. And this in turn places severe strains upon our own capacity to fulfil the tasks at hand.



CPR consolidation type 2-8-0 locomotive No. 3716 being restored in Vancouver for the Museum Train.

Haida totem pole from the Queen Charlotte Islands being removed from a temporary location at Prince Rupert for storage in Victoria. It will eventually be returned to the Queen Charlottes.

Considerable progress was achieved in 1974, particularly in collections, cataloguing, storage capacity, and restoration. By mid-December, upwards of 40 per cent of our collections were catalogued, photographed, and cross-referenced, mainly as a result of the Federally funded Catalogue Assistance Program.

Temporary exhibits have been another highlight, in that the Division's curators and technicians made material available for several displays which were located in the *Modern History* galleries. Indeed, the temporary exhibit has proven to be an excellent form for training curators as well as a method highly useful for strengthening and livening the permanent displays.

Several major field projects were completed in 1974. Part of June was spent making on-site video recordings of gold panning and hydraulic monitoring activity near Atlin. As part of their research for the *Museum Train* exhibits, two curators travelled extensively through southern British Columbia and into some American states to investigate and record various railroad, industrial, and maritime sites. There were periodic visits to Vancouver to choose material from Birk's Building during its demolition, and to supervise the transfer of the resulting accessions to Victoria. The chief curator visited major museums in Britain, Ontario, Manitoba, and Saskatchewan.

Work on the *Museum Train,* a project which includes both a major restoration of historic rolling stock and a Province-wide travelling exhibit program for 1975/76, filled much of the Division's time. The *Train* will include a steam locomotive, tank car, boxcar, two flatcars for live steam displays, two exhibit coaches, a theatre coach, and a crew-accommodation car. Inside exhibits will focus chiefly upon "British Columbia's Age of Steam, 1830's–1950's."

CONSERVATION

PHILLIP R. WARD, CURATOR

The Conservation Division is responsible for the physical welfare of the Museum's collections, with special concern for those in the field of human history. This embraces the preventive procedures necessary to the care of the collections during storage, study, and display; the provision of guidance and assistance to other divisions to ensure safe handling and transportation; and the cleaning, consolidation, and repair of the permanent collections. The Division develops improved techniques on all these fields and conducts technical examinations of objects in support of the research programs of other divisions. It also maintains the Museum's Collections Condition Record, provides professional liaison with other institutions concerned with the conservation of antiquities, and offers as advisory service to other museums and to the general public.

The year's most important event was the Government's decision to rationalize the Museum's organization by establishing on a permanent basis those staff positions which had been previously provided from various temporary sources. This had a profound effect on the Conservation Division, which at last has a balanced permanent staff compatible with its responsibilities.

Of the many interesting projects with which the Division has been concerned during the year, the consolidation of waterlogged artifacts excavated by UBC at Musqueam, which commenced last year, proved the most rewarding. This work was undertaken without foreknowledge of the exceptional importance of the artifacts,

but simply because no other conservation laboratory in Western Canada had the experience or facilities to provide the early treatment without which these artifacts would have rapidly disintegrated. It was therefore, especially gratifying when, early in 1974, radio-carbon analysis revealed that, at an age of approximately 3,000 years, these were by far the earliest perishable artifacts ever recovered on the Northwest Coast.

The treatment of excavated artifacts was not confined to the discoveries at Musqueam, however. Other material treated during the year came from sites at Little Qualicum River, Fanny Bay, Hesquiat, Maple Bank, and Buckley Bay.

On the principle that "nature abhors a vacuum," the Conservation Division, as the Provincial Government's only source of expertise in the conservation of antiquities and works of art, has become increasingly concerned with the demands of the many Government agencies which lack such expertise but which now are active in the preservation of cultural resources.

During 1974, such services were provided to nine Provincial Government departments and agencies, the National Museum of Man, four universities, and 10 other regional and local museums and historical organizations.

Although the demands of the Museum's permanent display program dictated the general limitation of external services to consultations, some 22 objects which were in urgent need of repair were treated.

Throughout the year much work was generated by the Museum's travelling exhibit program, for which the Conservation Division examined and prepared condition records of every object borrowed or loaned by the Museum. In many cases, the objects were also cleaned, repaired, or fumigated and in some instances packing and unpacking was also done by the Division's staff.

The routine conservation treatment of the Museum's collections was greatly accelerated, and at the end of the year the preparation of objects for the permanent anthropology displays was almost complete—approximately six months ahead of schedule. In all, 285 objects from the Museum's collections received major treatment.

Programs of original research was also initiated into the uses of BISRA consolidant on leather; the use of conifer resins for the repair of native artifacts; the consolidation of lignite; and the deterioration of opercula in contact with organic oils.

DISPLAY DIVISION

JOHN J. ANDRE, CHIEF

During 1974 the Display Division, which is responsible for all exhibits, completed the structural framing for the new Ethnology, Archæology, and part of the Natural History galleries.

The Archæology and Ethnology exhibits, which are due to open in July 1975, began to take shape this year with the Kikili Pit House now completed to form the focal point of the Archæology exhibit. The lumber for this house was collected by the Parks Branch in Manning Park.

The large soil profile which was collected last year from the Glenrose Cannery dig is now in place and ready for the surrounding showcases. Another soil profile was taken from the Galiano Island dig, but this dig had to be re-excavated. This will also be used in the Archæology exhibit.

During the summer, Archæology and Display technicians, in collaboration with local Indians bands, made moulds of all important petroglyphs in the Province.

Casts from these moulds will be used to build two 45-foot panels in the Ethnology exhibit.

Due to the imminent demolition of the Birks Building in Vancouver, arrangements were made for moulds to be made of some of the interior detailing of the building. This was very successful and was featured in the Vancouver newspapers.

The Natural History casting group constructed a tide pool, complete with flora and fauna, for a schools travelling exhibit. This provided good experience in developing this technique because many such pools which will be required for the Natural History exhibits.

During the summer the same crew made geological and botanical moulds for the Coast Forest and Marine dioramas. A Display Division crew, together with people from Marine Biology, Botany, and Birds and Mammals, also made a reconnaissance trip to Triangle Island to familiarize themselves with the part of the foreshore of that island to be used in this diorama.

Research continued into ways to duplicate whale bones. A system has now been devised, but locating a blue whale skeleton that we can use for experiments is proving to be a problem.

Several members of the Display Division were able to visit the Spokane World's Fair. Some of the equipment in use in the British Columbia Pavilion will be available to the Museum for its exhibit program. This trip provided an opportunity for a highly significant study of new audio/visual techniques.

During the year the Display Division was able to obtain additional equipment such as a Typositor, Diazo Printer, a metal lathe and vacuum chamber, which has made us less dependent on outside contractors.

EDUCATION AND EXTENSION SERVICES DIVISION

SHIRLEY CUTHBERTSON, ACTING CHIEF

The Education and Extension Services Division of the Museum provides general museum information, interpretive programs for visiting groups, and maintains contact with communities throughout the Province by circulating the Museum's travelling exhibits and school programs. A particularly eventful year was 1974. The teacher contact and travel program expanded, while the in-Museum school and adult programs were maintained. Summer children's programs increased, with four summer teachers giving 14 short courses, while four tour guides spoke to many of the 662,000 visitors entering the Museum in June, July, and August.

Approximately 80 docents gave their time (3,481 hours of it!) to teach the 43,000 school students whose teachers booked the Museum's school programs. The ratio of docent to children is usually 1 to 10 or less on most programs. To present such programs curatorial staff contribute ideas, content, and docent training, while museum educators assess school needs and fit program content to age and interest level. Program development and co-ordination, and group logistics are handled within the Division, for both school and adult programs.

Adult tours, lectures, and workshops, including teacher in-service workshops, were presented to approximately 5,000 people in 1974. Highlights of the evening programs were the multicultural music and dance series, presented while the National Museum Exhibit *Cherished Traditions* was here, and the *Heritage Court Presents* series of lectures.

