PROVINCE OF BRITISH COLUMBIA

ANNUAL REPORT 1975-76

British Columbia Department of Recreation and Conservation

HON. GRACE M. McCARTHY, *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

OUTDOOR RECREATION BRANCH

INFORMATION AND EDUCATION BRANCH

FOR THE YEAR ENDED MARCH 31, 1976

The Honourable Grace M. McCarthy,
Minister of Recreation and Travel Industry.

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 March 31, 1976.

GRACE M. McCARTHY
Minister of Recreation and Travel Industry

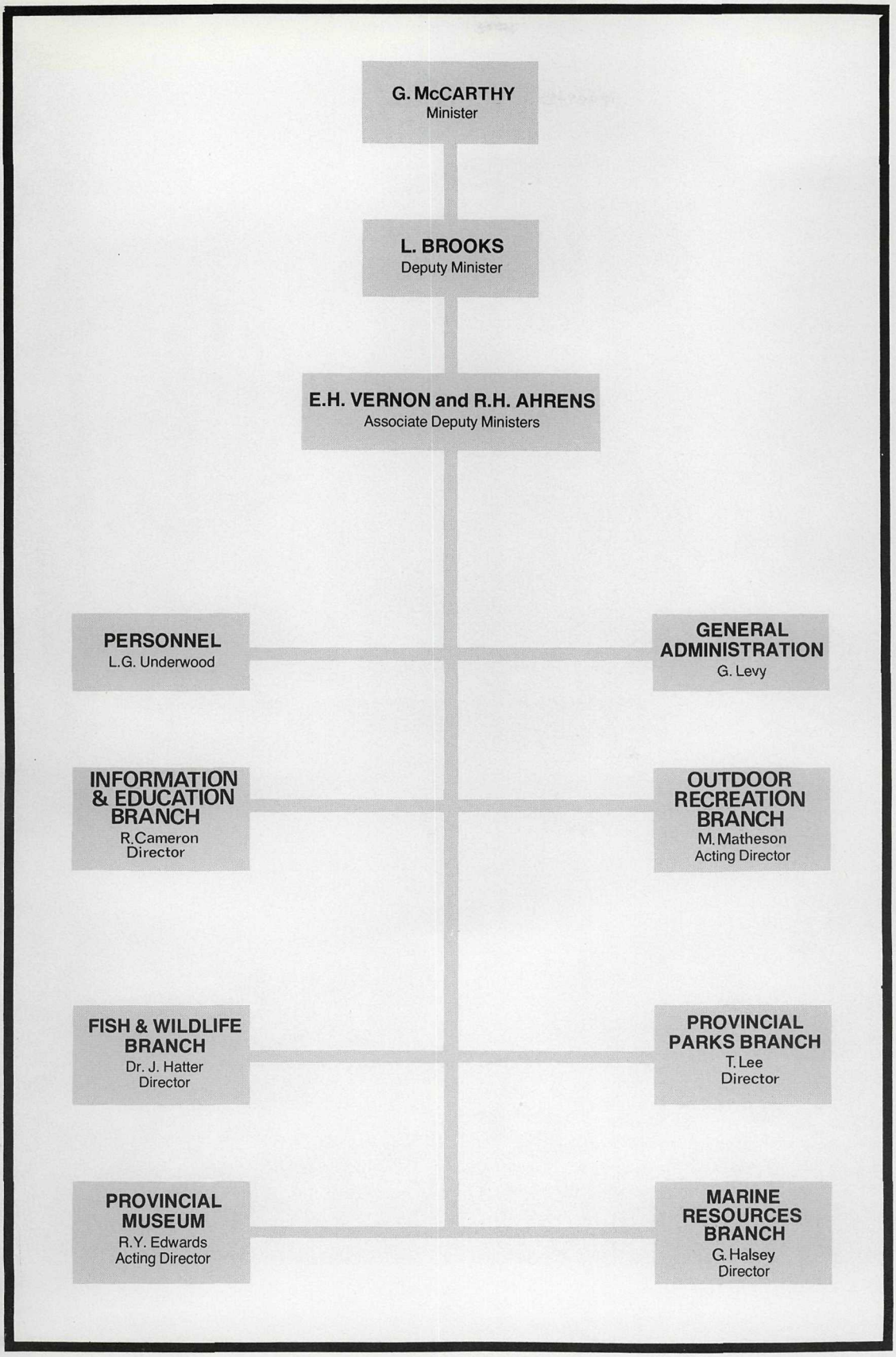
Victoria, B.C., October 1976.

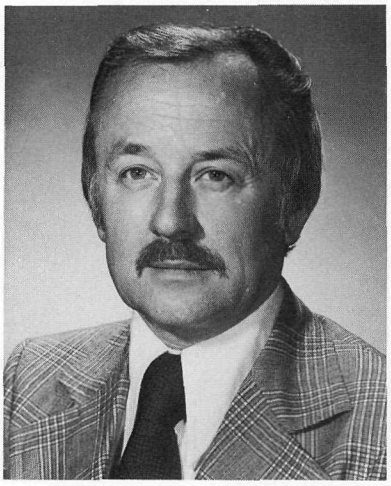
To the Honourable GRACE M. MCCARTHY,
Minister of Recreation and Travel Industry.

MADAM: I have the honour to submit the Annual Report of the Department of Recreation and Conservation for the year ended March 31, 1976.

LLOYD BROOKS
Deputy Minister of Recreation and Conservation

Victoria, B.C., October 1976.


G. McCARTHY
Minister
L. BROOKS
Deputy Minister
E.H. VERNON and R.H. AHRENS
Associate Deputy Ministers
PERSONNEL
L.G. Underwood
GENERAL ADMINISTRATION
G. Levy
INFORMATION & EDUCATION BRANCH
R. Cameron
Director
OUTDOOR RECREATION BRANCH
M. Matheson
Acting Director
FISH & WILDLIFE BRANCH
Dr. J. Hatter
Director
PROVINCIAL PARKS BRANCH
T. Lee
Director
PROVINCIAL MUSEUM
R.Y. Edwards
Acting Director
MARINE RESOURCES BRANCH
G. Halsey
Director



Lloyd Brooks,
Deputy Minister.

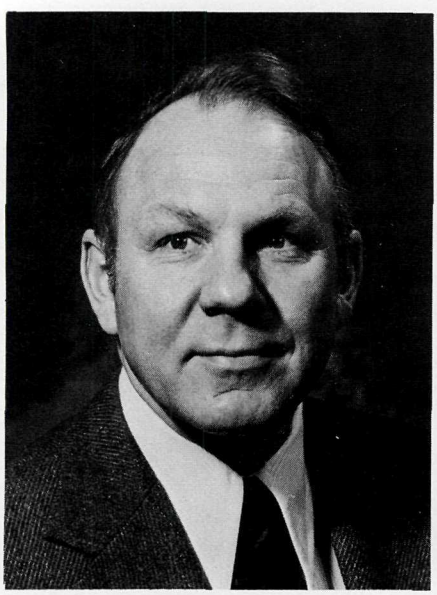
The Department of Recreation and Conservation, during the time of this Report, consisted of the Fish and Wildlife Branch, Parks Branch, Museum Branch, Marine Resources Branch, Outdoor Recreation Branch, and Information and Education Branch. It has an over-all responsiblity for living, recreational, and cultural resources in British Columbia. As such the Department complements and works closely with other departments of Government which have a primary responsibility for the commercial and industrial uses of natural resources, assuring an approach to integrated resources management where optimum benefits to the people of British Columbia are the objective.

Although the results of this Department's efforts and expenditures are not always measurable in monetary terms, nevertheless a substantial direct and indirect dollar return to the people of British Columbia is evident. However, the primary contribution of the Department of Recreation and Conservation must surely be to guarantee that this and future generations will always have abundant fish and wildlife populations and superb recreational and cultural resources to enhance their lives, even in the face of expanding population and necessary industrial and resources development.

This Report spells out how the Department is accomplishing the primary objective. It shows that all branches have been extremely active during the year in response to Governmental policies and varied public demands. There have been some substantial advances and accomplishments, such as the establishment of a new Outdoor Recreation Branch, a new Information and Education Branch, effective involvement of both Marine Resources Branch and Fish and Wildlife Branch with Federal fisheries in planning a major Salmonid Enhancement Program, significant accomplishment in preparation of vital resource folios in co-operation with other departments, opening of the major new Cypress Bowl Park, establishment of the 1.6-million-acre Spatsizi Wilderness Park, the maiden voyage of the Provincial Museum Train, and many other worth-while accomplishments.

The enthusiasm of the Department was dampened by the restraints on vitally needed staffing and mid-year reduction in funding reflecting the turn-down in the British Columbia economy. Negotiated union agreements further seriously reduced Departmental capability to provide the level of public service deemed necessary. On the positive side these set-backs served as a challenge to sharpen our performance and I am pleased to say the Department as a whole responded well.

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, and the Personnel Section. 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, acts as senior Departmental liaison on broad Governmental and interdepartmental issues, and provides 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.

ACCOUNTS AND PAYROLL

This Division provides a central co-ordinating system involving policy and executive directions for all Departmental financial support services, which includes accounts payable, accounts receivable, and payroll functions.

This Division also provides a systems design group capable of developing manual and computer-based information systems for all branches of the Department, budget preparation and control, and training seminars relating to accounting procedures.

During the year 1975 the Payroll Section processed pay for a minimum of 1,184 Departmental staff, both regular and seasonal, and a maximum staff of 3,073. There was considerable additional work involved in payroll during 1975 due to many pay adjustments which occurred as a result of union negotiations; however, these were properly processed to meet all staff requirements.

In the Accounts Payable Section, we established a new system enabling this section to process all accounts payable without undue delay, and we feel we have one of the most efficient systems in the Government.

In summary, during the 1975/76 fiscal year, we were able to maintain close liaison with all branches of the Department to assist with many accounting and expenditure problems and we feel that we have implemented guidelines to meet the Government's policy requirements plus assisting in maintaining the branches' expenditures with the allotted budget.

PERSONNEL

Administratively, a number of improvements were made. A comprehensive system for establishment control was completed. Extensive work in the development of job descriptions and organizational charts was undertaken.

Decentralization of some personnel functions has resulted in the documentation of new staff being handled by branch headquarters or field offices. In addition, sick and holiday leave records are now completely maintained at the branch level.

Treasury Board restrictions reduced recruitment activity to some degree. The following appointments of major importance took place within the Department:

Branch	Appointed	Date	Previous Director
Director, Information and Education	R. Cameron	Nov. 15/74	(New branch)
Director, Provincial Museum	Y. Edwards	Apr. 1/75	Dr. B. Foster
Director, Provincial Parks	T. E. Lee	July 7/75	R. Ahrens
Director, Marine Resources	G. Halsey	Sept. 5/75	R. McMynn

The Careers '75 Program provided an opportunity for experimentation with new programs while giving meaningful summer employment to approximately 800 students.

Group or organizations reviews have been the outstanding feature of the classification program in 1975/76. This was reflected in a continuing emphasis on considering the "total effect" of organizational changes rather than pursuing individual position reviews.

Major reviews completed include:

Regional Office Managers, Fish and Wildlife Branch;

Accounts Office, General Administration;

Construction Staff;

Technical Assistant Series.

Labour Relations had a busy year with renegotiation of the BCGEU Master Agreement, the completion of negotiations for the Licensed Professionals Master Agreement, and numerous component negotiations.

Perhaps the key highlight in Labour Relations during this past year was the establishment of two Departmental bargaining committees—one for the Environment, Resources, and Conservation Component and one for the Educational and Scientific Component. Two members of each committee will represent the Department at the bargaining sessions with management members of other departments. This is important as we now have input for the individual needs of our Department.

A Departmental Staff Training Committee was established in 1975, which functioned effectively by analysing some of the current training programs as well as sponsoring several training programs. To assist in analysing the staff training needs of the Department, the committee sent a questionnaire to all staff. Some activities included a seminar on Orientation of New Employees, two seminars on Occupational Health, and a senior management seminar on Management of Time.

The following employees were admitted to the Executive Development Training Program and Correspondence Course in Public Administration:

D. M. Rogers, Parks Branch—Executive Development;

M. Krause, General Administration—Public Administration;

P. Morberg, Marine Resources—Public Administration.

L. G. Underwood, the Director of Personnel Services, received his diploma for the three-year Executive Development Training Program.

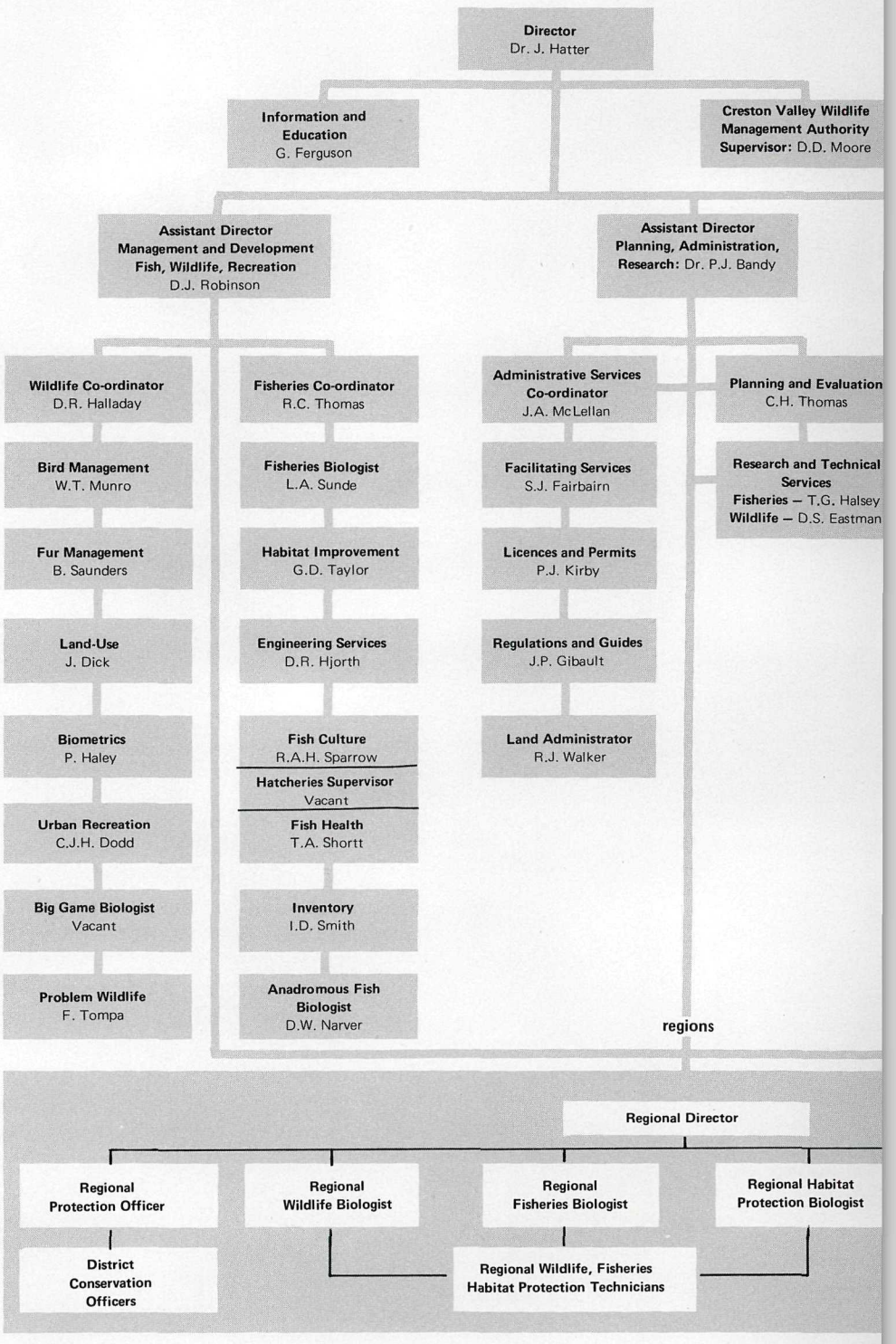
An Accident Prevention Program was initiated within the Department in 1975. A Departmental committee was formed and initial provisions for funds and staff proposed. The Department of Recreation and Conservation won the Premier's Safety Award for Safety Achievement (given to the department with the best percentage improvement in its safety record compared with the preceding year), which marks the third time we have won the award, the other years being 1971 and 1973. In addition, the Fish and Wildlife Branch won a Premier's Safety Award for a major operating unit with the best improvement.

The following employees received continuous service awards in 1975:

Gordon L. Levy, Departmental Comptroller (35 years);
Charles M. Darkis, Parks Branch (25 years);
Ray Lowrey, Parks Branch (25 years);
John V. Mackill, Fish and Wildlife Branch (25 years);
Ernest H. Samann, Fish and Wildlife Branch (25 years).