"How to Use the Museum as a Resource" was a teacher workshop presented many times during the year to local teacher groups at conferences, to individual student teachers, and to Faculty of Education classes. It is necessary for many teachers who cannot book museum programs to know how to use their museum visit effectively, and staff have helped many teachers to plan their own programs. In September, 20 student teachers worked in groups to plan, prepare, and teach museum programs for their first teaching practicum of the year.

For the people of the Province who cannot come to the Museum, Extension Services reached into nearly all regions in 1974. Exhibits, originated in the Provincial Museum under the National Museums Program, have been shown in 10 community museums. Two exhibits on British Columbia History and Marine Biology, with activities planned for school classrooms, circulated throughout Dawson Creek, Cranbrook, Prince Rupert, the Queen Charlottes, and Prince George. A teacher from Prince George was seconded by the Department of Education to travel with one kit. Because the kits are adapted to the average classroom, any town with a school can use them. Frequently, the school has been opened in the evening so that students could guide parents and interested members of their community through the exhibit. Another travelling school program "Son of Raven, Son of Deer," has travelled with its teacher, Mrs. Emma Hunt, to schools in many

Today's children learn the ways of the past in yesterday's schoolhouse.

districts on Vancouver Island and in the Fraser Valley. All of the travelling programs have had very favourable receptions, as borne out in an evaluation report on the National Museums "kits" by the Education Institute of British Columbia.

Highlights for staff during the year included several special programs such as the docent-led tour for 30 wheelchair patients from a local hospital, and the opening of St. Ann's Schoolhouse in May. The schoolhouse, donated by the Sisters of St. Ann, was moved and furnished through the co-operation of the Greater Victoria Real Estate Board, Friends of the Provincial Museum, and the Department of Public Works. Conferences on education in museums, a growing field all over the world, were attended by division staff in Quebec City, Copenhagen, and Vancouver during 1974. Conferences on environmental education were also attended in San Francisco and Surrey. Reports on the school travelling activity exhibits were presented to the Canadian Museums Association Conference in Newfoundland, and to the Association of Science Centres at Portland. There scope and impact was of considerable interest to museums elsewhere.

MUSEUMS ADVISER DIVISION

JOHN E. KYTE, MUSEUMS ADVISER

During 1974 the Museums Adviser Division continued its program of assistance to museums and galleries throughout the Province. With expertise from all disciplines of the Provincial Museum tied into training, display assistance, and technical advisory services covering small museum operation, local institutions were encouraged to improve their facilities and position in the community. The scope of the Division was expanded through an increased emphasis on museum training and the introduction of a much-needed program to provide assistance in the management of archival and photographic collections. The three-day seminar, adopted over the years as a basic museum training unit, has been revised and streamlined to provide a greater flexibility for scheduling to outlying areas of the Province. The development of a one-day "mini-workshop" proved highly successful and these will be used in areas where longer seminars are not practical.

Direct "services" to community museums and galleries formed the main thrust of Division planning for the year, but other less-obvious activities of municipal, provincial, and national involvement provided an opportunity for the interchange of ideas over the wider spectrum of cultural development. In November, at Winnipeg, provincial museums advisers from all parts of Canada met to discuss common problems and establish guidelines for the exchange of information, operating policies, and procedures. Membership on Advisory Committees of the Canadian Conservation Institute (Pacific Region), the Training Section of the Canadian Museums Association, the B.C. Community Recreational Facilities Fund, the B.C. Arts Board, and similar organizations provided direct and indirect benefits to the museum community. Throughout the year, a close-working relationship was maintained with the B.C. Museums Association and active participation by all advisory personnel in the three-day BCMA seminar and Annual General Meeting provided the opportunity to meet with museum people from British Columbia, the Yukon, other Canadian provinces, and the United States.

The lack of adequate financial support, inherent in museum and gallery operation, constitutes a major problem, particularly for smaller and often isolated institutions. However, some capital-cost funding, made available through the provincial Community Recreational Facilities Fund and the National Museums of Canada,

enabled several new museums to open their doors to the public and others to obtain improved facilities. As in the previous year, municipal involvement in local cultural affairs continued to expand to strengthen museum growth in the Province.

Though by no means affluent, some museums and galleries reflected improved conditions, particularly in community and municipal relations, but many small institutions still face the prospect of museum operation without adequate resources. However, the outlook generally was one of optimism and confidence in the future.

FRIENDS OF THE PROVINCIAL MUSEUM

St. Ann's School, one of the Friends' first projects, was moved to its permanent location opposite Helmcken House in January. It was officially opened on May 21 and is now being used by the Education Services Division of the Provincial Museum. Landscaping is still in progress and some interior repairs are still to be made. The Education Services Division is looking for schoolbooks and artifacts representing the period the schoolhouse was in use.

Associate membership in the Friends now stands at 395, including Gift Shop workers.

The Dr. G. Clifford Carl Memorial Reading Room, which was sponsored by the Friends, was opened at the University of Victoria in October.

One of our early projects was the establishment of the G. Clifford Carl bursary at the University of Victoria, to be awarded annually to a student majoring in marine Biology. David Citron was the winner of the $300 bursary this year.

During the year, donations from foundations, industry, and others included:

	$
Estate of the late Mrs. Elizabeth Benzie Moore	2,128
Hudson's Bay Company	4,000
Council of B.C. Forest Industries	5,000
B.C. Cultural Fund	1,500
Leon and Thea Koerner Foundation	500
Acquisitions for the year included:	
St. Ann's Schoolhouse	1,000
Kawa 6 camera	672
Stereomicroscope and accessories	1,648
Photo Typositor	4,042
10 metal storage cabinets	4,399
MR 12 Plessey radar	2,940

HERITAGE COURT SOCIETY

The Heritage Court Society, through its operation of the Gift Shop, had another successful year due mainly to the efforts of Mrs. D. A. Ross and her staff and the able assistance of a band of volunteer workers.

Our first venture in publishing was undertaken by the printing of a Historical Guide Book for the Museum's third-floor Modern History exhibit at a cost of $47,000.

In November a banquet was held at the Faculty Club of the University of Victoria for Gift Shop volunteer workers and the Directors of the Heritage Court Society.

A donation of $18,000 was made to the Friends of the Provincial Museum for use in the Provincial Museum during 1975.

The efforts of the volunteer workers are sincerely appreciated; the operation of the Gift Shop would not be so successful without their help.