Fish & Wildlife Branch

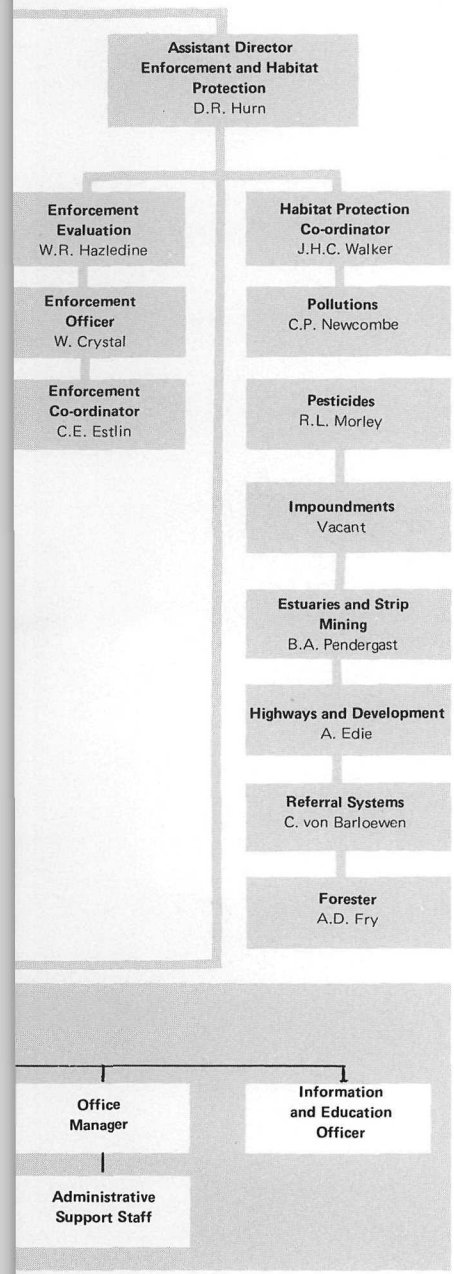
The Fish and Wildlife Branch is responsible for the protection and management of Provincial fish and wildlife resources to ensure sustained benefits from these resources for the people of British Columbia. To accomplish this, the Branch engages in research and inventory, the protection of land and water 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
G. Ferguson
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
Bird Management
W.T. Munro
Fur Management
B. Saunders
Land-Use
J. Dick
Biometrics
P. Haley
Urban Recreation
C.J.H. Dodd
Big Game Biologist
Vacant
Problem Wildlife
F. Tompa
Fisheries Co-ordinator
R.C. Thomas
Fisheries Biologist
L.A. Sunde
Habitat Improvement
G.D. Taylor
Engineering Services
D.R. Hjorth
Fish Culture
R.A.H. Sparrow
Hatcheries Supervisor
Vacant
Fish Health
T.A. Shortt
Inventory
I.D. Smith
Anadromous Fish Biologist
D.W. Narver
Administrative Services Co-ordinator
J.A. McLellan
Facilitating Services
S.J. Fairbairn
Licences and Permits
P.J. Kirby
Regulations and Guides
J.P. Gibault
Land Administrator
R.J. Walker
Planning and Evaluation
C.H. Thomas
Research and Technical Services
Fisheries – T.G. Halsey
Wildlife – D.S. Eastman
regions
Regional Director
Regional Protection Officer
District Conservation Officers
Regional Wildlife Biologist
Regional Fisheries Biologist
Regional Wildlife, Fisheries Habitat Protection Technicians
Regional Habitat Protection Biologist

fish & wildlife branch

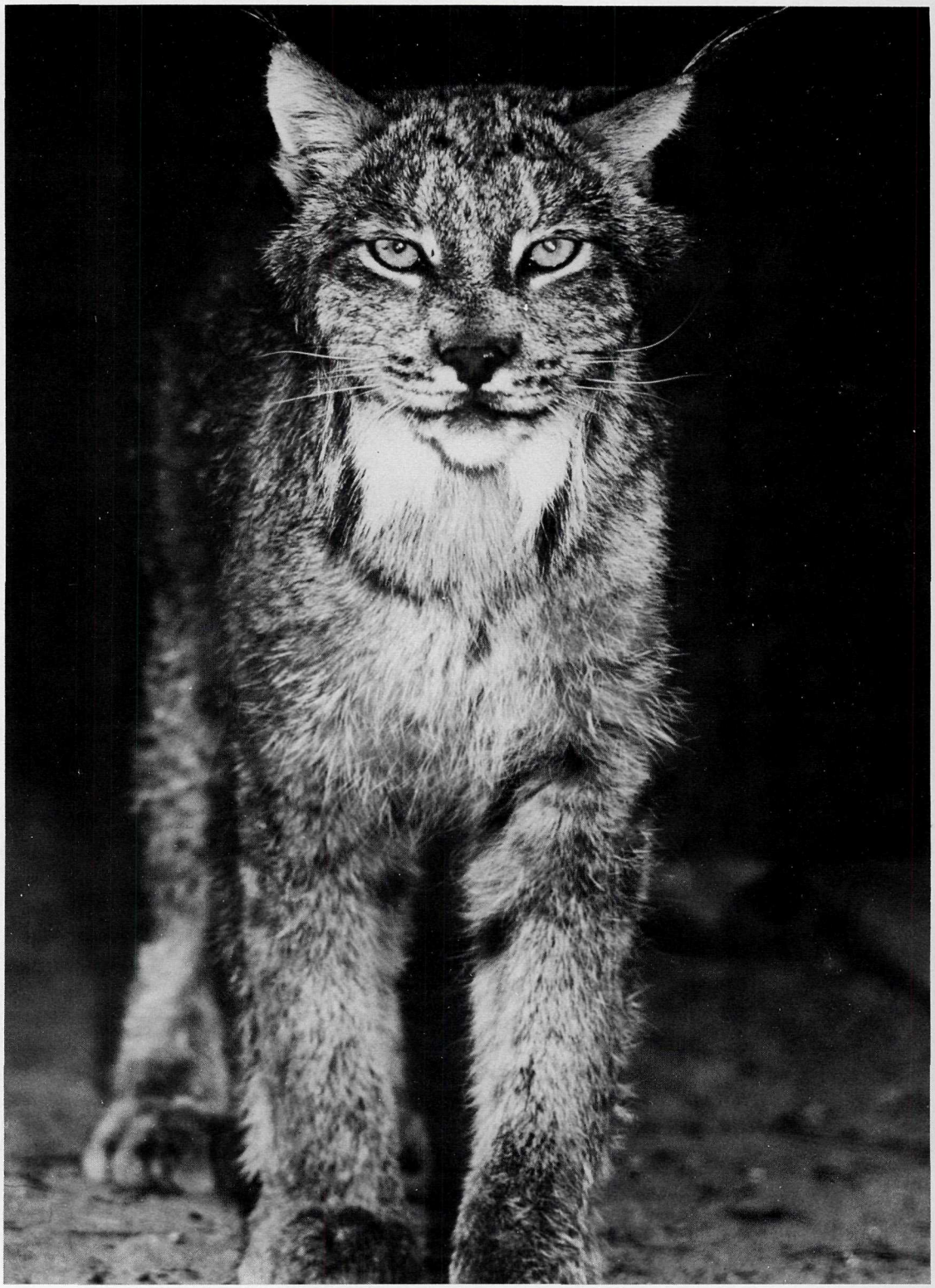
The management responsibilities of the Fish and Wildlife Branch are divided into five main areas. The fisheries management group are responsible for the management and enhancement of the Provincial freshwater sport fishery. The wildlife management group have an equivalent role in the management of Provincial 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.



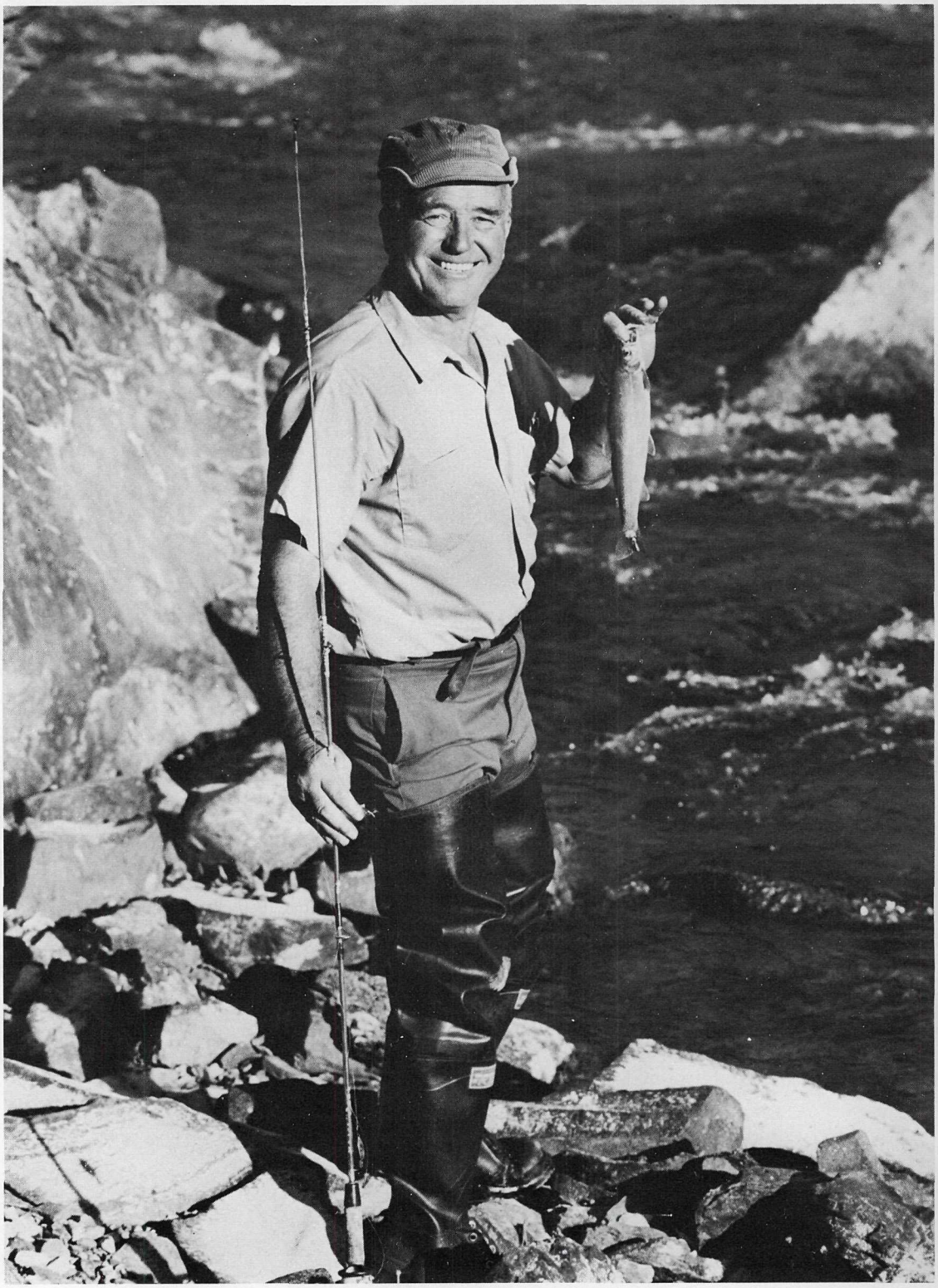
REGION	REGIONAL OFFICE	REGIONAL DIRECTORS
Vancouver Island	Nanaimo	J.C. Lyons
Lower Mainland	Burnaby	G.A. West
Thompson-Okanagan	Kamloops	G.E. Stringer
Kootenay	Nelson	G.F. Hartman
Cariboo	Williams Lake	I.L. Withler
Skeena	Smithers	D.J. Spalding
Omineca-Peace	Prince George	R. Goodlad

59 District Offices



1975/76 HIGHLIGHTS OF THE FISH AND WILDLIFE BRANCH

- A Federal-Provincial Memorandum of Understanding was signed to initiate a program designed to provide a substantial increase in the salmon and sea-run trout fisheries of coastal British Columbia. This initiative is referred to as S.E.P. or Salmonid Enhancement Program.
- Thirty-three Resource Folios were completed compared to 12 in 1974/75.
- A co-ordinated range use program in the East Kootenay was directed at solving long-standing conflicts in range use between cattle and big game.
- Over 4,500 acres of land were acquired for wildlife protection and management, bringing the total area under reserve for conservation purposes to 2,040,015 acres.
- The Fish and Wildlife Branch became the British Columbia agency responsible, under a newly ratified International Convention, for the protection of wildlife endangered or threatened by commerce.
- A completely new and innovative hunting regulations booklet was introduced.
- The Province was divided into 217 geographical wildlife management units to facilitate the application of localized seasons.
- New legislation was passed to further humane or low-stress trapping of fur-bearers.
- Special Licence Hunting Areas in the Lower Mainland increased from five to nine as a result of co-operative arrangements with several municipalities.
- Construction of the new Abbotsford Trout Hatchery began early in the year.
- An additional 290 Canada geese were released between Port Coquitlam and Hope, bringing the flock total to about 2,000 birds.
- A research study undertaken by the University of Victoria showed that physical fitness gains from hunting are maintained for about 13 weeks after the season.
- Wind-operated "pondmills" were installed and operated with good initial success to prevent winter kill of trout in the Merritt and Kamloops area.
- A record 9,231 students graduated from the Conservation and Outdoor Recreation Education (CORE) Program.
- The Summer Outdoor Recreation and Fishing Program accommodated 488 underprivileged children, an increase of 165 over 1974.
- The Information and Education Section experienced its heaviest year with 200 news releases and 31,000 letters received. Of the latter, 16,000 dealt with the leg-hold trap.
- About 7,000 visitors to the Creston Valley Wildlife Management Area enjoyed a full program of outdoor activities such as nature walks and canoe trips.



J. Hatter,
Director.

Fish & Wildlife Branch

The allocation of funds to the Fish and Wildlife Branch reached a record $9,030,078, exceeding the 1974 figure by $1,951,456. A comparison of revenue, however, reveals that income was down about a quarter of a million dollars. Revenue from resident hunters, anglers, and nonresident fishermen showed a small increase over the preceding year. Nonresident hunting revenue, on the other hand, declined significantly as a result of a 27-per-cent decline in nonresidents.

In 1975/76 the Fish and Wildlife Branch experienced new challenges and made some significant advances. An exciting new area of involvement has been our participation in early stage planning of the Federal-Provincial Salmonid Enhancement Program. It has been most gratifying to see the way our fisheries staff have reacted to the potential impact of massive salmon enhancement upon anadromous trout species. At the same time, the enthusiasm for applying enhancement principles to anadromous trout clearly indicates support for the goal of improving sport fishing in our coastal rivers.

On a less positive side, the Branch is experiencing increased difficulties in habitat protection work, especially in resource folio planning. It now appears that our involvement in folios must be modified considerably due to less than adequate capability in the inventory and data gathering function. Notwithstanding this, in excess of 30 resource folios were completed, compared to only 12 in 1974. In addition, regional staff remain active on Regional Resource Management Committees.

A new program of co-ordinated range use was introduced in the East Kootenay and expanded to other areas. This initiative holds great promise for solving long-standing conflicts with cattle and other uses of lands upon which game animals depend.

Again this year the Branch was active in the acquisition and development planning of lands acquired for wildlife protection and management. Over 4,500 acres were acquired, bringing the total acreage held under various tenures to 2,046,000.

The hunting regulations synopsis was radically changed this year. A completely new format, using maps and a minimum of textual presentation, marked something completely new in setting forth regulations governing the harvest of game species. This major change, which had to be implemented totally within one year, met with only slight criticism even though there were a number of technical imperfections due to difficulties encountered in changing the style of presentation. Almost three years of planning went into the delineation of the 218 management units which replaced the former 28 management areas. The new units now make it possible to devise hunting regulations better suited to local conditions of game abundance, access, and hunting pressure. This benefits the hunter by contributing to the goal of improving opportunities for public use and enjoyment of our wildlife resources.

Another significant advance has been the Branch's involvement in the broad area of humane trap development, low-stress trapping methods, and trapper education. The appointment of a fur management co-ordinator has made it possible, at long last, to give the proper attention due our fur resources.

After several years of planning and pre-construction studies, the Abbotsford Trout Hatchery is almost a reality. When operational, it will contribute significantly to public enjoyment of sport fishing, not only in our coastal lakes but in the Interior as well.

Further progress was made in the development of intensive management and hunting opportunities in the Lower Fraser Valley. Five more municipalities agreed to hunting by special licence, further testifying to the fact that carefully controlled hunting is compatible with other uses of farm lands in the Fraser Valley. This program will realize added benefits in the future as the expanding introduced population of Canada geese will be controlled by carefully planned hunting.