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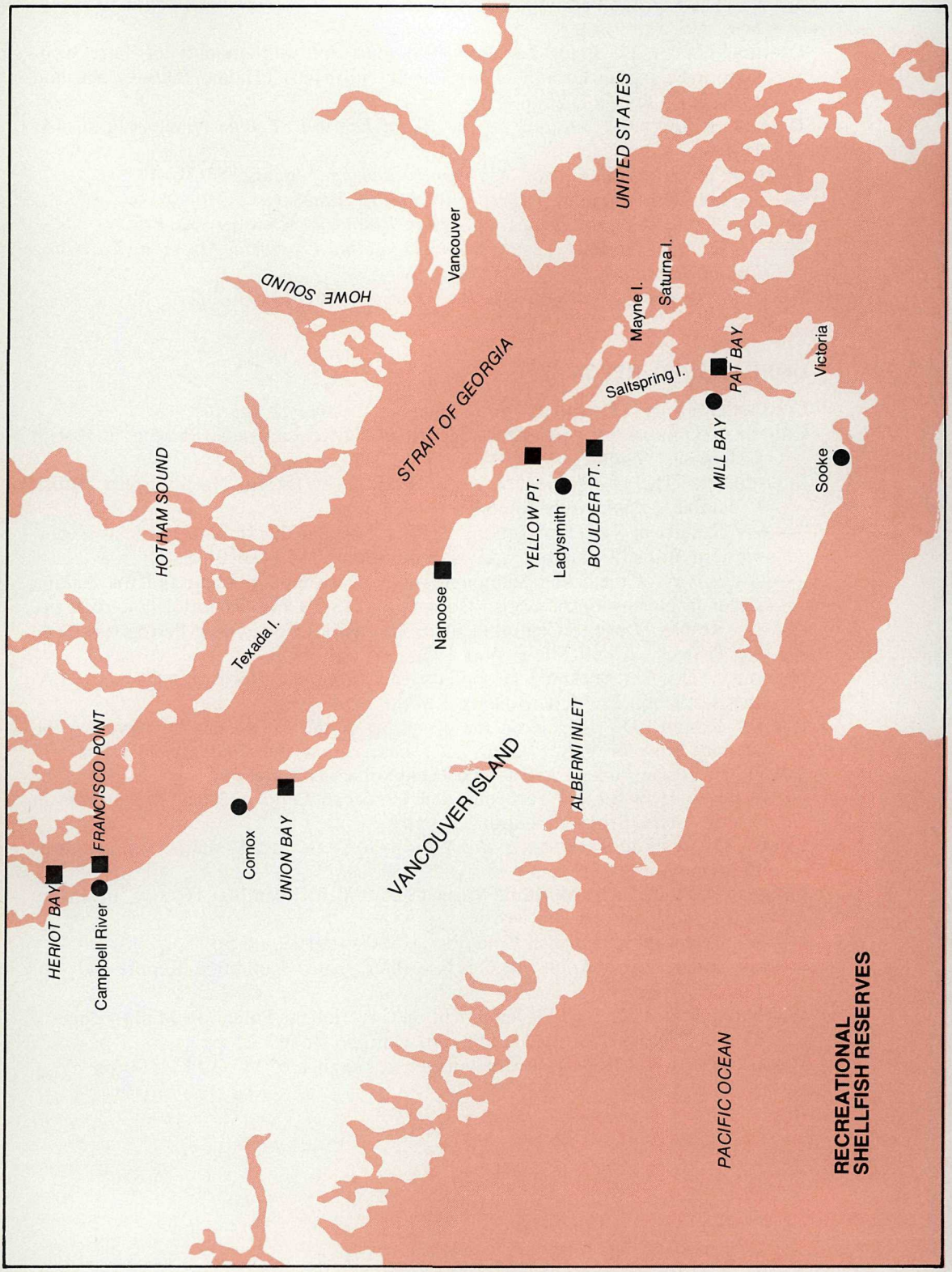
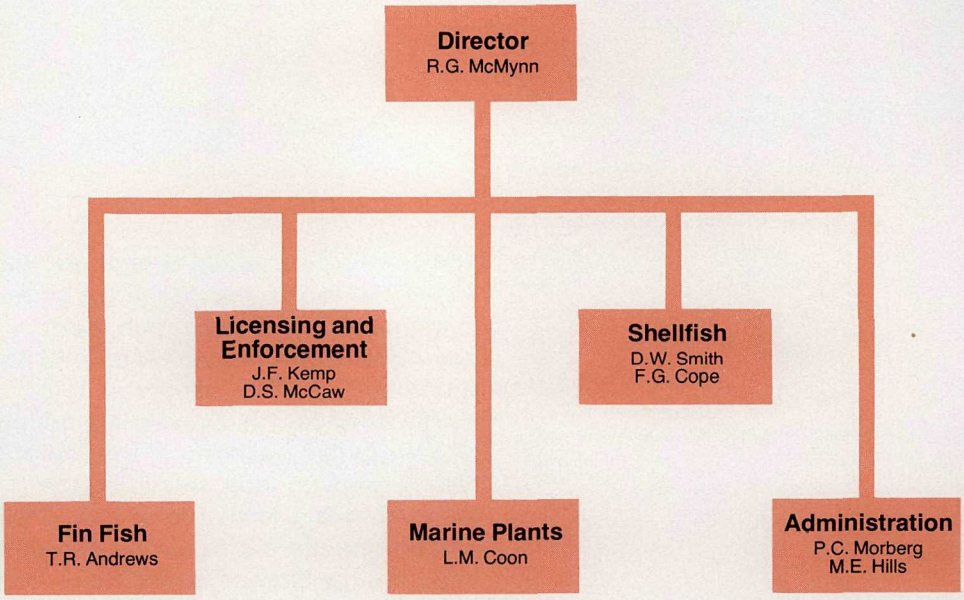

HERIOT BAY
Campbell River
FRANCISCO POINT
HOTHAM SOUND
Texada I.
Comox
UNION BAY
HOWE SOUND
Vancouver
STRAIT OF GEORGIA
Nanoose
VANCOUVER ISLAND
ALBERNI INLET
YELLOW PT.
Ladysmith
BOULDER PT.
UNITED STATES
Mayne I.
Saturna I.
Saltspring I.
MILL BAY
PAT BAY
Victoria
Sooke
PACIFIC OCEAN
RECREATIONAL
SHELLFISH RESERVES

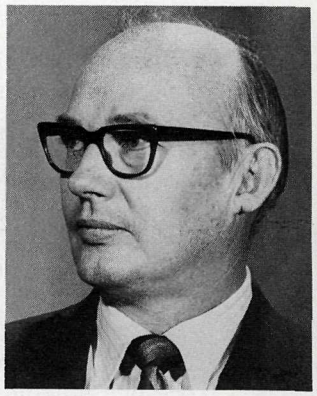
Marine Resources Branch

The Marine Resources Branch provides Provincial representation in the protection, management, and utilization, both commercial and recreational, of British Columbia's marine resources. It is responsible for the Provincial administration of appropriate sections of the *Fisheries* and *Fish Inspection Acts*, including the inspection and licensing of fish, shellfish, and marine plant processing operations. In addition, the Branch conducts research and acts as a Provincial partner in management planning and environmental impact evaluation for the protection of commercial and sport fisheries. This has led to an important liaison role between Federal fisheries agencies and Provincial land and water management agencies. The Branch also represents Provincial commercial fishery interests through the compilation of harvesting statistics and the provision of timely and factual information on the management of marine resources to the general public.

marine resources branch



In keeping with its responsibilities, the Marine Resources Branch is divided into four sections. The Aquatic Plants Section is responsible for the supervision of seaweed harvesting and processing activities along with appropriate aquatic plant research. The Fish Inspection and Licensing Section regulates industry operations through licensing and inspection of facilities. The shellfish section researches and manages both commercial and recreational shellfish activities, while the Fin Fish Section provides Provincial input to marine fishery management and supplies statistical data on the fisheries industry.



Bob McMynn,
Director.

Marine Resources Branch

(Commercial Fisheries)

GENERAL

The Province's resolve to develop a strong and effective voice in the management and conservation of British Columbia's marine resources was reflected in 1974 by increased funding for research and the filling-out of a core group of professional biologists to head the resource management sections. A new section was created to serve as a Provincial voice and research body in the marine sector of fin fish management and to advise and provide support, particularly logistical, for Canadian delegations in bilateral and multilateral fisheries negotiations. The past year was one of development, with emphasis being placed on definition of objectives and planning research programs to fulfil the objectives. Particular progress was made in this regard in the Marine Plant and Shellfish Sections.

Commercial and recreational demands on the Province's marine resources are continuing their escalation as measured by the increasing and diverse demands placed on Branch services by industry in the marine resources sector, the general public, and many Federal and Provincial resource agencies. The Branch is now taking a greater role in assisting the marine resource-based industries, through consultation, by jointly funding with the Federal Government industrial product and gear development and management assistance. We are barraged by requests from the public for our bulletins and pamphlets and by prospective entrepreneurs and students requesting information on the fishing industry. As the Branch's professional contingent has grown we have taken a greater role in interagency program referrals in matters related to the marine environment.

The Law of the Sea Conference in Caracas, Venezuela, provided the ideal forum for expressing Canadian concerns regarding the 200-mile economic control zone and several other major maritime issues. The Branch was represented on the Canadian delegation to speak for the Province on these issues since the resolutions eventually passed by this international body will undoubtedly have important repercussions to British Columbia.