The level of law observance appeared to change little during the past year. The increase in prosecutions was believed to be the result of improved enforcement capability involving radios, auxiliary staff, and increases in permanent Conservation Officers. (Revenue from fines increased by about $10,000.)

Conservation and Outdoor Recreation Education Program (CORE) graduated in excess of 9,000 students, setting a new record for the reporting period. Opportunities for outdoor recreation and education on the lands of the Creston Valley Wildlife Management Area are becoming recognized and appreciated. Some 7,000 visitors enjoyed a full program of outdoor activities, including nature walks and canoe trips.

In summary, 1975/76 was a year of intense activity in the Fish and Wildlife Branch. In its many endeavours, the improved capability of the Branch was directed at meeting its obligations to the people and to the fish and wildlife resources of the Province.

FISHERIES MANAGEMENT

British Columbia enjoys a bountiful natural endowment of freshwater sport fishery resources in terms of both abundance and variety. These resources are a gift of nature in the sense that society has had to pay few if any initial costs of creation or development. However, utilizing and maintaining these resources becomes increasingly costly, both directly and indirectly. Direct costs result from the development and enforcement of regulations, production of hatchery fish, improvement and protection of fish habitat, and the continuing need for a more complete inventory of the fishery resource. Indirect costs are associated with activities of other resource users such as hydro development, agriculture, and mining, where the developers are asked to incur extra costs to avoid or reduce detrimental effects on fish and their habitat. These indirect costs have been rising rapidly.

During the reporting period (15 months) it is estimated that approximately 5 million days of sport fishing were enjoyed by over 400,000 anglers. About 88 per cent of this represents activity of British Columbia residents, the balance about equally divided between visiting anglers from other parts of Canada, the United States, and elsewhere.

ANADROMOUS FISHERIES MANAGEMENT

Steelhead Harvest Analysis

Information for the 1974/75 Steelhead Harvest Analysis was obtained from a postcard questionnaire survey of anglers who purchased steelhead licences.

Of 24,399 steelhead licensees in 1974/75, 16,321 were mailed questionnaires and 7,677 responded. An estimated 16,469 (68.8 per cent) of the 24,399 licensed steelhead anglers actually fished; and of those who fished, an estimated 7,296 (46.5 per cent) caught one or more steelhead.

A Summary of the 1974/75 Steelhead Angling Effort and Catch Rate

Angling Area	Angler Units	Days Fished	Kill	Released	Kill/ Day	Catch/ Day[1]
Vancouver Island	11,073	58,239	11,144	9,622	0.19	0.36
Lower Mainland	10,222	76,079	5,635	4,559	0.07	0.14
Kamloops	1,412	7,258	1,052	304	0.15	0.19
Cariboo-Central Coast	2,312	11,339	2,988	3,699	0.28	0.72
North Coast	6,898	39,580	5,921	5,138	0.15	0.29
Queen Charlotte Islands	587	3,061	925	422	0.29	0.43
Provincial total	32,721	196,751	27,807	23,845	0.14	0.28

[1] Kill plus release.

It is of particular interest that of an estimated 51,652 steelhead caught in British Columbia, 23,845 or 46.2 per cent were released. On a Province-wide basis it took 3.8 days of angling to catch one steelhead. Among those who fished at least once, an average of six days were spent angling for steelhead. In total, 196,751 days were spent angling for steelhead.

Estimated Catches for the Most Productive Rivers in Each Angling Area

Angling Area	River	Catch	Catch/Day
Vancouver Island	Gold River	2,776	0.63
	Cowichan	1,604	0.20
	Stamp	1,236	0.35
Lower Mainland	Vedder	4,608	0.15
	Squamish	869	0.14
	Cheakamus	686	0.21
Kamloops	Thompson	1,336	0.19
Cariboo-Central Coast	Dean	3,736	1.18
	Bella Coola	1,851	0.54
	Atnarko	518	0.52
North Coast	Bulkley	1,775	0.26
	Zymoetz (Copper)	1,464	0.29
	Kitimat	1,350	0.23
Queen Charlotte Islands	Yakoun	869	0.53
	Tlell	194	0.30

The three top steelhead rivers in British Columbia in terms of total catch were the Vedder, Dean, and Gold. The Dean was the only river in the Province where the catch was more than one fish per day. However, the Gold, Bella Coola, Atnarko, and Yakoun showed an average catch rate of one fish in less than two days' fishing.

A traditional characteristic of the steelhead fishery is that the great majority of anglers catch few fish while a small number of expert and persistent anglers land the bulk of the catch. In 1974/75, an estimated 58.5 per cent (9,952) of the anglers who fished at least once were unsuccessful and 32.5 per cent (5,158) of the anglers caught one to five steelhead. The anglers who caught more than 10 steelhead in 1974/75 comprised only 3.4 per cent (614) of all the licensed steelhead anglers who fished. These 614 anglers caught 10,250 steelhead, which is 36.9 per cent of the total kill of 27,807. In addition, it is likely that this group of anglers accounts for a substantial portion of all the fish released.

Steelhead Licensees and Estimates of Numbers of Anglers, Successful Anglers, Total Steelhead Catch, and Numbers of Angling Days From 1966/67 to 1974/75

Year	Licensees	No. of Anglers	No. of Success. Anglers	Total Catch		Total Days Angling
				Killed	Released	
1966/67	37,000[1]	27,125[1]	11,121[1]	66,373[1]		.....
1967/68	39,388	22,289	8,167	48,509	.....	224,300
1968/69	39,775	19,789	7,834	41,672	.....	189,300
1969/70	45,824	24,515	8,339	37,319	.....	249,452
1970/71	43,750	23,533	8,128	33,977	19,939	232,664
1971/72	26,253[2]	18,270	7,934	36,733	24,724	184,978
1972/73	28,992	19,489	8,165	35,939	25,670	203,393
1973/74	31,315	20,291	8,282	32,720	26,213	208,105
1974/75	24,399[3]	16,469	7,296	27,807	23,845	196,751

[1] Estimated on the basis of incomplete licensing data.
[2] Steelhead licence fee increased from 25 cents to $2.
[3] Steelhead licence fee increased from $2 to $3.

SALMONID ENHANCEMENT PROGRAM

On November 7, 1975, a memorandum of understanding was signed by the Minister of State for Fisheries (Canada) and the Minister of Recreation and Conservation (British Columbia) to develop plans and programs for a comprehensive

Salmonid Enhancement Program. It was agreed that planning costs will be met by each government on a basis which reflects their respective interests in specific study activities, and that technical staff are to collaborate in both the planning and undertaking of the studies.

The main task of Federal and Provincial fisheries managers is to develop a comprehensive enhancement plan by March 1977. The proposal may call for a 10 to 15-year program, and may involve $250 to $300 million.

A two-year, pre-enhancement study and planning program has been developed jointly by Federal and Provincial fisheries staffs. Fish and Wildlife Branch fisheries personnel in headquarters and in most regions have been working intensely since early fall of 1975. Most of 1976 will also be characterized by emphasis on enhancement planning and preliminary field investigations. This co-operative approach to salmonid enhancement activities has resulted in much improved communication and understanding between management staff of the two levels of government. No longer will salmon be considered in isolation from anadromous gamefish such as steelhead, cutthroat trout, and Dolly Varden char.

FISH HABITAT IMPROVEMENT

Advice and services in a wide variety of activities were provided to Department staff, other Government agencies, industry, universities, schools, and the general public. Twenty field reconnaissance reports were prepared on habitat restoration and enhancement opportunities. Nine major reviews were requested of the section covering such topics as fish and habitat inventory, salmonid ecology, lake rehabilitation, and fish passage. Seven lectures were given on habitat improvement, including "do's and don'ts of stream improvement," "up and down culverts," "enhanced stream production for kokanee, rainbow, and cutthroat trout in British Columbia," "cutthroat trout enhancement," and "use of toxaphene and rotenone in chemical rehabilitation of lakes for gamefish production."

No chemical rehabilitation of lakes took place in 1975 due to problems of cost and availability of approved fish toxicants. Continued testing and refining of requirements for registered toxicants were conducted during the year. Efforts were continued in evaluation of a promising selective toxicant for squawfish, a major predator of gamefish. Also, completion of a two-year study on the effects of rotenone treatment of Courtney and Corbett Lakes near Merritt revealed negligible effects on fish-food oganisms resulted from chemical rehabilitation programs.

Limited field evaluation continued on installation features and fish passage in a modified section of Alaska Steep-pass Fishway. Chronic fish entrance problems to a "permanent" fishway on Mission Creek Dam near Kelowna was alleviated temporarily in 1975 with the installation of a portable steep-pass fishway. Installed and operated under adverse river flow conditions, the 16-foot device allowed about 500 rainbow trout to gain access to upstream spawning areas.

INVENTORY

Although it was not possible to complete staffing and development of an integrated inventory program involving the wildlife, fisheries, and habitat protection functions, considerable progress was made during the year in development of a balanced program at both regional and Provincial levels.

Inventory personnel were actively involved in the continued development of the Computer Assisted Resource Planning Program of the Forest Service. Con-

siderable assistance in this work was received from the Canadian Forest Service and The University of British Columbia.

Considerable effort was also directed to development of standardized fish and wildlife inventory systems suitable for use by industry in development of resource use folios. Similar involvement with the aquatic inventory section of the ELUC Secretariat resulted in general agreement on more standardized methods of collecting and reporting fisheries inventory information.

Lake Inventory

A two-person survey crew completed inventory of 54 lakes during the field season. Numbers of lakes surveyed by region were: Vancouver Island, 4; Mainland Coast, 5; Thompson-Okanagan, 9; Kootenay, 5; Cariboo-Coast, 1; Skeena, 15; Omineca-Peace, 15. Reports were completed on all lakes surveyed in 1975 as well as a number from 1974.

Stream Inventory

A four-person survey crew completed studies of five river systems encompassing approximately 4,000 square miles. The majority of this work took place in the two northern regions with some inventory also completed in the Kootenay Region. The imminent development of major coal deposits in the northeast part of the Province resulted in the development of a co-ordinated inventory plan for both fish and wildlife by Branch and Secretariat staff.

FISH CULTURE

Construction of the new Fraser Valley Hatchery at Abbotsford commenced in June 1975 and was well under way in March of 1976. Completion of this facility is scheduled for early fall 1976 and when operational will greatly increase fish production capability for the Lower Mainland and Vancouver Island Regions.

Approximately 5 million fish, a total of 54,000 pounds, were produced by the three major hatcheries (Wardner, Summerland, and Abbotsford) and distributed to 418 lakes in 1975.

Number and Weight of Fish Released From Hatcheries in 1975

Species	Number	Pounds
Brook trout	283,000	1,900
Cutthroat trout—		
Yellowstone	39,000	10
Coastal	3,000	100
Rainbow	4,700,000	50,000
Steelhead	23,000	1,500
Total	5,048,000	54,310

After extensive modifications, construction, and experimentation, settled organic solids are now routinely vacuumed from the fish ponds at Summerland Hatchery as was earlier recommended by a consultant to the Ministers of Health and Recreation.

Fourteen million eggs were collected in 1975 from trout and kokanee. About 8 million of the total eggs collected were from native rainbow trout. A native coastal cutthroat brood stock, established in 1973, produced the first eggs in 1976. Distributions of significant numbers of cutthroat should occur in 1976 and 1977.

A further 2.8 million kokanee eggs were planted in the Inonoaklin River above the falls. This planting brings the total to 7 million eggs during the first three years of a four-year program to establish a spawning run.

Due to declining spawning runs in recent years in tributary streams of Swalwell and Dee Lakes in the Okanagan Valley, an experiment was started in 1975 to evaluate survival of hatchery released fish and to measure the degree to which spawners stray between release sites. These streams are principal egg-collection sites for rainbow trout.

In November 1975, T. A. Shortt was appointed as the Fish Health Biologist and in this capacity is responsible for diagnostic services to all Government hatcheries. Pathological examinations will assist fish culturists in producing healthy fish for release into the public waters of the Province as well as providing information on diseases which occur in natural populations of fish.

Preliminary evaluation continued in 1975 for selection of a site for a hatchery to supply additional fish for the Okanagan Basin as recommended by the Okanagan Basin Study Report.

Considerable emphasis was placed on documenting the history of fish culture in British Columbia. All freshwater fish introductions, except salmon, are being recorded and a descriptive and photographic historical summary is being prepared to supplement numerical documentation.

Extremely high water in the Veddar River during the winter of 1975/76 seriously curtailed the operation and evaluation of a steelhead-rearing pond. Principally due to unstable water conditions, this project has not proven successful so far as a reliable source of adult steelhead and eggs for hatchery production.

Assistance was provided to Kootenay regional staff in establishing and operating gravel egg-incubation boxes and fish-rearing ponds for the production of rainbow trout (Duncan River origin) for release into Meadow Creek, a tributary of Kootenay Lake.

URBAN RECREATION—FISHERIES

The Urban Recreation Section has been largely involved over the past two years in problems concerning hunting and the discharge of firearms near urban centres. However, as these problems were resolved, effort was gradually shifted toward Urban Fisheries.

Problems concerning access to recreational fishing opportunities have increased, particularly in the Lower Mainland, and this has required a review of the land status and access problems on all major rivers in the Fraser Valley. So far these surveys have included the Alouette, Coquitlam, and Seymour Rivers, and Mosquito Creek and Lynn Creek.

Also in the Lower Mainland, a disadvantaged children's fishery was operated during the past two summers with the aid of university students. Each year some 300 children were taken on day trips to various fishing areas where fishing tackle was provided for the duration of the outing. Initial organizational problems were overcome with the assistance of social workers and teachers who helped to enhance the outdoor experience for the children to such an extent that all trips were over-

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subscribed. In fact the program was so well received by inner-core city families that the parents of the children themselves, with no angling experience, often asked to be taken along.

The Public Conservation Assistance Fund provided a total of $15,734 to six clubs and other outdoor organizations for fisheries enhancement projects. These projects involved such activities as steelhead tagging, fish pass construction, stream clean-up, incubation box construction, and salmon-fry feeding.

In conjunction with the Fisheries and Marine Service, Department of Environment, in Vancouver, several angler and recreational studies were carried out or are in progress. These include surveys of fishermen using the Capilano, Chilliwack, and Vedder Rivers and a study of recreational alternatives on Vancouver Island.

ENGINEERING SERVICES

The Engineering Section provided a wide variety of services to other sections of the Branch, ranging from draughting to reconnaissance, major construction and design activities. Topographical maps, engineering drawings, and bathymetric maps used for lake surveys were prepared as well as illustrations used in scientific publications. In the field, this section conducted a number of engineering feasibility surveys of importance to the protection and enhancement of habitat for fish and wildlife. Construction projects included the installation of fishways, the development of water supplies for incubation boxes and rearing ponds, and the construction of fish fences.

In the area of design, the section developed a unique fish fence which was installed on the Keough River on northern Vancouver Island. This fence was built as a floating structure which was later submerged to block the river and block up and down river migrants. The fence incorporates a horizontal rotating screen which facilitates cleaning and the passage of extremely high water levels. Design modifications for egg incubation systems improved both production and survival of fish. The section also designed and constructed a new and effective type of helical steep-pass fishway for upstream migrants.