MARINE PLANT SECTION

The hiring of a biologist in the fall of 1973 set the stage for the Province's first active role in the management of a resource which is not only one of primary significance to the nearshore oceanic environment but one with a large, but still undeveloped, potential for enhancing the Provincial economy in the marine resources sector. The Province's marine plant resources are vast; standing stocks of the bull kelp *Nereocystis* and the giant kelp *Macrocystis* alone have been estimated at 1,000,000 tons.

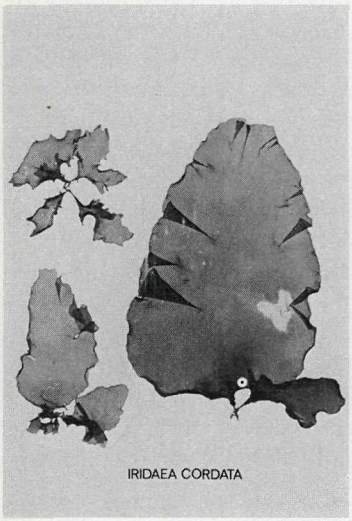
A management objective has now been outlined as a guide to our research effort; the objective is the same for all species of commercially valuable marine plants:

> ". . . to develop, through critically planned, executed, and evaluated research programs, an information base sufficient in breadth and scope to permit and control the commercial harvest of a given species on a maximum sustained yield basis."

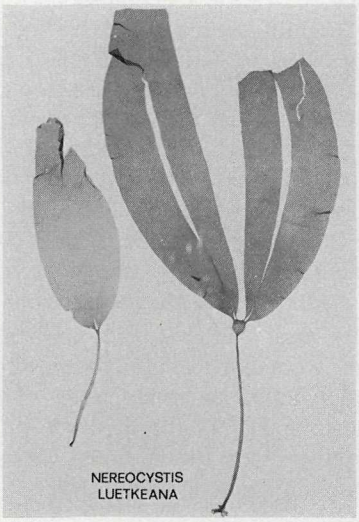
For each species this objective will be reached by phased program planning using the following general outline: A study of the biochemical make-up and how it varies seasonally and geographically; inventories of available stocks; studies of the growth and reproductive cycles and the effect of experimental harvesting on regrowth and stock recruitment; studies of the impact of larger scale harvesting on associated plant and animal species; and, where and when applicable, development of cultivation and enhancement technologies.

A certain amount of pertinent information is available for most if not all commercially valuable species; this base will be built upon as research funding and manpower permits. Studies have been commissioned on those species most likely to receive harvesting pressure. Commercial harvesting has been extremely light to date, the licensed firms being in a research and development stage paralleling that of the Section. However, as a safety factor and cognizant that existing legislation did not provide adequate control, a Federal-Provincial working group was struck to draft new legislation to govern the harvesting of marine plants.

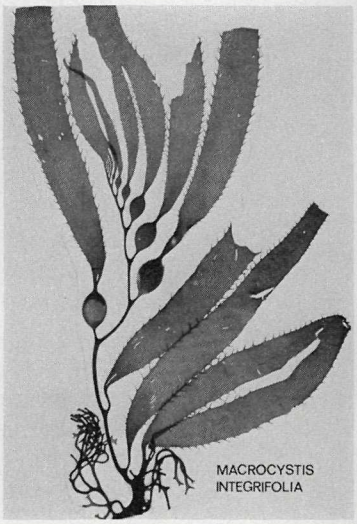
The Section also provides a consulting service to the new and developing industry. Requests have been made for information on general plan design, mechanical harvesters, and product development and diversification.



IRIDAEA CORDATA



NEREOCYSTIS LUETKEANA



MACROCYSTIS INTEGRIFOLIA

PROJECTS

Cost-shared Projects

1. Under contract, a University of Victoria team extended their inventory of the valuable carrageenin-containing red alga *Iridæa* to the northern portion of the Strait of Georgia. Known harvestable stocks in the strait total 2,800 tons annual yield. The team continued studies of seasonal growth and reproduction and of the effect of hand-harvesting on regrowth.

2. Under contract, a University of British Columbia team developed a standard method for inventorying stocks of the floating kelps *Nereocystis* and *Macrocystis*. The team subsequently applied their method to kelp beds in the Port Hardy-Malcolm Island area, finding some 13,500 tons.

3. Under contract, a second University of British Columbia research team conducted an evaluation of locally produced kelp meal as a ration component for sheep and swine. Preliminary results show that kelp meal is a beneficial food additive, primarily for its high mineral content.

Branch Project

A research team under the supervision of the Section Head initiated a study of the growth and reproduction of the giant kelp *Macrocystis*. An investigation was also made of regrowth after hand-harvesting. Preliminary results indicate that *Macrocystis* may be harvested twice during the summer-fall period.

SHELLFISH SECTION

The role of the Shellfish Section over the last year has increased and changed substantially with new objectives being defined in areas of management, development, enhancement, and extension services. These objectives are designed to provide for an increase in production and growth of the oyster industry, and to provide for the preservation and enhancement of the recreational shellfish resource.

During 1974, considerable progress was made toward the immediate objectives of this section. Major accomplishments included the assessment and enhancement of recreational shellfish areas. These assessments indicated the drastic reduction of oyster stocks in recreational areas, and initiated an enhancement program of relaying stocks from contaminated or inaccessible areas to designated recreational sites. Coinciding with these relays, inspection and evaluation of additional sites to determine suitability as recreational reserves was initiated.

Shellfish management activities were expanded, with resource inventory surveys being conducted throughout the Province. The results of these surveys will supply a biological data base for input into management decisions. The spatfall monitoring program in Pendrell Sound and Ladysmith Harbour continued to provide valuable additions to the information base necessary for the management and development of its resource.

Development activities entailed projects such as an oyster-seed development program, a tray culture project, and evaluation of suspension techniques for raft-cultured oysters. Information derived from these studies will provide additional biological and technical assistance to the industry.

The extension service activities of this section to the oyster industry consisted of continuing support under a joint Federal-Provincial cost-shared program. This

program retains the services of a secretary-manager who is endeavouring to establish a co-operative type of industry organization.

Biological and technical assistance was provided to the oyster industry and lease assessment and environmental impact surveys were conducted for different government agencies.

PROJECTS

Enhancement of Recreational Shellfish Areas

As a direct result of oyster population assessment conducted in 1973/74, an immediate need was determined for the enhancement of several areas used by recreational oyster harvesters and the establishment of additional areas to be used for recreational areas.

The recreational reserves must have good public access, approved shellfish-growing water quality with no immediate threat of contamination, and sufficient acreage of foreshore suitable for oyster-growing. So far, eight areas have been found suitable for this purpose and they are having map reserves placed over them for the use of recreational harvesters. These areas are Heriot Bay, Francisco Point, Union Bay, Nanoose Bay, Boulder Point, Yellow Point, Mill Bay, and Patricia Bay.

The enhancement program, which commenced on November 1, 1974, consists of relaying mature oysters from areas inaccessible to the public because of contamination or geographic location to recreational reserves. As of this date, 20.5 tons of oysters representing 3,170 recreational limits (25 oysters per person per day) have been relayed to these reserves:

Recreational Shellfish Reserves

Location	Amount Relayed	Area Status
Patricia Bay	2 tons	Poorly stocked.
Mill Bay	*Nil*	Poorly stocked.
Boulder Point	8.5 tons	Adequately stocked.
Yellow Point	6 tons	Adequately stocked.
Nanoose Bay	4 tons	Marginally stocked.
Union Bay	*Nil*	Adequately stocked.
Francisco Point	*Nil*	Adequately stocked.
Heriot Bay	*Nil*	Adequately stocked.

Signs have been constructed and will be erected to designate the recreational shellfish reserves and to inform the public what the daily limits are on clams and oysters.