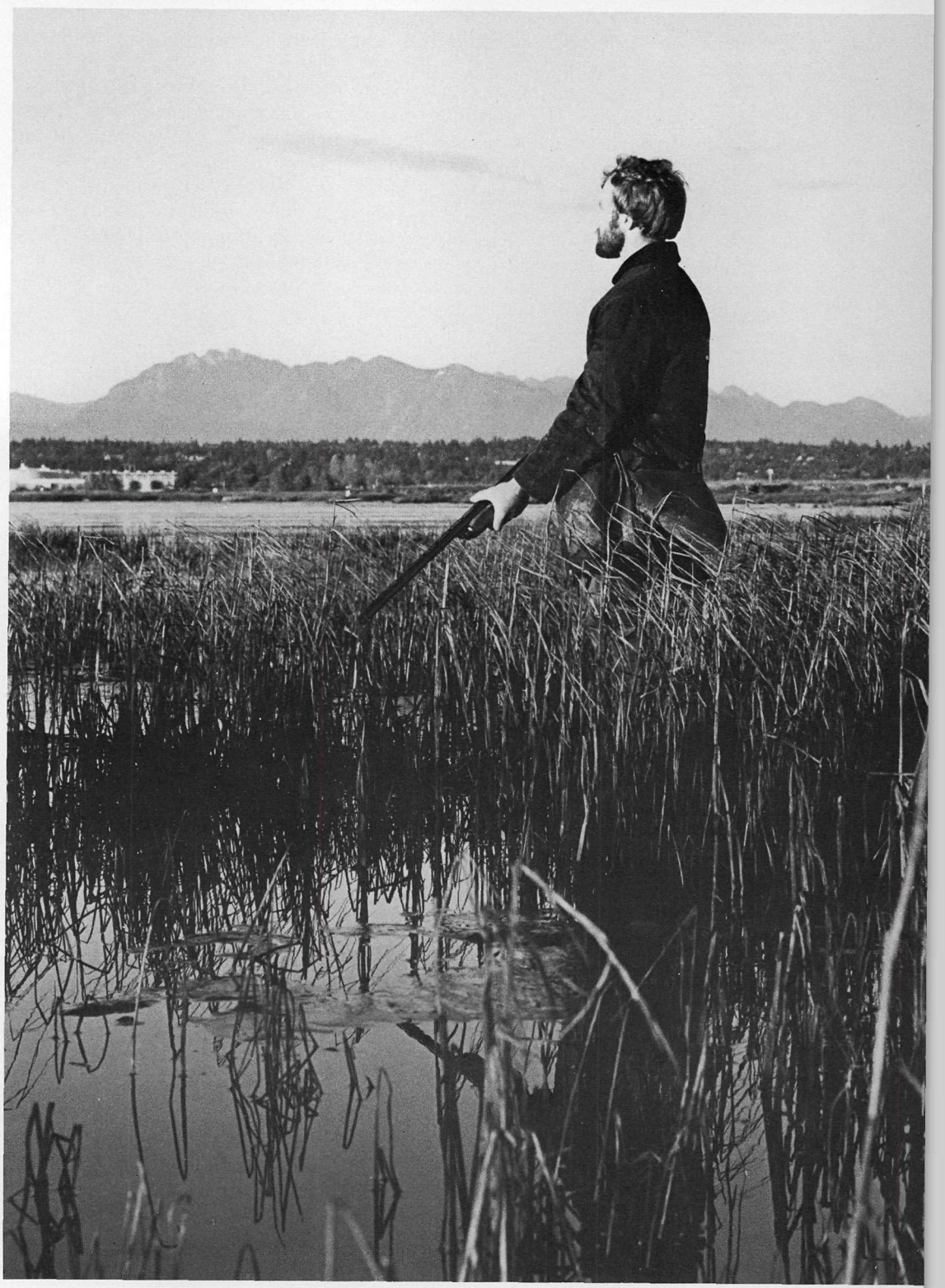
PRIVATE AND COMMERCIAL FISH FARMING

Fifty-four fish farming licences and 89 private fish pond licences were issued in 1975/76. Of the fish farming operations, 48, most of which were located in the Lower Mainland Region, produced trout while others produced salmon (four) and carp (two). Private fish pond operations were also most abundant on the Lower Mainland (22), but were also numerous on Vancouver Island and in the Prince George Region.

About 38 per cent of the commercial trout farmers operate U-Catch-Em operations, 13 per cent produce substantial quantities of trout for the food-fish market, and 6 per cent are restaurants that hold licences to display live fish. The remaining 43 per cent are relatively inactive, but most maintain some trout. The estimated production of market-size trout in 1975 was 92,000 pounds (about 164,000 fish). No production statistics are available for private fish ponds.

WILDLIFE MANAGEMENT

In 1975, hunting regulations were designed using a new 218 Management Unit system throughout the Province. This necessitated the development of a totally new format for the synopsis of hunting regulations, changing it from a 16 to



a 48-page booklet-brochure, with regulations displayed on a pictorial basis. This new approach greatly simplified interpretation of regulations and for the first time provided the public with an opportunity to understand clearly what areas are covered under special firearms and hunting regulations. Attention was also given to the preparation of Provincial wildlife species policies and five-year planning statements.

SPECIAL HUNTING SEASONS

In addition to the limited entry hunting seasons on grizzly bear (Toba and Butte Inlets), mountain goat (near Terrace), and mountain sheep (near Keremeos) established in 1974, the Fish and Wildlife Branch initiated special seasons on moose (near Kamloops and in Wells Gray Park), and on white-tailed deer (near Creston) in 1975 and early 1976. All limited entry hunting seasons required special licences and remain available only to residents of British Columbia.

PROBLEM WILDLIFE MANAGEMENT

The Provincial and Regional Predator Advisory Committees established in 1974 became functional throughout the Province. These committees are fulfilling their role by advising the Branch on matters of wildlife and human interaction and by assisting in the development of functional wildlife management programs. These committees have played as significant role in developing an understanding of the complexities of solving problem wildlife management difficulties.

Most regions acquired permanent technical staff to carry out Branch policy in problem wildlife management. Control programs largely directed toward individual problem animals are part of wildlife management under the direction of Regional Wildlife Biologists. A computerized system for recording problem wildlife information was developed to help determine problem areas. Some Conservation Officers have received special training in the use of chemical control techniques and are now licensed to use these techniques where and when conditions warrant them.

Through the Federal-Provincial task force on vertebrate pest damage to agriculture, the Branch became an active participant in developing research proposals to study the complex problems of black bears in conflict with people. These studies when completed will directly address the problems of black bears at garbage dumps.

In co-operation with the Department of Agriculture, a program was initiated through the Predator Management Advisory Committee to educate the public about various preventive management practices which will reduce wildlife damage. The Fish and Wildlife Branch continued to develop positive ties with various agricultural producer organizations such as the B.C. Honey Producers Association and the Organization of B.C. Sheep Breeders.

WATERFOWL, UPLAND GAME BIRDS, RAPTORIAL BIRDS, AND ENDANGERED SPECIES

An analysis of all waterfowl banding in British Columbia since banding began in the 1920's was completed. Based on this analysis the Branch was able to identify populations which are available for harvest and others which are subject to excessive mortality on or near their breeding grounds. This information will be used as a basis for Provincial and regional waterfowl management plans.

The "International Convention on Trade in Endangered Species of Wild Fauna and Flora" was ratified in Canada in 1975. The aim of the convention is to control the over-exploitation for commercial gain of certain wild species. The Fish and Wildlife Branch is responsible for the issuance of export permits before any of the species listed in the convention can leave British Columbia. No permits were issued for native fauna or flora in the Province during this reporting period.

FUR MANAGEMENT

Several advances were made in the fur management program in 1975. Barry Saunders, formerly of the Ontario Ministry of Resources, was appointed as the biologist in charge of fur management.

A trapper education course for voluntary instructors and Branch staff was held in Prince George during March of 1976. In addition, several local trapper education courses were presented in northern British Columbia by the British Columbia Registered Trappers Association.

British Columbia became a member of the Federal-Provincial Committee for Humane Trapping in 1975. The Branch now also represents Western Canada on the United States based International Committee for Coordinating Fur Resources and has continued to develop close liaison with the Canadian Association for Humane Trapping in an attempt to benefit from their knowledge in the area of trap testing and humane trapping systems.

Fish and Wildlife Branch increased its effort to find low-stress (humane) trap devices and, to that end, has modified trapping regulations to require more humane practices.

BIOMETRICS

Questionnaires and Surveys

The 1975 Cache Creek game check operated from September to November. The analysis of reported hunter effort and harvest was completed. The 1974 hunter sample survey and report have been completed. The 1975 hunter sample survey is completed and the analysis and report are in final stages. Considerable additional effort was required in the preparation and operation of this survey during 1975. The change of regional resource boundaries and the conversion from 28 management areas to 218 management units necessitated extensive revision of existing codes for locating hunter effort and harvest. The 1974/75 Steelhead Questionnaire was completed. The 1975/76 Steelhead Questionnaire is in progress.

The Biometric Section participated with the Environment Canada, Fisheries and Marine Branch, in a pilot survey of sports fishing in British Columbia. This survey was undertaken in conjunction with all other provinces. The objective of the survey was to provide initial baseline catch, effort, social, and economic data for sports fishing in Canada and also to test the feasibility of undertaking a more extensive survey.

The Fish and Wildlife Branch, together with the Canadian Wildlife Service and other provincial Fish and Wildlife management agencies in western Canada, developed a co-operative migratory bird data storage and retrieval system which became operative in March of 1976. Two special short-term surveys were undertaken to determine hunting effort, success, and some attitudes of archers and cougar hunters.

In 1974 and 1975, questionnaires were mailed to successful applicants for limited entry hunting permits to determine hunter effort, success, and some preference data.

Branch Biometric Support

Significant progress was made in the development of a system to provide reference analysis of existing hunter effort and harvest data. This system will allow a more in-depth knowledge of hunter pressure and success trends than was previously available. This section also undertook an analysis of nonresident hunter effort and harvest data from 1965 to 1974 for the Prince George and Kootenay Regions.

A new process of enforcement reporting and evaluation was instituted on an experimental basis on Vancouver Island. This system, which will be implemented Province-wide in 1977, will help regional Conservation Officers in planning and evaluating their activities. Progress in the computerization of all available historical information concerning past hunting seasons and regulations in the Province was also achieved.

Continued progress was made in developing a data base storage and retrieval system for all Fish and Wildlife Branch inventory information. This system, which will be completed and put into operation by the fall of 1978, will be fully compatible with the new Provincial system.

URBAN RECREATION PROGRAM

The Public Conservation Assistance Fund

Twenty-nine projects involving requests for $147,502 were reviewed. Of these, 12 were given approval for a total of $41,370. A brochure describing the fund and application procedures was prepared for publication.

With Urban Recreation programs involving hunting on farmlands in the Fraser Valley being carried out by regional staff, attention was turned to developing similar opportunities in the Okanagan area and the heavily urbanized southeast portion of Vancouver Island. These projects will continue to be developed through co-operation with regional districts and municipalities during 1976, with the expectation they will provide new recreational opportunities in 1977.

LAND MANAGEMENT

Land Acquisition

The following areas of critical fish and wildlife habitat were acquired by the Branch for conservation and management during 1975:

(*a*) *Buttertub Marsh near Nanaimo*—This property was purchased by the National Second Century Fund and was leased to the Branch for 99 years. The area will be used as an outdoor classroom for local schools and Malaspina College.

(*b*) *Boothman green belt property, Grand Forks*—This historical homestead, comprising approximately 1,500 acres, was purchased out of the Green Belt Fund by the B.C. Land Commission. The Land Commission consigned management authority for the property to the Branch late in 1975. The Boothman property forms part of a

larger area known locally as the Grand Forks Environmental Management Area, which consists of Crown rangelands and a 475-acre parcel purchased in 1974 by the National Second Century Fund. The area is a very important white-tailed deer and mule deer winter range which will be managed by a committee comprising the Fish and Wildlife Branch, the Range Division of the B.C. Forest Service, and the Department of Agriculture.

(*c*) *Osoyoos Lake*—Thirty acres of marshland at the north end of Osoyoos Lake were purchased by the Branch from the Okanagan-Similkameen Park Society. This property is a key component in an interagency proposal for the management of unique arid and wetland environments in the Osoyoos vicinity.

(*d*) *Pitt-Polder green belt property*—Approximately 2,940 acres of marshland at the south end of Pitt Lake, purchased under the Green Belt Fund in 1972, were consigned to the Branch in 1975 by the B.C. Land Commission for waterfowl management. In combination with the existing public shooting area to the north, this forms a wildlife management area of approximately 3,500 acres.

During 1975, progress was made on a number of aspects of the management of lands controlled by the Branch. For the first time, comprehensive records of the establishment and status of each wildlife management area were compiled and accurate maps prepared. Acreage calculations based on these maps reveal that as of March 31, 1976, the Branch has approximately 2,040,015 acres under some form of tenure for conservation purposes. These include reserves of Crown land, consignments of management authority on green belt lands, leases from Crown corporations, leases from the National Second Century Fund, and lands purchased by the Branch or received as gifts. A breakdown of the acreage of wildlife management areas by resource region into wetland areas (primarily for waterfowl, fish, and aquatic mammals) and upland areas (primarily for ungulates, upland birds, and associated predators) is shown in the following table:

Number of Reserves and Acreage by Land Type

Region	Wetland Areas		Upland Areas		Total	
	Number	Acres	Number	Acres	Number	Acres
Vancouver Island	7	15,395	1	700	8	16,095
Lower Mainland	12	77,740	....	.....	12	77,740
Thompson/Okanagan	8	1,760	9	75,820	17	77,580
Kootenay	15	43,140	18	1,195,750	33	1,238,890
Cariboo	3	11,005	3	41,550	6	52,555
Skeena	6	6,935	2	15,785	8	22,720
Omineca/Peace	4	14,235	9	540,200	13	554,435
Totals	55	170,210	42	1,869,805	97	2,040,015

The planning process for Branch lands will involve participation of citizen's groups and Government agencies in the formulation of management objectives and policies. Once this step is completed a management plan will be prepared by a management group usually involving the Branch and other Government agencies.

WILDLIFE INVENTORY

Computer-assisted Resource Planning

This program is carried out in co-operation with the B.C. Forest Service of the Department of the Environment with assistance of the personnel from the Canadian Forest Service and The University of British Columbia. The program involves three facets:

(*a*) Modelling research on black-tailed deer and grizzly bears through contract with the personnel at The University of British Columbia.

(*b*) The development of appropriate computer systems to allow for the assessment of impact of forest harvesting practices upon wildlife. This work is being carried out by the Canadian Forest Service.

(*c*) The baseline data requirements for the computer system resource planning are being formulated.

Inventory Services

A filing system for wildlife inventory information was developed in 1975, this system will be expanded to cover regional inventory information in 1976.

The first comprehensive inventory of large falcons was conducted throughout the southern Interior of British Columbia.

Work was initiated on the development of standardized wildlife observation forms and a standardized form for reporting hunter road check results.

HABITAT PROTECTION

Continuing involvement in routine referral systems from other Government agencies, the evolution of the folio system, and an accelerated program of energy generation placed increasing demands on the Habitat Protection Section during 1975. These, and other demands on the resource base, prompted a more fundamental approach to environmental problems with emphasis on generic issues rather than the traditional site-specific response. This section continued to work closely with other Government agencies, both Provincial and Federal, in committees, co-operative studies, and task forces on a variety of major environmental issues. Increased efforts were made to inform and involve the public in issues concerning potential adverse environmental effects. Major problems were addressed by a task-force approach involving both regional and headquarters staff as well as expertise from other sections of the Branch.

Forestry-resource Interactions

An important brief was prepared and presented to the Pearse Royal Commission. The brief identified conflicts between forest practices and the fish and wildlife resource and recommended some solutions.

A professional forester was engaged in 1975 to conduct a comprehensive assessment of the resource folio system in co-operation with Resource Planning Division of the B.C. Forest Service. The Branch also supplied advice regarding industrial involvement in the folio system and specific planning techniques and produced guidelines for both Government and industry.

Pollution

The Branch continued its active involvement in the pollution control referral system and was supplied information on several thousand applications for industrial

and urban development proposals. Several major pollution-orientated studies, notably the NKK Steel Mill Study and the Hat Creek Thermal development proposal, were also completed.

Stream diversion, channelization, and impoundment again posed the problem of inadequate residual flows for fish. Research on the development of a better method for determining minimum acceptable flows in fish-bearing streams was continued.

A sampling kit designed to provide Branch field staff with the capability to detect adequately a variety of chemical pollutants will be completed this spring and should enable staff to investigate potential pollutions more readily.

Biocides and Heavy Metals

In early May 1975 the Royal Commission of Inquiry into the Use of Pesticides and Herbicides completed their final report. The general recommendations of the report, if implemented, should assist in providing better protection for fish and wildlife resources. A review was also undertaken of the proposed new pesticide legislation and modifications were suggested which should result in better control of pesticides as they affect fish and wildlife.

Mortalities from the indiscriminate use of biocides continued in 1975, including extensive duck kills on the Fraser Delta and in Victoria. As a result of investigations by the Fish and Wildlife Branch and other agencies, the chemical responsible, Carbofuran 10G, was withdrawn from the market. Fish mortalities resulting from aerial adulticiding for mosquito control were also investigated and recommendations were made to reduce the impact of mosquito control programs on fish life.

Numerous biocide applications were monitored and investigations of these treatments resulted in two Branch publications, *Aquatic Weed Control in Vernon Arm, Okanagan Lake* and *Monitoring of an Aerial Herbicide Treatment at Toba Inlet, B.C.* Another publication, *Biocides—Fish and Wildlife Concerns,* was produced co-operatively by the Branch and Environment Canada.