A brochure explaining the biology of the oyster and the proper method of shucking as well as a map showing the locations of the recreational reserves has been written. This will be made available to the public through the Marine Resources Branch and other agencies of the Department of Recreation and Conservation.

Oyster Stock Assessment

Biological information on stock size and potential yield is necessary of management and regulation of the oyster resource. During 1974, assessments were conducted in areas where both recreational and commercial interests were active in harvesting shellfish. These areas included Quadra Island, Cortes Island, Desolation Sound, Baynes Sound, Denman Island, Nanaimo Harbour, Nanoose Harbour, and Ladysmith Harbour.

Food of Oysters for Relay to Recreational Area

The Marine Resources Branch during 1974 issued 90 Commercial Harvesting Permits, an increase of five over the previous year. These permits realized a production of 1,145 tons of shellstock, a decline of 455 tons over 1973. The tonnage harvested by permit from Crown foreshore represented 27 per cent of the oyster production for British Columbia, which totalled 4,292 tons of shellstock or 107,302 U.S. gallons of shucked meats. This represents a total decrease of 974 tons or 24,347 gallons of shucked meats compared to 1973.

This drastic decline in production (18.5 per cent) can mainly be attributed to a softening of the market demand for soup oysters and a shortage of marketable shellstock for the table trade.

PACIFIC OYSTER-BREEDING, 1974

Pendrell Sound

In 1974 the research and monitoring programs in Pendrell Sound were greatly expanded over those of the previous five years. The main purpose of these expanded programs, which include both biological and oceanographic studies, is to determine whether the oyster industry can continue to rely on Pendrell Sound for their seed and whether the prediction service can be improved. Results of these studies will be published as the data are analysed.

Physical conditions in Pendrell Sound in the early part of the summer of 1974 were generally unfavourable for Pacific oyster-breeding, but improved markedly in mid-summer to provide favourable water temperatures and salinities. A commercial oyster set was predicted and occurred in August. Water temperatures and salinities were monitored at six stations in the sound and at six stations in waters around East Redonda Island. Surface water temperatures were cool until mid-July and then increased because of better weather; mean surface water temperatures of

20°C or higher were recorded from July 24 to September 6, except for a seven-day period, August 20–26. Surface salinities remained above 15 per cent throughout the breeding period. Unlike the previous two years, no heavy phytoplankton blooms were observed in the sound once the surface layer was established.

Spawning first occurred in late July; a few 2-day-old larvæ were observed in surface plankton tows made on July 26. Extensive spawning occurred on July 26 or 27 since large numbers of straight-hinge larvæ were found in plankton tows made on July 29. Growth and survival of larvæ from this spawning was excellent and they provided the major part of the commercial set. Light sporadic spawning continued until mid-September.

Spatfall was monitored at eight locations; Stations 1, 2, 3, 4, 5, 6 east, 6 west, and 10. Initial settlement was recorded during the 24-hour period, August 13 and 14; maximum setting occurred August 21 and 22. All experimental cultch was removed and examined on September 17. Mean spat counts at all eight stations were over 40 per piece of Pacific oyster shell cultch; the maximum count was 298 spat per piece of cultch. Heaviest spatfalls were observed at Stations 4 and 5 in the central part of the sound. The larger spatfall at these two stations probably occurs because of the strong currents which pass by Stations 4 and 5 and hence bring more larvæ in contact with the cultch than at the other stations. In future the industry should consider the possibility of exposing cultch at these two stations rather than at the head of the sound. The maximum length of spat on September 17 at the eight stations ranged from 8–13 mm; the average spat length was less than observed in previous years but commercial cultch removed later in the fall showed the spat had grown considerably during the fall. The average spat count on commercial cultch ranged from 20–25 spat per piece of shell. A total of 300,000 strings of Philippine oyster cultch and about 75,000 strings of Pacific oyster cultch or equivalent was exposed by five companies.

Hotham Sound

Observations of Pacific oyster-breeding in Hotham Sound were continued in 1974 to determine whether the industry could use this area for seed collection, particularly if breeding failed in Pendrell Sound as in 1973.

Surface water temperatures were lower here in 1974 than in 1973. Average daily surface water temperatures of 20°C or more were not recorded until July 29 and then they occurred only sporadically until August 11. Salinities were above 16 per cent during the period of observations.

Small numbers of straight-hinge Pacific oyster larvæ were found in plankton tows taken on July 30, indicating minor spawning occurred about July 27. On August 9, moderately large numbers of 4 to 5-day-old straight-hinge larvæ were found in plankton tows which must have come from an extensive spawning on August 4 and 5. On August 21 the number of Pacific oyster larvæ was greatly reduced and most were in the mid-umbone stage. The numbers of larvæ in these tows were too few to produce a commercial set but a light set was expected.

Experimental cultch was exposed on August 21 and removed on September 16. The average number of spat on this cultch was four per piece of oyster shell.

No commercial cultch was exposed in Hotham Sound in 1974.

Ladysmith Harbour

No commercial set of Pacific oysters was recorded in Ladysmith Harbour. Surface water temperatures of 20°C or higher were recorded from July 28 to August 11. Although no spawning was reported, modest numbers of 4-day-old

Oyster Seed Panel Demonstration

straight-hinge larvæ were found in surface plankton tows on July 30. On August 6, moderately large numbers of straight-hinge and early umbone larvæ were found. On August 13 and 15, scattered populations of Pacific oyster larvæ in all developmental stages were found in surface plankton tows at six stations and a light set (up to five spat per shell) was expected. However, no spat was found on cultch exposed at the marina but some isolated light spatfall has been reported in the harbour.

Newsletter

The newsletter, which is intended to inform the British Columbia oyster industry of Pacific oyster-breeding in the Province and assist with seed collection operations, was continued in 1974; 13 editions were issued.

Oyster-seed Development Project

Roughly 200 million seed oysters are required each year to sustain a three-year rotation on oyster leases in British Columbia. Local oyster shell is readily available and is used by the oyster industry as a collecting medium for spat. This shell is heavy and costly to suspend in seed collecting areas, also, the strong bond between the young oysters and the mother shell causes mortalities of up to 25 per cent when clusters are broken up as yearlings.

Cement-coated wood veneer has proved superior to shell cultch when tested under research conditions. The purpose of this project was the further testing of veneer cultch on a semicommercial scale and under a wide variety of conditions.

Five hundred bundles of veneer cultch bearing about eight million seed oysters, averaging one quarter inch in length, was purchased with Federal-Provincial funds. More than one-half of the seed was distributed in May to 14 members of the oyster industry, the remainder is being cultured by Marine Resources Branch for eventual disposal to recreational areas.

Seed-rearing operations by the Branch were carried out in Sooke and Ladysmith Harbours. The seed panels were wired together in pairs and laid out, tent fashion, over light polypropelene rope supported by 2 by 2-inch stakes. In Sooke, oysters have reached a mean length of 1.5 inches with a few dominant oysters up to 3 inches. Minor mortalities occurred from silting on the lower parts of the panels. In Ladysmith, predation from oyster drill and seastars caused moderate losses and required labour to hand-pick the pests from panels. Growth of the oyster-seedlings in Ladysmith is slightly lower than Sooke.

Early reports from industry participants in the project indicate good growth and negligible losses in this vulnerable first year of culture.

Assessment of veneer cultch, as a possible alternative to local shell, will be made early in 1975 when overwinter mortalities can be determined.

Oyster Tray Culture Project

This three-year Federal-Provincial cost-sharing project has completed its second year of operation. Sabine Seafoods Ltd., of Lasqueti Island, the contractor assigned to evaluate the feasibility studies on tray culture of oysters, has released an interim report on the studies progress, with some observations on production problems, seed acquisition, and tray design along with some preliminary estimates of probable yield from tray culture.

Problems have been encountered with the tray design as it does not provide suitable circulation for oyster growth and also, it requires repeated cleaning to prevent fouling. New ideas as to the tray design or modifications to the present tray are being evaluated. Other aspects of the production procedure are continually being modified either to improve the efficiency of method or to reduce direct costs.

The marketing of the production has been extremely successful. Reports are most encouraging with comparisons being made to the more popular European variety in the half shell trade.

To the present time, 1,800 dozen oysters have been marketed ($1.65–$2.00 per dozen F.O.B. Vancouver) with a further 320 dozen available for immediate sale. By June 1975, 1,500 dozen will be available to market and a further 2,500 dozen by October 1975.

The major problem is meeting the increased demand from the existing markets because by January 1975, 400 dozen oysters will be needed per week over a 10-month period every year. This represents a market in excess of 16,000 dozen per 10-month year with a gross yield of $30,000 per year.

Raft Development for Shellfish Raft Culture

This project was initiated to examine alternatives for suspension of shellfish grown by raft-culture techniques. Traditionally, floatation has been provided by cedar logs. Such logs, of limited durability and recently inflated purchase costs, are being compared with rafts using aluminum pontoons, steel drums and plastic drums as floatation.

The contractor, Westcoast Mariculture Inc., is making an economic assessment on criteria of durability, susceptibility to fouling, maintenance and anchorage requirements, and general handling suitability.

Preliminary results of this study indicate that floatation is still a major charge against raft-culture operations. Plastic drums appear most favourable of the floatation materials tested.

Comparison of Floatation Methods for Raft Culture

Type of Floatation	Characteristics			
	Maintenance	Costs	Durability	Fouling
Cedar logs	Moderate	Low	Fair	Heavy
Aluminum	Minimal	High	Good	Heavy
Metal drums	Moderate	Low	Poor	Heavy
Plastic drums	Minimal	Moderate	Excellent	Moderate

Oyster Growers Management Assistance

The Federal and Provincial fisheries agencies have retained the services of a secretary-manager for an additional two years to provide direction concerning marketing, quality control, and product diversification for the oyster industry.

Consulting engineers were engaged to provide plans for a central processing plant capable of producing a wide variety of finished oyster products. A plant site in the Union Bay area was given first preference by a working committee of oyster-growers. Present cost estimates, for a plant equipped to handle annually 275,000 gallons of oysters, is about $2.6 million.

Major efforts have been toward assuring an oyster-seed supply for the industry. A co-operative venture in seed collecting in Pendrell Sound yielded about 12,000 strings of well-seeded cultch, a further 22,000 strings were purchased from a commercial seed producer. This total will satisfactorily seed about 80 acres of foreshore. Necessary handling equipment and floatation materials were purchased to increase seed collecting potential in future years.

Recent developments in the area of marketing shellfish is the establishment of brokerage outlets in California to market British Columbia produced shellfish. This new market area has shown great promise and early shipments have demonstrated favourable economic return to British Columbia producers.

FIN FISH SECTION

ABALONE—SEA URCHIN SURVEY

Under a Federal-Provincial cost-sharing arrangement, a survey of the densities and age structure of abalone and sea urchin populations was conducted on the lower east and west coasts of Vancouver Island from Nanaimo to Tofino. D. C. Miller, of Nanaimo, conducted the survey. In the final report, recreational and commercial management strategies for both species were recommended on the basis of this and previous studies. It was recommended that abalone size limits be clarified, and that densities of abalone in the area covered by the survey, especially the lower east coast of Vancouver Island were not sufficient to support a significant commercial fishery.

For sea urchins, the present size limit of 4 inches diameter was felt to be adequate. However, the effects of commercial harvesting and slow growth and erratic recruitment of these animals suggest that current management strategies should be re-examined. Two alternatives were suggested and will be discussed further with appropriate Federal fisheries staff.

PRAWN SURVEY

This Federal-Provincial cost-shared project was initiated to assess the potential for commercial prawn-harvesting in the central coastal region of British Columbia. A commercial fisherman was contracted to conduct the exploratory fishery under the direct supervision of scientists from the Pacific Biological Station at Nanaimo. As a result of this survey, two new areas were discovered which could support a commercial fishery. These two areas are in Fish Egg Inlet south of Namu and in Kwatna Inlet southwest of Bella Coola. Sustainable yields from these and secondary areas is estimated at 75,000–100,000 pounds annually.

IMPACT OF LOG HANDLING ON THE MARINE ENVIRONMENT

This study has been initiated to quantitatively assess the impact of various log handling practices on the marine environment, particularly shellfish and organisms serving as food for fishes. One site, Buckley Bay, was examined with the assistance of Careers '74 funding, in the summer of 1974. Definite impacts were observed in this study, most notably shifts in sediment composition and faunal make-up. These changes are, in large part, directly attributable to the log dumping and storage operation in this bay. Expansion of this impact assessment is planned for the future and recommendations will be prepared for protection of the marine environment.

INTERNATIONAL FISHERIES

SALMON

In addition to attendance at the annual meeting of the International Pacific Salmon Fisheries Commission, this Branch represented the Province at advisory and planning sessions and at the formal negotiations with the United States on salmon problems centred around the interception of each other's salmon. Little progress was made at these formal negotiations and as a result a major Canadian position review with respect to these negotiations was completed in November. Branch staff actively participated in this review and in preparations for further negotiations with the United States tentatively scheduled for 1975.

FISHING INDUSTRY PRODUCTION

Figures for 1974 were not complete at the time of printing, but some preliminary figures were available and indicative of some trends worthy of mention. Preliminary value of all fish landed by British Columbia fishermen in 1974 was $93,000,000 compared with the figure of $130,000,000 for 1973.

SALMON CANNING

COMMERCIAL

The canned salmon pack for 1974 was 1,427,414 48-pound cases, being 126,167 cases less than the 1973 pack of 1,553,581 cases. The sockeye pack was again high, but unlike 1973, when the chum pack was the highest for many years the total pack declined in 1974 by 183,020 cases.

Fifteen salmon canneries were licensed to operate in 1974. The locations were as follows: Skeena River-Prince Rupert area, five; Central area, one; Vancouver Island, three; Fraser River-Lower Mainland area, six.

Comparative Pack by Species (48-pound Cases)

	1973	1974
Sockeye	652,692	707,662
Chinook	11,022	20,453
Steelhead	996	1,557
Blueback	705	2,727
Coho	113,860	157,312
Pink	360,623	307,040
Chum	413,683	230,663

Sport

Four canneries designed to custom-can sport-caught fish operated during 1974. They were located at Brentwood, Nanaimo, Quadra Island, and Victoria. Production to the end of December 1974 was 215,618 cans, an increase of 108,811 cans over the previous year's total. A total of 5,194 sportsmen used these facilities, of whom 4,798 were residents and 396 nonresidents. The following number and species of fish were canned: Chinook, 7,567; coho, 15,648; pink, 216; chum, 384; sockeye, 955; steelhead, 53; and trout, 373.

HALIBUT FISHERY

Halibut production in 1974 was the lowest in over 60 years. In 1972, production peaked at 70 million pounds. In 1974, this fell to 21 million. Areas 2 and 3 had catch limits imposed of 13 and 12 million pounds respectively; these quotas were not reached.

Prices paid to fishermen were fairly high, averaging 71 cents, they were, however, less than prices in 1973 so the total value of the fishery declined from a dockside figure of $24 million to $15 million. Although the low catch and value mainly reflected poor stock conditions and the restrictions imposed by the International Pacific Halibut Commission, the decline in catch was also influenced by the reduction in fishing effort as many halibut fishermen chose to enter other fisheries, chiefly herring and salmon.

HERRING FISHERY

Approximately 49,000 tons of herring were harvested in British Columbia waters between January and June 1974. The estimated landed value was about $12 million. In this same period, 8,406,000 pounds of roe were produced in addition to 19,708,000 pounds of round-roe herring. The roe-fishery accounted for nearly all of the production value as the food-fishery did not get under way in the early part of the year due to the failure of some fishermen and the processors to agree on prices.