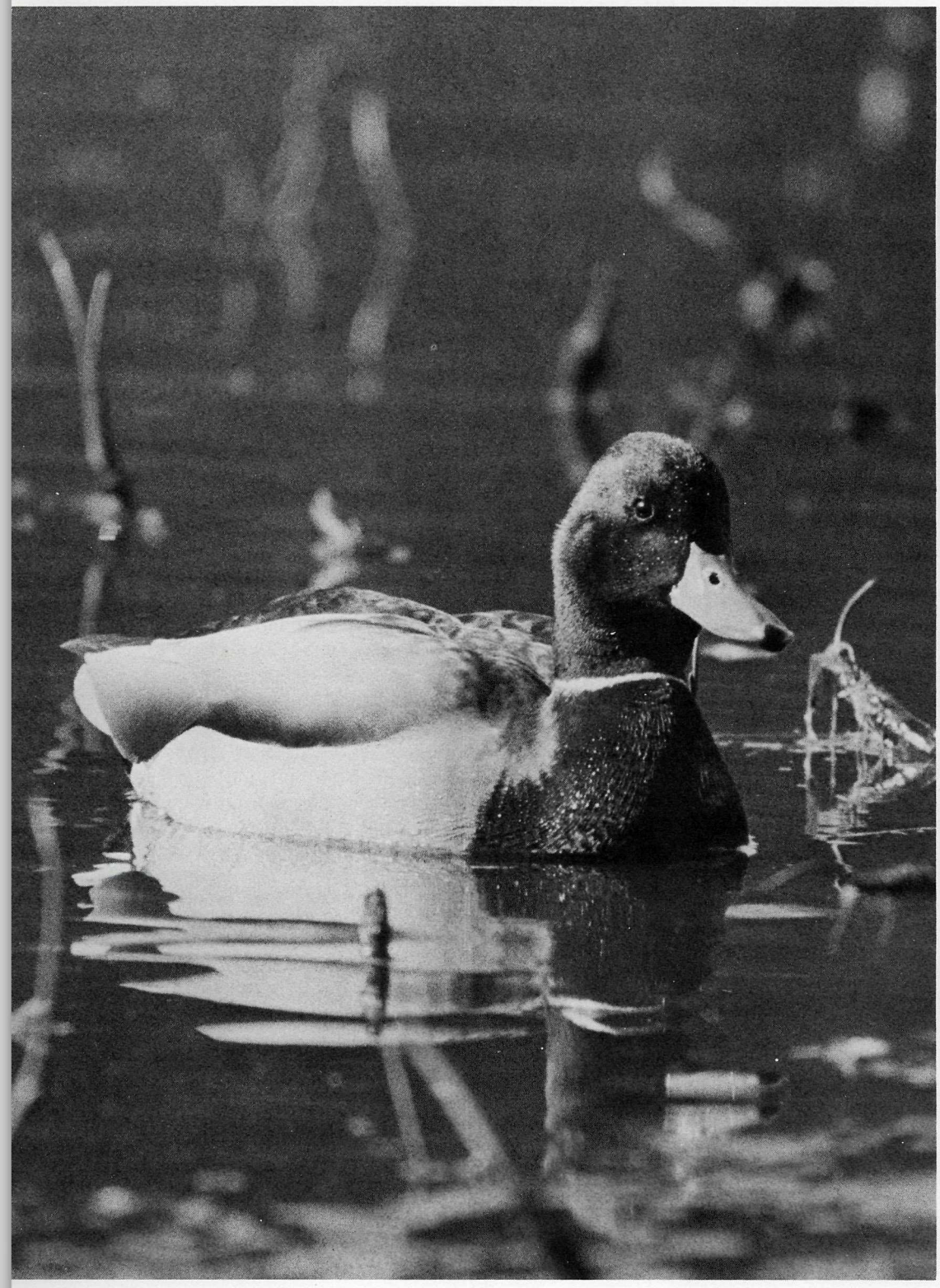
An active role was maintained on various interagency committees such as the Aquatic Weed Control Committee, the Interdepartmental Pesticide Committee, and the Forest Pest Review Committee.

Participation on the Federal Provincial Committee to study Mercury Pollution in B.C. allowed additional effort to be directed toward the investigation of heavy metal pollution. A report entitled *Mercury Contamination of Fish in Pinchi Lake, B.C.* was completed.

Energy Generation and Coal Development

An access road to the Seven Mile power project was a major concern in 1975 which resulted in a public hearing and a Cabinet appeal. As a result Cabinet decided to build the road through the critical winter range on the north side of the Pend-d'Oreille River, as requested by B.C. Hydro. Hydro was instructed by the Water Comptroller to make $1.8 million available to the Fish and Wildlife Branch for the development of a deer management unit, as partial compensation for loss of valuable winter range.

An assessment of the effect of the proposed dam at Revelstoke was started in late September after receipt of funds from B.C. Hydro. This project will provide information of use to public hearings which will be held at Revelstoke in the late spring of 1976 and will form the basis of recommendations designed to mitigate fishery losses.



A regional headquarters committee was formed to review the thermal generation project at Hat Creek and to identfy possible areas for mitigation should the development proceed.

With the announcement of the North East Coal Block proposal, a co-operative study funded by the Department of Economic Development was developed between the Fish and Wildlife Branch and the ELUC Secretariat to inventory the fish and wildlife resources of the affected areas. This work will result in an assessment of the possible effects of the development and the manner in which environmental damage can be mitigated.

An investigation of the effects of the proposed Kemano II development was completed during the summer. The report, scheduled for completion in 1976, will identify fish and wildlife resources that will be affected by the proposed development in the Nanika-Kidprice Lakes area.

Other Resource Impacts

The Fish and Wildlife Branch, in conjunction with Marine Resources, Lands Branch, and Federal Fisheries and Marine Service, began a biogeo-physical inventory of coastal areas along Vancouver Island as a first step toward assessing the suitability of such areas for intensive industrial and recreational use and their relative capability as habitat for various species.

Interaction of bears and people on garbage dumps continued to pose a major problem during 1975. At present, the section is developing a set of guidelines in co-operation with the Wildlife Section to attempt to minimize potentially adverse bear-human interactions at such sites.

A review of existing environmental legislation in both Canada and the United States was started in an attempt to identify major resource problems which could be addressed through a broader legislative base. This review will establish the types of legal framework available for the protection of fish and wildlife resources.

While many types of pressure or impact on the natural environment are addressed by the Branch, the regions of the Province, by virtue of their resource characteristics, social and industrial history are faced with environmental stresses which are geographically unique. Thus in the Omineca-Peace Region, the effects of the still expanding oil and gas industry present special problems to wildlife, forestry, and agricultural managers alike. In the Skeena Region, the lightly explored and largely unexploited natural resources are being exposed and prepared for extraction through a whole new network of transportation corridors involving both highways and railroads. The Vancouver Island and Lower Mainland Regions, which share much of the coastal areas of the Province and the heavy rainfall forests, are developing special management expertise in coastal and estuarial land use planning and are addressing special problems posed to wildlife and fisheries by coastal forest practices. In the Kootenays, Hydro generation and coal mine developments seriously affect fish and wildlife resources, thereby committing resource managers to new and untried protective practices.

In the Cariboo and Thompson-Okanagan Regions, traditional land and resource patterns are being affected by development of mineral resources and the inevitable competitive frictions which intrusive industries such as metallurgy or intensive recreation impose on stable resource pictures. Of special note, historic patterns of land use and occupations by native Indian peoples are being threatened by social and industrial expansions into the Chilcotin plateau west of Williams Lake, while in the Lower Fraser Valley the large human population and diminishing land and water resources perpetually overtax natural resources.

WILDLIFE LAW ENFORCEMENT

Following the increase of District Conservation Officer staff in 1973 and 1974, activity in wildlife law enforcement continued to expand. The restructuring of the Province into management units, coupled with the development of limited entry hunting and fishing opportunities, impressed new enforcement duties on District Enforcement staff. The significant reduction in productive capability brought about by collective bargaining in the Public Service in the face of fiscal cautions exercised by the Branch was partially offset by the added efficiency of multi-person district staffing, better radio communications, and tighter operational planning. Even though the number of licensed anglers and hunters declined slightly, the number of prosecutions for regulatory infractions was higher than in previous years and this was reflected in a notable increase in fines paid to the Provincial Treasury in the calendar year of 1975. Even though direct enforcement of hunting and fishing regulations constitutes only 40 per cent of the activities of District Conservation Officer staff, an upswing in monitoring of environmental conditions for detection of violations under the *Fisheries Act* of Canada, *Migratory Bird Convention Act,* and *Litter Act* was reflected in the increase in court proceedings in environmental matters.

The activities of hunters, fishermen, and other outdoor recreationists has spread as access into wildlands continues to be developed as a by-product of industrial expansion (forestry, mining, power generation, etc.). This phenomenon has dictated the development of new enforcement techniques which provide better field coverage and sustain a high level of contact with resource users. The adoption of plainsclothes operations and blitz-force saturation enforcement tactics have proven highly effective enforcement methods in trouble spot areas or seasons. Intercommunication with other Branch offices and the RCMP by modern VHF radio has done much to increase effectiveness, particularly in the north. Also, the use of aircraft for surveillance with air-to-ground radio linkage has provided greater efficiency into field operations.

Special patrols were conducted in chronically sensitive areas. As the harvest by live capture of Peregrine falcons was disallowed in 1975, special patrols and all-point surveillance were mounted on the Queen Charlotte Islands and approaches with, we believe, complete protection success. Border patrols in areas adjacent to the Alaska and Yukon borders, the southern Rocky Mountains, and the Ashnola area were sustained with beneficial and socially noted effects.

Continuing dislocations in relationships occurred between Provincial and Federal agencies and the native Indian peoples in many parts of British Columbia. Even though there were few incidents involving infractions of fish and wildlife regulations, hostilities based on proclaimed aboriginal rights of free access to fish and wildlife resources were regrettably numerous and difficult.

An educational approach to public understanding and appreciation of wildlife law enforcement was extremely well received by the public. The Omineca-Peace Region mounted such a multi-media approach in the community of Prince George with very favourable response. At the same time, educational counselling through newspapers and radio in the West Kootenay resulted in a reduction in black bear complaints in the West Kootenay communities.

INFORMATION AND EDUCATION

The Conservation and Outdoor Recreation Education (CORE) course graduated 9,231 students in 1975/76. Since its inception in 1969, nearly 24,000 students have successfully completed this program. Hunting fatalities have dropped from an average of eight per year in the 1960's to only one in 1974 and, for the first time, none in 1975. Although the course is directed primarily toward hunter safety, many nonhunters enrol for general outdoor recreational training, such as bird and animal identification, outdoor survival, and basic first aid. It was estimated that 25 per cent of CORE students in 1975 were nonhunters. The following table indicates the growth of the program:

Conservation and Outdoor Recreation and Education Students Graduated Each Year

Year	Number of Graduates	Year	Number of Graduates
1969	319	1973	2,890
1970	1,242	1974	4,781
1971	1,540	1975	7,551
1972	3,869	1976 (three months)	1,680

Seminars were held throughout the Province to qualify or upgrade CORE instructors. By the end of March 1976, a total of 1,296 was qualified to act as instructors in the CORE program.

In addition to their major involvement in the CORE program, regional I and E officers throughout the Province participated in a wide variety of television and radio programs designed to increase public awareness and knowledge of fish and wildlife conservation and to explain management practices, such as the new management unit system. They presented film and slide programs and talks at schools, clubs, and professional associations, represented the Branch at major exhibitions, such as the annual Boat Show in Vancouver and the Jaycees Fair in Victoria. In the field, they erected roadside signs and display shelters for the purpose of interpreting and explaining management projects, publicizing specific regulations, and indicating points of interest. I and E staff also participated in a variety of special recreation projects, including a freshwater fishing course at Selkirk College which stressed the recreational aspect of the fish and wildlife resources. They also coped with specific regional problems, such as a 15-minute video tape which was prepared to assist in the resolution of a bear/garbage problem in Region 6. As always, these activities helped inform the public on the accomplishments and goals of the Branch. Our regional and headquarters staff contacted thousands of British Columbians last year, many of them youngsters whose world will be directly affected by the attitudes they are forming now toward their environment.

Over 200 news releases (including those issued regionally) were distributed to newspapers and radio and television stations to inform the public of Branch activities and to promote sound ecological practices.

The Information Section also answered more than 17,000 letters requesting fishing, hunting, and general wildlife information. More than in previous years, and as a reflection of the increasing sophistication and complexity of fishing and hunting regulations, many of these letters requested assistance in interpreting new regulations and in understanding the new management unit system. With few exceptions, these letters were sympathetic to and even warmly appreciative of the

Branch's efforts to protect the fish and wildlife resource in the Province by means of regulatory controls. The section also processed over 16,000 letters and petitions concerning trapping methods at present in use in British Columbia. In addition, many personal and telephone inquiries received the attention of not only I and E officers but also of all other Branch staff.

The design of public displays in the new Fraser Valley Hatchery complex received a lot of planning and preparatory attention. Students were hired last summer to conduct tours of the Summerland and Kootenay hatcheries and provide information about fish culture. In addition, renovations of the Summerland Hatchery provided more presentable and informative services to visitors.

The Information Section presented several "orientation" lectures throughout the Province as a means of providing new staff with a better understanding of the structure of the Department and the activities of the Branch. All employees seemed most appreciative of this service, which will be continued. Similar information was provided through seminars to more than 100 Travel Counsellors from the Department of Travel Industry to assist them in their work.

The section published four editions of the Branch newsletter, a publication that provides staff with a sense of Branch identity and adds a personal touch to Branch activities. The section also collected and rewrote information used for the purpose of briefing the Minister and senior staff of important activities throughout the Province.

ADMINISTRATION

REVENUE

With the change in the annual reporting to a fiscal year (April 1 to March 31) from a calendar year we are able to provide more up-to-date statistics on revenue and licence sales. This year, 1975/76, is included as well as the two previous years in order to reflect the major increase in revenue ($2,291,871 or 66 per cent) in 1974/75 caused by a change in licence fees followed by a decrease of $221,109 or 4 per cent in 1975/76.

These changes are reflected in the following tables and the most significant are:

Resident hunters declined by 21,628 in 1974/75. This decline continued in 1975/76, but the total number of hunters, 143,652, was reduced from the previous year by only 3,709. A new licence at a reduced fee was initiated in 1974/75 for senior citizens and 5,841 were issued that year. This number increased by 765 in 1975/76 to a total of 6,606. The number of species licences issued in 1974/75 declined by 281,347. This was not only caused by reduced numbers of hunters and the increased fees but by hunters beings more selective in purchasing licences. This was most noticeable with deer licences where sales went from 172,512 in 1973/74 to 118,749 in 1974/75, a reduction of 53,763 or 31 per cent. The sale of species licences declined by a further 7 per cent (10,719) in 1975/76. Minor increases occurred in sales of black bear, cougar, grizzly bear, and mountain sheep licences.

Resident anglers declined by 28,830 in 1974/75 to a total of 269,643, but increased in 1975/76 by 11,195 to a total of 280,838. A similar trend took place with those anglers who purchased steelhead licences. Past experience indicates it is normal for licence sales to decrease in a year of fee increases and then show a recovery in subsequent years.

Nonresident hunters were the hardest hit by the licence structure change and fee increases in 1974/75. A new series of species licences was introduced in 1974/75 and the trophy fee system based on payment only for animals taken was discontinued. The new system which incorporates the trophy fee into a species licence has deterred nonresident hunters from opportunistic-type hunting because of the higher cost involved and the need to prepay for all hunting opportunities.

The number of nonresident hunters decreased from 7,602 in 1973/74 to 4,911 in 1974/75, a decrease of 35 per cent. A further reduction of 953 or 19 per cent occurred in 1975/76, bringing the total down to 3,958. Although the fee increase and the prepayment requirement may have contributed to the decline in nonresident hunters, the international economic recession also had an adverse impact.

Total revenue, mainly from hunting and fishing, decreased from approximately $5.7 million in 1974/75 to more than $5.5 million in 1975/76. The decrease of only $221,109 or 4 per cent is largely attributable to a reduction of $214,248 in the sale of hunting and species licences to nonresident hunters.

Sale of species licences decreased by 6,230 or 43 per cent from 1973/74 to a total of 8,229 in 1974/75. This decline continued in 1975/76 when a total of 6,816 was sold; a decrease of 1,413 or 17 per cent.

Nonresident angler licence sales decreased by 31,214 or 25 per cent in 1974/75. This can be attributed in part by the discontinuance of a licence for nonresidents under 16 years of age. However, the decline in the number of anglers continued in 1975/76 when there were 2,639 or 3 per cent fewer licences sold. Special lakes and special rivers licences were introduced in 1974/75 when 1,205 and 1,028 respectively were issued. In 1975/76 an increase of 591 or 49 per cent occurred in the sale of special lakes licences. A less significant increase of 107 occurred in the sale of special rivers licences, bringing the 1975/76 total to 1,135.

No significant changes occurred in other miscellaneous revenue derived from trappers, fur traders, and guides licences, fur royalties, and fines, etc.

Gross Revenue by Major Activity

	1973/74		1974/75		1975/76	
	$	Per Cent	$	Per Cent	$	Per Cent
Hunting	1,921,990	55	3,498,562	61	3,209,785	58
Angling	1,369,199	39	2,091,515	36	2,147,416	39
Other	182,554	6	175,537	3	187,304	3
	3,473,743	....	5,765,614	....	5,544,505	....