Herring Products Manufactured in British Columbia
January to June 1974

	Tons	Value $
Food and bait	625	125,000
Roe	4,203	18,913,500
Roe herring	9,854	4,927,075
Fish meat	3,703	1,851,300
Oil (gallons)	104,408	104,408
Totals	122,793	25,921,283

REVIEW OF FISHERIES PRODUCTION, 1973

GENERAL

The wholesale value of all British Columbia fish products marketed reached a record $285 million, compared to the 1972 figure of $159 million, the previous high record for the Province.

Never before have returns to both fishermen and processors been so high. Favourable markets and continuing high prices for all types of fish combined to make 1973 a record year.

As marketed wholesale, the principal species were salmon, with a value of $221.6 million, herring valued at $34.6 million, and halibut with a value of $9.613 million.

Until late in 1971, only small quantities of herring were taken for human consumption. However, with increasing demands for herring roe fishermen landed 123 million pounds of herring for which they received a record $11 million, about $3.6 million more than the previous record set in 1959. The wholesale value of all herring products was $34.6 million, the highest value ever, surpassing the 1972 record by more than $22 million. Herring roe accounted for 70 per cent of the total wholesale value, herring frozen for food 20 per cent.

In 1973 the total wholesale value of shellfish amounted to $4.394 million. The value of the clam production was $393,000; oyster production $1.081 million; and crab and shrimp production $2.920 million.

Tuna landings of 2.799 million pounds valued at $1.224 million were 5 million pounds and $6.6 million less than 1972.

FISHING-VESSELS

During 1973 the fishing fleet of British Columbia was comprised of drum seiners, 271; table seiners, 12; gillnetters, 2,233; trollers, 1,662; trawlers, 11; and longliners, 37.

SALMON-CANNING

Fifteen salmon canneries were licensed to operate in 1973. The locations were as follows: Skeena River-Prince Rupert area, five; Central area, one; Vancouver Island, three; Fraser River-Lower Mainland area, six. The new Oceanside Cannery in Prince Rupert was built to replace the original Oceanside Cannery destroyed by fire in 1971.

The total canned-salmon pack for British Columbia, according to the annual returns submitted to this Branch by canners licensed to operate in 1973, amounted to 1,550,114 cases, an increase of 377,362 over the 1972 pack of 1,172,752 cases.

Sockeye salmon—The 1973 sockeye pack was 642,601 cases. This was an increase of 329,694 over 1972's total of 312,907 cases.

Sockeye fishermen had a bumper year in 1973 with more than a 150 per cent increase in the landed weight over the previous year at 47.4 million pounds round weight landed. This compares with 20.9 million pounds landed in 1972. The increase in sockeye prices gave more than a 250 per cent increase in wholesale value. Sockeye was by far the largest pack in 1973.

Pink salmon—Pink salmon landings declined from 39.9 million pounds in 1972 to 29.3 million pounds in 1973. But with the average price per pound for

pinks increasing from 16.6 to 26.9 cents per pound from 1972/1973 this kept the landed value up at $7.8 million from $6.6 million in 1972. Wholesale value moved from 20.6 million in 1972 to $27 million in 1973.

This year's pack of 355,695 cases was 129,469 down from the previous year's pack of 485,164 cases.

Chum salmon—Chum salmon showed a good increase again in 1973. Not the tremendous increase of 1972 stemming from the large return to the Nitinat but a respectable jump from 66.5 million pounds in 1972 to 72.2 million pounds in 1973.

The 1973 pack was 423,364 cases, 144,913 more than the 1972 pack of 278,451 cases.

Coho salmon—Coho landings were up slightly from 23.2 million pounds in 1972 to 24.8 million pounds in 1973. The average price rose from 47.6 to 76.2 cents per pound. This jumped the wholesale value from $16.6 million to $27.8 million.

The 1973 pack was 116,197 cases an increase of 32,442 cases over the 1972 pack of 83,755 cases.

Chinook salmon—Landings of Chinook salmon declined from 18.4 million pounds in 1972 to 16.6 million in 1973. The 1973 pack of 11,258 cases was worth $776,449 compared to 1972's 11,608 cases worth $463,882.

Steelhead—The 1973 steelhead pack amounted to 999 cases. Although steelhead are not salmon, some are canned each year, principally those caught incidental to fishing other species.

OTHER CANNERIES AND PROCESSORS

Shellfish and specialty products—In 1973, seven shellfish canneries were licensed to operate in British Columbia and produced the following packs: Clams, 53 cases; crabs, 771 cases; clam chowder, 7,981 cases; oyster soup, 46 cases; oyster stew, 8,798 cases. Sundry processing plants produced the following: Creamed salmon, 30,894 cases; salmon chowder, 4,223 cases; creamed tuna, 3,713 cases; salmon milts, 109,744 pounds; sea urchin roe, 56,264/10-ounce plates; herring in oil, 34,151 cases; herring in tomato sauce, 211 cases; fish and chips, 73,238/20-ounce packages and 194,973 cases; breaded oysters, 12,000 pounds; breaded herring, 768 pounds.

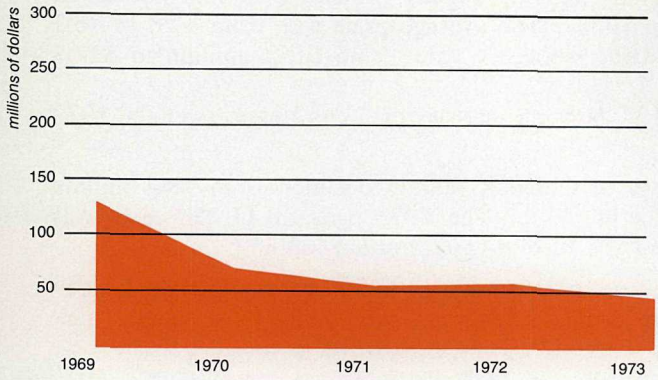
Fish-curing—Twenty-five smokehouses processed the following: Herring (kippered, 39,850 lb.; plain, 37,114 lb.; snax, 775 lb.); cod, 724,427 pounds; salmon, 989,190 pounds; oysters, 262 cases; steelhead, 299 pounds; trout, 23 pounds; mackerel, 10,000 pounds; eels, 300 pounds.

Pickled herring—Pickled herring production in 1973 amounted to 19,233 cases of 12/12-ounce jars; 886 cases of 12/16-ounce jars; 4,038 cases of 12/32-ounce jars; 2,619 cases of 6/56-ounce jars; 2,704/128-ounce jars; 47/10-pound pails; 1,260/20-pound pails; 81/50-pound pails.

Miscellaneous production—Herring roe, 8,503,000 pounds; mild-cured salmon, 489,000 pounds; salmon eggs packed in salt, 4,715,000 pounds; frozen food herring, 27,566,000 pounds; herring-oil, 2,438,000 pounds; herring-meal, 4,716 tons.