Gross Revenue From Resident and Nonresident Hunting and Angling

	1973/74		1974/75		1975/76	
	$	Per Cent	$	Per Cent	$	Per Cent
Resident hunting	1,367,777	63	2,238,918	63	2,164,389	61
Resident angling	819,815	37	1,340,799	37	1,403,325	39
	2,187,592	....	3,579,717	....	3,567,714	....
Nonresident hunting	554,213	50	1,259,644	63	1,045,396	58
Nonresident angling	549,384	50	750,716	37	744,091	42
	1,103,597	....	2,010,360	....	1,789,487	....

Resident Hunting Licence Sales

	1973/74		1974/75		1975/76	
	Number	Value	Number	Value	Number	Value
		$		$		$
Senior citizen	.....	.....	5,841 ($1)	5,841	6,606 ($1)	6,606
B.C. resident	168,989 ($4)	675,957	141,520 ($7)	989,773	137,046 ($7)	959,322
Black bear	20,562 (50¢)	10,280	9,652 ($4)	38,639	10,999 ($4)	43,996
Caribou	6,119 ($5)	30,595	3,623 ($10)	36,335	3,017 ($10)	30,170
Cougar	534 ($5)	2,670	420 ($10)	4,203	480 ($10)	4,800
Deer	172,512 ($1)	172,447	118,749 ($4)	474,789	110,211 ($4)	440,844
Elk	10,081 ($5)	50,405	7,421 ($10)	74,249	6,890 ($10)	68,900
Grizzly bear	1,427 ($10)	14,270	588 ($35)	20,588	663 ($35)	23,205
Moose	63,839 ($6)	383,032	50,262 ($10)	502,846	47,572 ($10)	475,720
Mountain goat	4,495 ($2)	8,990	2,069 ($15)	31,041	2,066 ($15)	30,900
Mountain sheep	1,778 ($5)	8,890	903 ($25)	22,539	1,070 ($25)	26,750
Total licences	450,336	1,357,536	341,048	2,200,843	326,620	2,111,213
Firearms	10,241 ($1)	10,241	15,572 ($1)	15,572	18,940 ($1)	18,940
Bow	.....	.....	1,016 ($3)	3,048	1,132 ($3)	3,396
Special Areas						
Fraser Valley	.....	.....	3,512 ($5)	17,560	5,427 ($5)	27,135
Limited entry hunting	.....	.....	113 ($5)	565	483 ($5)	2,415
Creston (pheasants)	.....	.....	266 ($5)	1,330	210 ($5+$25)	1,290
Subtotals	10,241	10,241	20,479	38,075	26,192	53,176
Totals	460,577	1,367,777	361,527	2,238,918	352,812	2,164,389

Nonresident Hunting Licence Sales

	1973/74		1974/75		1975/76	
	Number	Value	Number	Value	Number	Value
		$		$		$
Canadian resident (non-B.C.)	244 ($15)	3,660	403 ($7)	2,810	368 ($7)	2,576
Nonresident	7,358 ($25)	183,950	4,239 ($75)	315,595	3,358 ($75)	251,850
Nonresident game bird	.....	.....	269 ($25)	6,725	232 ($25)	5,800
Black bear	2,824 (50¢)	1,532	892 ($40)	35,680	805 ($40)	32,220
Caribou	1,629 ($5)	8,145	1,052 ($100)	105,202	837 ($100)	83,700
Cougar	63 ($5)	315	38 ($100)	3,800	50 ($100)	5,000
Deer	.....	.....	477 ($50)	23,854	330 ($50)	16,500
Elk	739 ($5)	3,545	416 ($100)	41,602	337 ($100)	33,700
Grizzly bear	1,439 ($10)	14,440	485 ($300)	145,506	423 ($300)	126,900
Moose	5,341 ($6)	32,046	3,244 ($100)	324,412	2,488 ($100)	248,800
Mountain goat	1,302 ($2)	2,595	732 ($100)	73,202	724 ($100)	72,400
Mountain sheep	1,129 ($5)	5,600	653 ($250)	163,254	596 ($250)	149,000
Wolf	.....	.....	240 ($75)	18,002	226 ($75)	16,950
Trophy fees	.....	298,385	.....	.....	.....	.....
Totals	22,068	554,213	13,140	1,259,644	10,774	1,045,396

Resident Angling Licence Sales

	1973/74		1974/75		1975/76	
	Number	Value	Number	Value	Number	Value
		$		$		$
B.C. resident	284,567 ($3)	745,778	250,208 ($5)	1,250,633	260,599 ($5)	1,302,995
Senior citizen	13,913 ($1)	13,913	19,435 ($1)	19,435	20,239 ($1)	20,239
Steelhead	29,972 ($2)	60,124	23,619 ($3)	70,731	26,697 ($3)	80,091
Totals	328,452	819,815	293,262	1,340,799	307,535	1,403,325

Nonresident Angling Licence Sales

	1973/74		1974/75		1975/76	
	Number	Value	Number	Value	Number	Value
		$		$		$
Canadian resident (non-B.C.)	32,986 ($3)	98,960	39,138 ($5)	195,680	38,712 ($5)	193,560
Nonresident (annual)	26,148 ($10)	261,426	20,064 ($15)	298,218	19,452 ($15)	291,780
Nonresident (three-day)	46,038 ($3.50)	161,057	32,182 ($6)	192,995	30,481 ($6)	182,886
Canadian resident (non-B.C.) and nonresident steelhead	2,100 ($5)	10,605	2,014 ($10)	20,067	2,055 ($10)	20,550
Special lakes	.....	.....	1,205 ($15)	18,079	1,796 ($15)	26,940
Special rivers	.....	.....	1,028 ($25)	25,677	1,135 ($25)	28,375
Minors	17,326 ($1)	17,326	.....	.....	.....	.....
Totals	124,598	549,384	95,631	750,716	93,631	744,091

Other Revenue (Sources Other Than Hunting or Angling)

	1973/74		1974/75		1975/76	
	Number	Value	Number	Value	Number	Value
		$		$		$
Resident trapping	2,664 ($5)	13,322	2,596 ($5)	12,980	2,493 ($5)	12,465
Guide outfitters	.....	27,250	.....	25,462	.....	24,530
Fur traders licence	81	2,402	51	1,800	60	2,027
Royalty on furs	.....	35,879	.....	28,039	.....	24,038
Fines imposed under *Wildlife Act* and *Firearms Act*	.....	87,477	.....	92,861	.....	103,842
Miscellaneous	.....	16,224	.....	14,395	.....	20,402
Totals	.....	182,554	.....	175,537	.....	187,304

EXPENDITURES

Estimated expenditures for 1975/76 were $10.3 million. Our ability to effectively expend the estimated amount was curtailed by internal Government policies to decrease expenditures and in some cases by restricted activities due to union contracts. The actual expenditure (unaudited) was $8.6 million. The 1975/76 expenditure exceeded 1974/75 by $1.5 million.

The expenditure control system was redesigned for 1975/76 and allowed the Branch to determine expenditures for six major programs.

Expenditure by Major Program

	$	Per Cent
Wildlife	1,461,636	17
Fisheries	1,891,527	22
Habitat Protection	687,828	8
Information and Education	601,849	7
Enforcement	2,235,441	26
Administration	1,719,570	20
	8,597,851	

WORKING IN GOVERNMENT (WIG 75)

In 1975, the Working in Government Program was provided with supplementary funding for projects which were additive to and supportive of Branch objectives. A total of 173 students was employed on 109 separate projects at a total cost of $600,500. The students were employed on projects that related generally to investigation and inventory of fish and wildlife resources. The projects included research to estimate primary productivity of major plant species, evaluation of incubation boxes for the productivity of rainbow trout, evaluation of the effects of logging on creeks and streams, and operation of an outdoor recreational program for disadvantaged children.

The benefits of the program were two-fold. Students were provided with opportunities to gain technical field experience related to their academic courses as well as financial assistance. Secondly, the Branch was able to undertake projects that would not normally have been possible because of the additional staffing and fiscal resources required.

GENERAL ADMINISTRATION

A computerized reporting system for expenditure control was instituted on a trial basis and proved reasonably successful. With a few modifications the system is now operational and is being used. The process for estimating expenditure and budgeting was redesigned and is now compatible with expenditure control procedures. It is expected this will result in greatly improved efficiency in the management of resources.

Plans were developed to revise the records management system and implementation is scheduled for 1976. The Departmental Mechanical/Equipment Section continued to improve services and greatly assisted in the efficient maintenance of mobile and stationary equipment. Our efforts to provide housing for staff in remote areas were unsuccessful; however, some progress was made and as a result some housing will be acquired.

PERSONNEL

Through transfers to the Information and Education and Outdoor Recreation Branches, the established positions in this Branch were reduced from 348 to 341. The remaining positions are distributed throughout the major programs as follows:

Program	Number of Staff
Wildlife	45
Fisheries	62
Habitat Protection	34
Information and Education	8
Enforcement	110
Administration	82
	341

Of the 341 established positions there were 29 vacant at the end of the fiscal year. Sixteen temporary employees were hired to assist in maintaining essential administrative services. In addition, 140 seasonal employees continued to provide services for planned Branch activities.

With the establishment of the new Administrative Resource Boundaries the following districts were transferred:

(1) Grand Forks District from Thompson/Okanagan to the Kootenay Region.

(2) Lillooet District from Lower Mainland to the Thompson/Okanagan Region.

(3) Burns Lake District from Omineca/Peace to the Skeena Region.

Other adjustments involved the transfer of a Conservation Officer from Kelowna to Lillooet, and an Animal Control Officer from Penticton to Kamloops. A Fisheries Biologist was transferred from Terrace to Smithers. The relocating of these staff members was made in an effort to improve Branch operational capability.

GUIDING INDUSTRY

The guiding industry was not excluded from the adverse impact of the current international economic recession. This was reflected by a decline of 17 per cent in nonresidents participating in the harvest of big game. Moose hunters are the largest group of nonresidents who came to British Columbia to hunt. Hunters from this group, mostly from the United States, declined by 24 per cent. There were 3,358 nonresident non-Canadian hunters compared to 4,239 in 1974. Nonresidents who hunt mountain sheep also declined in numbers by 10 per cent.

The decrease in nonresident hunters was not isolated to British Columbia, as similar decreases were noted by other fish and wildlife agencies throughout Canada and Alaska.

The guide outfitters, the people who supply the guiding services for wildlife in the Province, are reorienting their operations. They know that it is no longer possible for them to rely on hunters alone to maintain a viable operation. Currently they are expanding their services to include people who are only interested in wilderness experiences.

The sudden decline in nonresident hunters in British Columbia has removed 19 guide outfitters from the active scene, leaving 369 to provide services during the year.

The guide outfitters' task in providing an enjoyable hunt or trip into the hinterland under the most trying conditions is commendable, especially when considering

their clientele represents individuals from all walks of life, often unconditioned for the hunt or travel into rugged mountainous country. Many are complimentary of the services which provided the enjoyable trip experience. Less than one half of 1 per cent of people guided complained about unsatisfactory service. Most of the guides are endeavouring to maintain efficient and high quality services and are performing well.

Since August 21, 1970, when the first guide outfitter's certificate was issued, 176 certificates have now been granted. These certificates have considerable substance in a guiding operation by granting exclusive rights in a designated territory for certain big game species during a determined period.

REGULATIONS

In the interest of improving fish and wildlife management in British Columbia, the Government enacted considerable legislation during the year to provide the necessary rules and climate to promote and safeguard intensive management plans.

Some of the changes in regulations are as follows:

(1) Divided the Province into smaller management units by rescinding the 28 management area legislation and creating 218 management units.

(2) The bison or American buffalo of the bison species was designated as "wildlife" because of their existence on Crown lands in the Province.

(3) Provided regulations to control the keeping of killer whales in captivity.

(4) Restricted the registration of traplines to Canadian citizens 18 years of age or over.

(5) Restricted the issuance of a trapping licence to

(*a*) the holder of a previous licence to trap; or

(*b*) to a person who will serve one full trapping season as an authorized assistant to a licensed trapper; or

(*c*) to a person who has completed or is in the process of completing an approved Trapper Education Course.

(6) Prohibited the use of certain inhumane methods of trapping.

(7) Provided for the safety of the public from those discharging firearms the following "No Shooting" areas were created:

(*a*) Alaska Highway, Stane Mountain, Muncho Lake, and Liard River, Hotsprings Park;

(*b*) Nanaimo (extended);

(*c*) Cowichan Lake;

(*d*) Okanagan Landing;

(*e*) Kaiser, reduced in size (Sparwood area);

(*f*) Reflection Lake (Golden area).

LAND ADMINISTRATION

An Assistant to the Land Administrator was appointed in early 1975. This appointment enabled the Branch to increase the number of land status reviews, facilitated land acquisition projects, and established an improved land data recording system for Branch use.

The Land Administration Section, working in close co-operation with other Branch personnel, played a major role in gathering data for a number of project areas across the Province. Status reports were prepared for numerous Vancouver Island estuary areas. Similar studies on major areas reserved for conservation purposes were also initiated. This service is used to augment the existing service of the Land Management Branch and is designed to meet specific Branch needs with greater efficiency.

Negotiations with property owners, Crown agencies, and other interested parties enabled the purchase of land or established with respect to possibilities for future purchases. During this report period, 4,555.53 acres of land were acquired through outright purchase by the Branch and through transfer of administration and control for management of fee-simple land from other Crown agencies. Additional acreage is at present under negotiation for acquisition on a long-term lease basis. The total acreage administered by or under reserve for the Branch is 2,046,035. In addition the Branch owns 14 patrol cabins and seven administrative sites as well as 75 water licences.

A summary of the number of acres of land administered by, or under reserve, for the Fish and Wildlife Branch follows:

Purpose	Area (Acres)
Wildlife management reserves	2,040,015
Fisheries management reserves	5,600
Fish hatchery operations	265
Egg collection/spawning channel sites	155
Total	2,046,035

PLANNING AND EVALUATION

In 1975 the Planning Section concentrated on improving the design of the Fish and Wildlife Branch Program Planning and Budgeting System. This required the development of more effective procedures for the formulation of program and project objectives and cost estimates which form the annual budget. The improved design is capable of providing the senior staff with a Management Information System (MIS) for rapid analysis of Branch operations and policies.

The section also initiated a study of the intensity of use of the fish and wildlife resources on a regional basis. This is a long-term undertaking that is dependent on data collected annually by the Branch. Determination of resource use by regional units will further improve organizational effectiveness in terms of the allocation of manpower and resources. To this end a survey was undertaken of sportsmen who hunted in the Pemberton area during the 1975 season. The Planning Section, together with the Biometrics Section, provided assistance in the design of the questionnaire and assisted the Lower Mainland Region in all other aspects of this project. The survey was designed to assess levels of satisfaction among hunters in relation to such regulations as opening dates, season length, and bag limits. Similar assistance was also provided for the design of a survey conducted by the Kamloops Regional Office designed to determine some hunter preferences.

Assistance was also given the Fisheries Section in creel census work pertaining to Elk and Beaver Lakes near Victoria. This involved reviewing procedures and methods as well as design of the census.

A series of seminars was organized by the section, which provided opportunities for both Branch staff and specialists from other organizations, such as universities, to lead discussions or present findings of work done in the field of resources management. This well-attended series, because of its significant educational value, has become a permanent activity of the section.

The section was also responsible throughout the year for the organization of conferences dealing with a wide variety of administrative and planning topics. Branch planning meetings were held both in Victoria as well as other centres throughout the Province for purposes of reviewing and redefining organizational objectives and programs.

Section staff have initiated the development of work for the development of a Program Evaluation System which should permit the determination of program effectiveness and cost efficiencies.

In co-operation with regional staff, significant progress was made in developing regional management plans and setting of objectives compatible with the goals of the Branch. A continuation of this work will enable all staff to operate more responsively to the needs of the public and the fish and wildlife resources.

Three major reports were completed by planning staff. One was a detailed survey of summer students employed by the Fish and Wildlife Branch recording an evaluation of their attitudes and benefits which they derived from this experience. This survey, when combined with a review of accomplishments by the Summer Employment Program, forms a comprehensive evaluation of the Working in Government (WIG) Program. The second report consists of an annotated bibliography of departmental literature pertaining to the social and economic values of recreation resources. A report identifying critical wildlife habitat in the Lower Mainland municipalities was also prepared in co-operation with the Wildlife Management Section, as their input into the GVRD environmental planning.

FISHERIES RESEARCH AND TECHNICAL SERVICES

The Fisheries Research and Technical Services Section maintains a professional staff of three biologists and four technicians whose responsibilities include research and development of information and techniques relevant to regional fisheries management and habitat protection, technical services for regional personnel, and co-ordination and participation in interagency programs (including universities) which relate to the fisheries resources of the Province.

RESEARCH AND DEVELOPMENT

Loon Lake Rainbow Trout Studies

Studies of rainbow trout (*Salmo gairdneri*) production dynamics, utilization of these stocks by anglers, evaluation of the impact of intensified agriculture as well as increased cottage lot development, and an assessment of two protection and enhancement techniques reached their final stages of data collection and analysis this year. Several aspects of the life history of the Loon Lake populations were documented, including, growth, age of maturation, survival, and distribution in lakes and streams.

Studies of the effects of intensified agricultural activities and cottage lot development provided preliminary estimates of severity as well as an evaluation of various techniques useful in describing the degree of eutrophication in lake systems. Nutrient budgets provided equivocal results, but techniques utilizing micro-fossils

in sediment cores appeared more reliable. Cattle manure was potentially of most importance, while chemical fertilizers and septic tank effluents contributed relatively small amounts of nutrients.

Incubation boxes of the type used for pink and chum salmon production were modified and evaluated for rainbow trout production. Their simplicity and minimal maintenance requirements make them well suited for local enhancement projects where hatchery stocking is either not feasible or desirable. Survival rates of "green" eggs of 85–95 per cent demonstrated the potential effectiveness of this technique. A newly designed screen for irrigation ditches proved effective in preventing fish losses.

Duncan-Meadow Creek Trophy Rainbows

The Duncan-Meadow Creek project is a co-operative project with the Kootenay Region designed to re-establish the trophy-sized Duncan River stock in Meadow Creek, a tributary of the Duncan-Lardeau system. Incubation boxes and rearing facilities developed on site were used in an attempt to "imprint" the Duncan stock on the Meadow Creek system. The first year's production of 5,000 fish was released during September 1975.

Stocking Evaluation Studies

Stocking of lakes with hatchery-reared rainbow trout form the basis for British Columbia's renowned Kamloops area trout fishery. Earlier studies conducted in co-operation with the Kamloops region were assembled in preparation for publications, and include data on optimal size of release, survival, growth, age of maturity in lakes of different productivity, and histories of stocking. The data provide useful guidelines for efficient stocking practices.

Slim-Tumuch Watershed

The Fish and Wildlife Branch and the Federal Fisheries and Marine Service, in co-operation with B.C. Forest Service and a Prince George forest products company, completed the stream and lake phases of a four-year study to determine the effectiveness of fisheries protection measures employed in an upper Fraser River watershed. The study was based on simultaneous comparisons of similar logged and unlogged stream reaches and lakes. The study documents the critical importance of using soil inventory in determining road locations, cutting units, and erosion control measures. Relationships between suspended sediment levels, sediment deposition, and salmonid egg to fry survival in simulated stream channels were also established. These will prove useful for assessing the severity of sediment releases into salmonid streams.

Keogh River Anadromous Gamefish Studies

In April 1975 a research program was initiated on a coastal anadromous gamefish river. These studies involve the use of this 20-mile river as an experimental system for developing and testing stock assessment techniques and inventory systems for steelhead capability analyses, identifying critical limiting factors to steelhead production and to test appropriate habitat improvement techniques as alternatives to hatchery transplanting programs, and to provide baseline life-history characteristics on anadromous gamefish species. During the first year of operation, two fish-trapping facilities and a field camp were installed.

A larger trap, located at the river mouth, was designed and installed with the assistance of the Engineering Services Section. Enumeration and measurements of out-migrating smolts was initiated in May and completed in July. In-migrating adult Dolly Varden enumerations were conducted in August and September; the run estimated at 1,500 fish with some up to 5 pounds. Work on adult steelhead began in November and was comprised of enumerating, tagging, sampling scales, and measuring migrants in addition to assessing angler catches and returns of tagged fish to determine harvest rate by the sport fishery.

TECHNICAL SERVICES

Several requests for technical support from Fisheries Management and Habitat Protection were processed, including preparation and aging fish scales, computer programming, analysis of fish data, literature searches, and aquatic invertebrate identification. Personnel also assisted with research projects in the field.

Research staff also acted as technical witnesses for a successful court action under section 33 (2) of the *Fisheries Act,* provided technical advice and guidelines for evidence collection on sediment cases, and helped in the design and analysis of data for regional programs.

INTERAGENCY PROGRAMS

Salmonid Enhancement Program

The Head of the Research Section represents the Fish and Wildlife Branch on the joint Federal-Provincial Biological Working Group of the Salmonid Enhancement Program (SEP), whose responsibilities include the design of a research program to facilitate doubling salmonid production on the Pacific Coast. A significant effort by section biologists was directed to identifying research requirements and planning projects to be conducted under this program.

Three annotated bibliographies were completed, summarizing published and unpublished information on steelhead trout; sea-run cutthroat and Dolly Varden char; and salmonid marking, enumeration, and trapping techniques. A review of existing information on instream and fish cultural enhancement of steelhead and cutthroat trout was completed to assist in planning regional projects. In addition, a computerized data retrieval system was evaluated for steelhead streams on Vancouver Island. Most of the existing data for 500 streams were incorporated into this system.

Williston Reservoir Study

Lake and stream studies on Williston Reservoir co-ordinated by the ELUC Secretariat and funded by B.C. Hydro were completed this year. The study incorporated an evaluation of 50 streams for the production of gamefish and an assessment of the reservoir's potential support of these populations. Data on age, growth, and distribution of several species of fish within three basins of the reservoir were obtained and an analysis of the effects of impoundment on resident stocks was undertaken. The baseline data will aid in the management of the reservoir and provide a comparative framework for long-term assessment of the effects of impoundments on fisheries.

Co-operative Research (UBC)

Each year the section undertakes to support a small number of worth-while graduate student projects in association with the Institute of Animal Resource Ecology at UBC. This support consists of a grant to the institute and assistance in the design and execution of projects. Four studies were supported:

(1) An assessment of the effects of coastal clearcut logging on the residential cutthroat population of a small stream.

(2) Feeding habits, residence time, distribution, and migration of Gerrard juvenile rainbow trout.

(3) Structure and dynamics of zooplankton communities in eutrophic lakes of the Kamloops region.

(4) Interactive ecology of cutthroat trout and Dolly Varden.

WILDLIFE

Research and technical service projects were organized into the following seven program areas:

Impact of Resource Development

The goal of this program is to provide predictive guidelines for assessing impacts of resource exploitation on wildlife species and, where possible, for integrating the needs of these species. The program is oriented toward relationships between animals and their habitat.

Habitat requirements of moose in sub-boreal forests in the Prince George region were investigated. The first phase involved studies of winter habits and habitats in logged and unlogged forests. The second phase was a site-specific, intensive baseline sampling of an area scheduled to be logged over the next decade. The average winter density of moose was estimated at 1.0–1.5 per square mile over the study area, but moose were found primarily in creek bottoms and partially logged stands rather than occurring randomly over the study area. Amounts of available and utilized browse were estimated and the major plant communities characterized with respect to species composition and biomass.

A study of the effects of logging on blacktailed deer in the Nimpkish River valley on northern Vancouver Island was continued. This project is being conducted by Dr. Fred Bunnell and students of The University of British Columbia, through a grant from the Research Section. Four studies are currently in progress:

(1) Digestible energy and nutritive quality of forage and litterfall in logged and unlogged habitats. Work in 1975 concentrated on completion of chemical analyses and preparation of the final report (Ph.D. thesis).

(2) Dispersal patterns of black-tailed deer in response to forage and shelter. Daily and seasonal movements were studied intensively through the use of radio telemetry.

(3) Influences of forest canopy on natural browse productivity, biomass, and chemical composition. This included field orientation, plot selection, detailed field sampling, and the nutrient analysis of collected samples.

(4) Factors influencing the distribution and abundance of lichens, a new study that will improve our understanding of the supply of this important winter forage.

The effectiveness of reclamation practices for rehabilitating strip mines for wildlife was studied for a second year. Vegetative cover tended to be patchy and yields variable. Deer and elk used reclaimed areas at slightly higher levels than 1974, but still at levels below those of the surrounding undisturbed vegetation. Effects of exploration were examined in a pilot study. Exploration roads disturb approximately 11 acres/mile on south and west-facing subalpine slopes that exceed 30° (ungulate winter range). On gentler slopes or in treed areas, approximately 6 acres/mile are destroyed. Tunnel sites occupy from 0.3 to 0.5 acre, and drill sites, 0.1 acre.

The foreshore of the Fraser River delta, a vital area for waterfowl and shorebirds, was the subject of two studies which received support in 1975. This research was done by Dr. V. C. Brink and his students at The University of British Columbia. One study on the primary productivity of foreshore vegetation was completed. Dry matter yield averaged approximately 2 tons/acre. Production and species diversity was greatest near the dykes and decreased seaward. Soil organic matter followed a similar pattern. The second study was directed toward the winter ecology of lesser snow geese, and important species on the foreshore. Diet, foraging behaviour, and feeding areas were documented for both day- and night-time periods. The nutritive value of foods eaten was also measured.

Wildlife Enhancement

The goal of this program is to develop ways of improving production of wildlife. We provided a grant to Dr. J. Bendell and his students, University of Toronto, to study the effects of nitrogen fertilization on blue grouse production on Vancouver Island. In the spring of 1975, 16 tons of urea were applied at a rate of 350 pounds of 40 per cent urea per acre on ten 6-acre plots in a 150-acre experimental area. Herbaceous vegetation responded spectacularly, especially pearly everlasting, hare's ear, trailing blackberry, huckleberry, and willow. All are important deer foods, and except for the first species, important for blue grouse. More yearling blue grouse seem to occur in the fertilized areas than on the control areas. Studies of vegetation and small mammals were also conducted.

Factors affecting the productivity of black-tailed deer are also being studied through a grant to Dr. R. M. Sadlier and his students at Simon Fraser University. The productivity of captive deer fed on two planes of nutrition was monitored in terms of fawns and milk production. Maternal behaviour or chemicals in milk or both may affect the maturation of fawns.

Plans for two new projects were developed in 1975. One study is designed to assess the effects and feasibility of prescribed burning as a habitat management technique. This project will involve co-operation with the B.C. Forest Service and the Canadian Forestry Service. Preliminary field work and a literature review were initiated. The second study is a comprehensive investigation of factors affecting the production of bighorn sheep under controlled conditions. The influence of vegetation, behaviour, nutrition, and genetics on an enclosed herd of bighorns will be included.

Dynamics of Exploited Populations

The response of wildlife populations to harvesting is the prime focus of this program. The long-term study of regulation of blue grouse numbers on Vancouver Island is being supported through a grant to Dr. F. Zwickel and his students from the University of Alberta. Results so far suggest that hunting has little if any effect on grouse densities.

The value and application of simulation modelling as a research and management technique also received attention. Most of this work was co-ordinated by the Inventory Section, but the Wildlife Research Section was also closely involved. Population models were prepared for grizzly bear and black-tailed deer through a grant to Dr. F. Bunnell.

Social and Economic Research

The Branch supported two studies in this program. One examined changes in physical fitness attributable to hunting activities. Pre-season fitness levels of hunters were significantly below the recorded means for active males. By half way through the hunting season, the fitness of both hunter and control groups improved significantly. In fact, hunters showed greater gains than the nonhunters. Thirteen weeks after the end of the hunting season, hunter fitness declined while that of the control group did not. Hunters should undertake a pre-season fitness program to develop their oxygen transport system to cope with the stress of hunting activity. A post-season fitness regime should also be adopted to retain the positive training effects derived from hunting; otherwise, hunting season gains are lost. This project was done by Dr. D. Docherty and his associates at the University of Victoria.

The second study examined ways of increasing nonconsumptive use of black-tailed deer by residents of Vancouver and vicinity. Through a system of trails, blinds, special crop plantings, and informational signs at the UBC Haney Research Forest, attempts were made to increase the chances of seeing deer. Surplus deer from the reproductive study were also released to increase deer densities. Public response was monitored through a questionnaire survey and a report is expected in 1976.

Technical Services

This program provides specialized scientific and technical services to management. These included food habit analyses, identification of parasites and diseases, preparation of figures and illustrations, and the identification of plant specimens.

In 1975, two new activities were initiated. The first was to explore methods of species identification of tissues as an aid to enforcement. Paper chromotography proved unreliable and as a result attention was turned to other techniques such as electrophoresis and serology. Close contact is being maintained with other provincial and state agencies to minimize duplication of effort. The second activity involved development of expertise in aging harvested animals by histological examinations of tooth annulations. Conventional grinding methods are not applicable to some species such as grizzly bear and cougar, and so other methods must be used. Cougar may require a completely new approach since their teeth may not exhibit annulations.

VANCOUVER ISLAND REGION

FISHERIES MANAGEMENT

Anadromous fisheries management activities centred on the Big Qualicum, Campbell, Quinsam, and Gold Rivers. Intensive creel census programs were initiated during the 1975/76 winter steelhead season. Angler co-operation was encouraging and it is expected that the derived catch and effort data will provide

a firm base for future management policy. Snorkel and wet suit counts of summer steelhead in select river systems and the results of a mark-recovery experiment indicated that reliable estimates of stock size and angler exploitation could be made. Emphasis was placed on studies of the benefits of hatchery steelhead production at the Big Qualicum and Quinsam Rivers to anglers.

A three-year lake-stocking evaluation of Elk-Beaver Lake near Victoria was completed in 1975. Rainbow trout stocked at 40 fish per pound (approximately 4 inches in length) provided the highest return to the creek (48 per cent of the total number stocked) and also achieved better growth than those stocked at 500 and five fish per pound. Data obtained from this study will be used for a lake stocking plan for Southern Vancouver Island.

The Sayward Forest lakes represent one of the most popular recreational areas on Vancouver Island. Fishing pressure on these lakes is steadily increasing. In view of this, angler harvest, lake productivity, stock status, and enhancement potential were evaluated on Mohun, Brewster, Boot, Merrill, Beavertail, Gooseneck, Upper Quinsam, Patterson, Roberts, Echo, McCreight, and Pye Lakes. This baseline work will lead to the enhancement of the Sayward Lakes fish populations.

The Cowichan River is the single most important recreational fishing river on Vancouver Island. During the past two years, anglers have become increasingly concerned over a reported decline in brown and steelhead trout populations. In 1975 a program with the objective of maintaining the present recreational quality of the river and enhancing the sport fish populations was carried out.

WILDLIFE MANAGEMENT

Many traditional wildlife management procedures were carried out in Region I during the past year. Spring carryover counts for deer indicated normal levels of winter mortality while autumn hunter checks indicated an over-all daily success rate of 14 per cent. Mandatory checks for cougar appeared successful, but those for mountain goats appeared uncertain at this point.

Emphasis was placed on the development of a framework for data collection and handling for species management programs. The basic prerequisites for such a system include inventory, the storage and retrieval of data and interpretation, and management prescriptions. Computerization of questionnaire information (harvest and its distribution, sex and age structure, hunter distribution) greatly enhanced analysis and interpretation on a management unit basis. Currently, the management unit system is being restructured to incorporate 225 subunits.

Ultimately, species management will be assisted by simulation modelling techniques encompassing population dynamics, habitat, and climate. Continuation of the Northwest Bay work is the first step in co-ordination of data upon which to base such a system.

Roosevelt elk management was greatly intensified. Radio telemetry, animal condition, reproductive status, population features, and quantitative habitat biology are being evaluated as a basis for more refined management plans.

The cougar research and management program was continued and similar attention was paid to the increasing Vancouver Island wolf population. More intensive programs for Coastal Mainland species (grizzly bear, mountain goat, moose) are currently under way.

LOWER MAINLAND REGION

FISHERIES MANAGEMENT

Fisheries Inventory

Inventory continues to be a top priority. Habitats, fish populations, and angler use were investigated and described in a number of selected drainages. A creel census program on the Serpentine, Nicomekl, Little Campbell, and Salmon Rivers (Surrey area) yielded important data on angler use and catch success. These data will help form the base for future management decisions within these drainages.

Adult steelhead populations were studied on several rivers in the Chilliwack-Hope area. A co-operative tagging program (Steelhead Society/Fish and Wildlife Branch) on the Vedder River produced valuable insights into fish movement and spawning area preferences. Float counts by skin divers were done on the Vedder as well as the Coquihalla, Silverhope, and North Alouette Rivers. Adult steelhead populations in some of these streams had never been studied as closely before. In addition, fish and habitat were investigated in other parts of the region, notably Harrison Lake, as well as the Squamish and Skwawka River systems.

Fisheries Habitat Protection

Fisheries management continued to play an active role in habitat protection. During 1975, fisheries staff, through referral systems, provided recommendations notably on flood control and dyking, forest harvesting, subdivisions, pollution control permits, pesticide and herbicide applications, highway location and construction, water use, land clearing, and stream relocation.