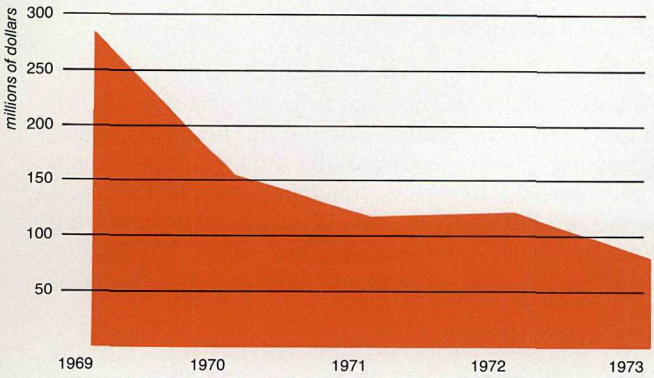
SUMMARY TABLES, 1969–73

Table I—Total Landings and Effort



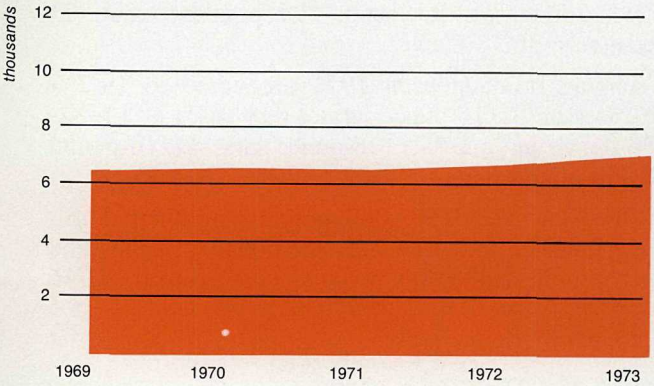
Landed Value of Fish and Fish Products

	$
1969	44,565,000
1970	56,909,000
1971	55,664,000
1972	70,817,000
1973	130,400,000



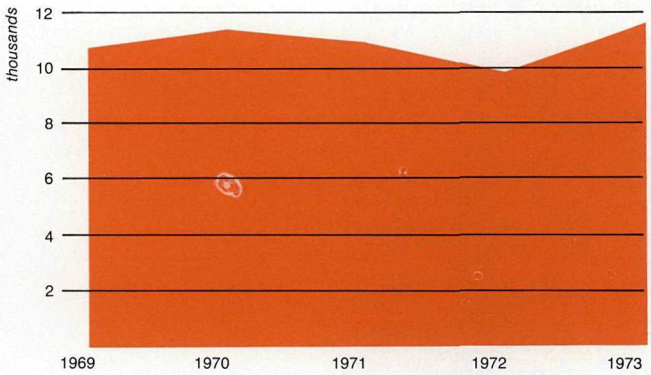
Wholesale Value of Fish and Fish Products

	$
1969	83,000,000
1970	123,280,000
1971	120,100,000
1972	159,132,000
1973	285,000,000



Number of Licensed Boats

1969	7,181
1970	6,975
1971	6,698
1972	6,670
1973	6,589



Number of Licensed Fishermen

1969	10,942
1970	11,647
1971	11,015
1972	9,902
1973	11,717

Table II—Licences Issued and Revenue Collected, 1970–74, Inclusive

Licence	1970		1971		1972		1973		1974	
	Number	Revenue	Number	Revenue	Number	Revenue	Number	Revenue	Number	Revenue
		$		$		$		$		$
Salmon cannery	17	6,800	14	5,600	15	6,000	15	6,000	15	6,000
Herring cannery	-----	----------	-----	----------	1	25	1	25	1	25
Herring reduction	-----	----------	-----	----------	2	800	2	800	3	1,200
Tierced salmon	3	300	3	300	3	300	3	300	3	300
Fish cold storage	19	3,275	23	3,550	27	3,825	30	4,075	38	4,975
Fish-processing	64	2,320	63	2,500	67	2,900	91	5,300	117	8,090
Shellfish cannery	7	700	6	600	7	700	7	700	6	600
Tuna cannery	3	300	1	100	2	200	2	200	1	100
Fish-offal reduction	5	250	5	250	4	200	4	200	5	250
Herring dry-saltery	2	50	1	25	-----	----------	1	25	1	25
Fish-buyers	358	17,900	300	15,000	324	16,200	352	17,600	407	20,350
Pickled herring	2	50	2	50	2	50	2	50	2	50
Sport-caught fish cannery	3	75	3	75	3	75	4	100	4	100
Aquatic plant harvesting	51	2,550	51	2,550	25	1,250	27	1,350	11	550
Aquatic plant processing	1	200	-----	----------	-----	----------	1	200	-----	----------
Dogfish reduction	-----	----------	-----	----------	-----	----------	2	100	2	100
Salmon dry-saltery	-----	----------	-----	----------	-----	----------	1	25	1	25
Oyster-picking permits	107	1,070	131	1,310	94	940	85	850	92	920
Province of B.C. receipts	309	2,313	250	3,014	153	1,751	149	3,371	388	2,787
Totals	951	38,153	853	34,924	729	35,216	779	41,271	1,097	46,447

Table III—Species and Value of Fish Caught in British Columbia, 1969–73, Inclusive

	1969	1970	1971	1972	1973
	$	$	$	$	$
Salmon	57,982,000	99,597,000	96,926,000	114,349,000	221,642,000
Herring	559,000	682,000	2,256,000	12,612,000	34,641,000
Halibut	13,814,000	14,025,000	11,367,000	16,904,000	12,963,000
Crabs and shrimps	2,460,000	1,775,000	1,303,000	1,730,000	2,920,000
Lingcod	920,000	1,038,000	1,003,000	981,000	1,266,000
Grey cod	937,000	752,000	1,299,000	3,428,000	3,128,000
Oysters	856,000	590,000	575,000	798,000	1,081,000
Sole	1,352,000	1,819,000	1,829,000	1,504,000	1,796,000
Black cod	275,000	226,000	219,000	806,000	896,000
Clams	226,000	457,000	503,000	759,000	393,000
Tuna	1,090,000	984,000	1,499,000	3,088,000	1,618,000
Other species	2,488,00	1,335,000	1,310,000	2,173,000	2,653,000
Totals	82,959,000	123,280,000	120,089,000	159,132,000	284,997,000

Table IV—British Columbia Salmon Pack, 1969–73, Inclusive, Showing Areas Where Canned

(48-pound cases)

1969

Species	Area		Total
	Fraser Area and South Coast	North Coast	
Sockeye	253,458	106,149½	359,607½
Red spring	1,402	573½	1,975½
Pink spring	1,446½	823½	2,270
White spring	656	400	1,056
Steelhead	295½	289½	585
Blueback	2,146	.....	2,146
Coho	39,046½	16,754½	55,801
Pink	109,830	44,358	154,188
Chum	36,212	10,312	46,524
Totals	444,492½	179,660½	624,153

1970

Sockeye	279,009½	116,596½	395,606
Red spring	826	348	1,174
Pink spring	4,966	1,037	6,003
White spring	2,205½	641½	2,847
Steelhead	225	306	531
Blueback	2,881	.....	2,881
Coho	62,489	49,185	111,674
Pink	212,996	447,781	660,777
Chum	100,411	141,978½	242,389½
Totals	666,009	757,873½	1,423,882½

1971

Sockeye	439,031	129,725	568,756
Red spring	521½	506½	1,028
Pink spring	5,571	1,630½	7,201½
White spring	2,802½	621½	3,424
Steelhead	727	574	1,301
Blueback	5,608	.....	5,608
Coho	174,640	41,215	215,855
Pink	359,041½	143,282½	502,324
Chum	24,207½	74,300½	98,508
Totals	1,012,150	391,855½	1,404,005½

1972

Sockeye	199,890½	113,016½	312,907
Red spring	927	874½	1,801½
Pink spring	4,292	2,047½	6,339½
White spring	3,024½	442½	3,467
Steelhead	393½	473½	867
Blueback	.....	.....	.....
Coho	52,878½	30,877	83,755½
Pink	225,502	259,662	485,164
Chum	187,415	91,036	278,451
Totals	674,323	498,429½	1,172,752½

Table IV—British Columbia Salmon Pack, 1969–73, Inclusive, Showing Areas Where Canned—Continued

(48-pound cases)

1973

Species	Area		Total
	Fraser Area and South Coast	North Coast	
Sockeye	470,960	171,640½	642,600½
Red spring	367	548	915
Pink spring	4,783½	1,656½	6,440
White spring	3,552	351½	3,903½
Steelhead	788½	210½	999
Blueback	705	.....	705
Coho	98,610½	16,881½	115,492
Pink	280,047½	75,647½	355,695
Chum	305,732	117,631½	423,363½
Totals	1,165,546	384,567½	1,550,113½

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1975