Special Fisheries

By regulation, Browning Lake (Squamish area), Como Lake (Coquitlam), Upper Grey Creek (Sechelt area), and Boston Bar Creek (Hope area) were designated as special fisheries for children under 15 years and the elderly over 65 years. In co-operation with Abbotsford Trout Hatchery and the municipality of Sardis, a children-only fishery for large rainbow trout was established in Sardis Park Pond.

Plans for a children-only fishery for black crappie (sunfish/bass family) in an isolated portion of Bell Slough (Chilliwack area) and for a special "no kill" fishery for summer-run steelhead in the Coquihalla River (Hope area) were developed in 1975. These fisheries are consistent with the management objective of providing people with a variety of angling opportunities.

Fish Culture—Lake Stocking

A rearing pond for summer-run steelhead was operated at Watercress Creek on the Coquihalla River and a small number of Coquihalla adult steelhead was captured to provide offspring for restocking the pond. By augmenting the number of steelhead smolts in the Coquihalla system with pond-reared fish, the returning runs of adult fish should be increased significantly over current low numbers.

Commercial and Private Fish Ponds

Requests for permits to raise trout and other fish are increasing rapidly in the Lower Mainland. There is concern that natural fish-bearing streams, which have many ponds adjacent to them, may be adversely affected by the ponds through

elevated temperatures and nurtient loading. In 1975 a moratorium was placed on the issuance of pond licences where effluent water enters a stream. A study of the effects of fish ponds on streams is planned for the summer of 1976 by Federal Fisheries and Marine Service.

WILDLIFE MANAGEMENT

Because the Lower Mainland Region encompasses the largest waterfowl wintering ground in British Columbia, emphasis was placed on waterfowl management within the region. Long-term management plans for the enhancement of existing waterfowl habitat and for the expansion of certain waterfowl species within the Lower Fraser Valley were developed.

Engineering feasibility studies were completed for the Pitt Lake Wildlife Management Area waterfowl enhancement project. Construction funded by Ducks Unlimited (Canada) is scheduled to begin in the summer of 1976 and is expected to continue seasonally until 1978. In addition to providing additional habitat for nesting, migrating, and wintering waterfowl, the Pitt Lake Management Area will be used for a number of outdoor-oriented educational and recreational activities, including nature observation, nature interpretation, canoeing, and controlled waterfowl hunting.

In co-operation with Ducks Unlimited (Canada), construction was started to improve waterfowl habitat on the Serpentine Fen Wildlife Management Area. A series of dykes and water impoundments are being developed on the site to increase the capability of the area for waterfowl resting, propagation, and observation. Nature interpretation and education programs directed toward grade school students were carried out on the area in co-operation with Douglas College, Surrey, B.C. The Branch proposes to expand this program as additional facilities are developed.

The Canada goose propagation flock established within the Lower Fraser Valley in 1973 is reproducing well and has increased to two to three thousand birds. Although the original program goal was to establish and maintain a population of up to 20,000 Canada geese within the Fraser Valley, crop depredation problems are beginning to occur. This necessitated restricting over-all goose numbers to a level acceptable to the land owner and the public. It is anticipated that intensive management of local wildlife refuge areas and the initiation of a compensation program for crop losses within the Fraser Valley will alleviate existing and potential problems. One of the program goals for this project has already been realized in that local people are beginning to observe Canada geese in the Lower Fraser Valley.

The wood duck propagation program started in 1973 within the Lower Fraser Valley was completed in 1975. In conjunction with the Canadian Wildlife Service, Ducks Unlimited (Canada), and a number of local rod and gun clubs, several hundred wood duck nest boxes were established throughout the Lower Fraser Valley during the project. Wood duck populations have increased significantly as a result and have now reached habitat saturation densities in some portions of the valley.

A study to determine ungulate utilization of forest cover types within selected portions of the Chilliwack Valley has been completed, although monitoring of a species of permanent sample plots established within the study area must be continued to realize long-term study goals. The information gathered during the project will be invaluable in assessing the impact of future logging development on wildlife populations within the valley and will provide excellent baseline data for the development of land use plans for similar watersheds.

THOMPSON-OKANAGAN REGION

Consolidation of Region III consistent with new administrative boundaries was finally completed with the transfer of all functions in the Kettle watershed to Region IV. Some readjustments saw a second Conservation Officer located in Lillooet and an Animal Control Officer in Kamloops. These moves were designed to balance more equitably the work load.

FISHERIES MANAGEMENT

Lake aeration activities were continued with windmills and pondmills being tested as an alternative to the standard compressor still used on Yellow Lake. Other programs included the transfer of Mysis shrimp from Okanagan to Missezula Lake, improvement of spawning potential in Okanagan River oxbows, emuneration of Mission Creek spawning rainbow run by trapping at upstream end of a fishway, and the control of downstream losses over some irrigation dams.

Involvement in the Federal-Provincial study of Thompson River finally came to an end with the preparation of a report. Other co-operative interagency studies include Bonaparte Plateau moratorium and the Adams River spawning area. Neither has been completed at this time.

Management plans on a lake specific basis were developed. They included recommendations covering shoreline development, special regulations, and fish management objectives. Their purpose is to avoid *ad hoc* response to a myriad of special interest considerations. A treatise on lake rehabilitation in the region over the past 30 years was completed.

WILDLIFE MANAGEMENT

Management staff and Conservation Officers monitored moose and deer populations to determine productivity of sample herds. Moose surveys showed continued low productivity and declining populations in management units where the main winter ranges are old burns that now have less winter forage. Other management units in the Bonaparte Plateau showed high productivity and increased numbers, now that logging is restoring productivity. Surveys showed that deer numbers remained low and that juveniles made up only 21 per cent of April populations compared to a normal 30 per cent or more. This drop in productivity was attributed to winter conditions which at Kamloops were the second most severe in 18 years.

The Regional Predator Management Committee took several approaches to the management of predators, including the complete removal of wolves from designated areas and the use of lithium chloride for aversion baiting to reduce conflicts between wolves and cattle.

An aerial census of caribou in Wells Gray Park showed a marked drop from 308 observed in 1970 to 123 in 1975. Weather at the time of the flights was believed responsible for this low count, but destruction of caribou winter ranges by logging may have resulted in an actual decline in numbers.

Hunting regulations were modified on the basis of a resource use study to reduce conflicts between hunters and other users. A second study of hunters provided additional information used to further modify regulations in order to supply hunter demands for reduced crowding, reduced bag limits for grouse, and later opening dates.

A spring burn on the Lower Dewdrop of 120 acres in the ponderosa pine and Douglas fir was done as part of the program of range improvement. Similar burns were completed in the Ashnola and at Westside near Kelowna. Six intensive management areas in the Okanagan were selected to collect data on deer food preferences and the effects of habitat modifications such as logging, burning, weed clearing, and shrub planting.

Spring counts were made of deer in many locations throughout the Okanagan. Whitetailed deer are increasing generally along with mule deer in Vernon-Monashee and Princeton areas. Elsewhere, mule deer continue to decline. Inventory surveys of the "Six Mile" deer winter range and most of the key ranges on Skull Mountain and Monte Lake were completed. The information gathered is of prime importance for management decision practices.

KOOTENAY REGION

FISHERIES MANAGEMENT

Heavy industrial development, hydro-electric reservoir flooding, forest overcommitment, utility development, grazing conflicts, and settlement expansion are the key components of the resource picture of the Kootenays. As a result, both Fisheries and Wildlife staff are now involved in total land use plans with the other Government agencies and the public sector. This has lead to the development of better logging and grazing plans resulting in improved range conditions and fish habitat protection.

Fisheries management activities in 1975 were reduced due to increased demand for input into habitat protection. A lot of time was spent relative to coal mining proposals in the Flathead and Elk Valleys. In addition, fisheries personnel spent a lot of time on a regional submission to the Pearse Royal Commission on the Forest Industry.

The Fisheries Section has started to develop a new run of rainbows to replace those lost to the Duncan Dam and have set up monitoring and assessment programs for the Arrow Lakes in an attempt to save the rainbow, kokanee, and Dolly Varden fishery which has been seriously affected by the Mica Dam. Restoration of kokanee and rainbow trout production in the Arrow and Kootenay Lakes received considerable attention. In addition, plans were started on an over-all stream management program for the East Kootenay.

Rainbow trout production was started at the Meadow Creek spawning channel, which produced a record 12 million kokanee fry. In addition, gravel placement at Gerrard resulted in expanded spawning habitat for the trophy Gerrard rainbow trout.

Nonresident anglers generally accepted the special lakes licence on Kootenay Lake where there was a definite shift toward a high-quality trophy-type fishery.

LAND USE

Habitat protection issues continue to dominate wildlife management activities in this region. A proliferation of developments require that management staff (fisheries and wildlife) play an increasing role in protection activities. Coal mining in

the Elk and Flathead Valleys, proposed subdivision of B.C. Hydro lands in the Arrow Basin, the Pend-d'Oreille (7 Mile) and proposed High Revelstoke and Kootenay Diversion hydro-electric projects, and a 500-kv transmission-line through the southern portion of the region required attention. Fish and wildlife resources will be adversely affected in all instances and the best that can be expected is to minimize losses.

A large burn was planned and executed by the Forest Service and the Fish and Wildlife Branch on the Bull River winter range. Over 600 acres were successfully burned and a six-year burning plan was subsequently prepared.

The intensive resource inventory of the 500-square-mile Springbrook project area was completed by the Secretariat. A total of 28 maps was prepared as the inventory base to facilitate intensive co-ordinated resource management planning.

Meetings were held with the Forest Service to develop an access plan and a fire management plan for the region. Access plans will be developed on a PSYU basis using the same approach as that used for co-ordinated planning.

INTEGRATED RESOURCE MANAGEMENT PLANNING

A new approach to renewable resource management was launched in the East Kootenay, aided by a $1.5 million ARDA project. Under the direction of the Acting Director of the Range Division, a task group comprised of representatives of the Fish and Wildlife Branch, Forest Service, Range Division, Lands Management Branch, and Department of Agriculture, and the forest and range users involved, developed integrated plans on three range units. The planning process is designed to reduce or resolve conflicts, thereby allowing the efforts of managers and users to be directed into positive resource activities. The Cranbrook-Fort Steele, Wildhorse-Lewis, and St. Mary's Prairie plans were completed (approximately 50,000 acres total) and a start was made on a plan for the Luckhurst unit (Premier Ridge area) (approximately 75,000 acres).

WILDLIFE MANAGEMENT

A Wildlife Management Biologist added to the Kootenay Region assumed responsibility for the West Kootenay and specific habitat protection matters common to both the East and West Kootenays.

Game checks, late winter aerial game counts, and spring carry-over counts were conducted. The elk feeding project was continued on a reduced number of sites in the East Kootenay. Calf components of fed elk herds reached near record levels in 1975. Elk feeding will be phased-out when the ranges are able to produce sufficient natural forage. The Creston deer feeding project and permit hunt reduced orchard damage and deer highway losses. The pheasant feeding program in the vicinity of Creston minimized potentially severe winter losses and contributed to another successful pheasant hunting season.

Problem Wildlife

Interactions between black bear and people were again severe in the West Kootenay. Improper garbage disposal practices in municipalities and regional districts continued to attract bears to a convenient, guaranteed food source. Bears from these dumps wander into adjacent urban areas to raid garbage cans, compost

heaps, and fruit trees. Lack of funds for proper sanitary garbage disposal and lack of a suitable approach has allowed improper and illegal dumps to perpetuate the nuisance bear problem.

CARIBOO REGION

FISHERIES MANAGEMENT

A lake capability study emphasizing recreational potentials, water quality, foreshore development, and user preferences was undertaken in 12 Cariboo lakes during the summer of 1975. The Planning Section of the Cariboo Regional District participated in the study. The information obtained will be used in setting development restrictions, regulations of power craft, and in the development of recreation facilities on these lakes.

A creel census program and general surveillance activities were undertaken at Dean River; a coastal river which provides world-famous fishing for summer steelhead. Severe overcrowding occurs at popular fishing sites. Plans are being developed to implement a "limited entry" system to alleviate this situation.

A large freshwater shrimp (Mysis), which in other lakes forms an important part of the food chain for kokanee, was introduced in Lac la Hache. This introduction should, in a few years, significantly enhance the kokanee and trout fishery of this lake.

Rail Lake, rehabilitated with antimycin in 1974, was found to be clear of this fish toxin and was stocked with rainbow trout. It will provide an excellent fishery in future years. The opening day for fishing, slated for spring of 1976, will be restricted to fishing by youngsters and the elderly.

WILDLIFE MANAGEMENT

The development of the Junction Wildlife Management Area, a protected unit of grassland in the Chilcotin which supports about 300 California Bighorn Sheep, was one of the most important activities. Grazing by cattle was eliminated by the construction of exclosure fencing. As a result, natural forage grasses used by sheep are showing good recovery from their previously over-grazed condition. The popularity of the area as a range demonstration site and as a sheep-viewing site has grown to the extent that it is now necessary to retain a patrolman on site during the summer and fall months.

The introduction of a co-ordinated land use planning process to the region in 1975 provides a promising opportunity to integrate the uses of all resources. The first integrated resource use plan by the (Cariboo) Grazing Task Force was completed on a range unit in Chilcotin. This planning system permits optimization of all local resources with the active involvement and agreement of resident landowners and leaseholders.

SKEENA REGION

In 1975 the Burns Lake District was transferred from the Omineca-Peace to the Skeena Region in line with Province-wide adjustments to administrative boundaries.

FISHERIES MANAGEMENT

Inventory continued as one of the major thrusts during 1975 and was greatly aided by Headquarters, Parks Branch, and Secretariat crews as well as Regional Habitat Protection staff. On the Queen Charlotte Islands the Yakoun, Hanna, and Denna Rivers were surveyed. In the Skeena system, the Kitimat, Zymoetz, Kitsequecla, Suskwa, Morice, Telka, and Sustut were examined, as well as the Dala, Kildala, and Kinskutch Rivers. Lakes inventoried were Johnson, Round, Tyee, Seymour, Ross, Mose, Onerka, Sicintine, Gunanoot, Haul, Tahloe, and Burnie.

Steelhead research and management took a significant proportion of time, with emphasis on the Kispiox River. In addition to fecundity and population studies on the Kispiox, 218 steelhead fishermen were contacted and 250 scale samples were collected. Necessary restrictions on the steelhead fishery have resulted in reduced catch and possession limits, shorter seasons, and closures to protect wintering and spawning fish.

WILDLIFE MANAGEMENT

Summer surveys of the Queen Charlotte Islands established that mink have not colonized the Charlottes. Elk have spread from Tlell and are now in the Rennell Sound and possibly in the Naden Harbour area. They have also moved south from Graham Island to Moresby Island. An important ancient murrelet nesting colony was located on Lyell Island. In addition, approximately 60 occupied peregrine falcon nests were found during a complete inventory of the Queen Charlotte Islands.

Inventory surveys were also carried out in the middle Skeena-Kispiox River area and in the proposed Kemano II development area. Both grizzly bear and moose will be adversely affected if flooding for Kemano II goes ahead.

Winter flights and hunting season road checks indicated the need for more restrictive seasons to protect cow and calf moose in those portions of the Kispiox, Bulkley, and Babine areas which have received heavy hunting pressure. The limited entry hunt for goat in the Nass Range was a partial success. Out of a possible 100 permits, 65 were issued and 11 goats taken. More hunters may be encouraged to apply by a longer season.

A pilot study to examine winter requirements, movements, and population dynamics of mountain goat was initiated in the Babine Range near Blunt Creek.

The nuisance animal control program is clearly satisfactory, with stock losses minimized and positive comments coming from some ranchers.

OMINECA-PEACE REGION

FISHERIES MANAGEMENT

An intensive inventory program was carried out to establish a basis on which to plan watershed management and projects of importance to recreational fisheries. Extensive inventories of all streams tributary to Takla Lake, the entire Driftwood River system, the Sakeniche River system, and all streams tributary to Trembleur Lake were completed in 1975.

Carp Lake Project

This project was designed to measure the fish production and rearing capabilities of a large lake in a new high-use Provincial park, with the objective of maintaining a high-quality sports fishery. Stream surveys of the extensive tributary systems to the lake were completed, a creel survey was continued, plankton and aquatic insect and benthic samples were collected and identified, and burbot samples were taken. Portable fences, which greatly aided the program of tagging rainbow trout, were designed and installed on several influent creeks.

WILDLIFE MANAGEMENT

Because of major differences in geography, latitude, wildlife species, and many other features, wildlife management is reported separately for the two subregions of the Omineca-Peace region.

Omineca Subregion (Prince George)

Routine classified big game counts were conducted on major winter ranges throughout several management units in the Omineca subregion. Game was not as concentrated in lowland habitats as in the previous winter because snow conditions permitted animals to disperse over more of the available range. Animals were in healthy condition and production (fawn/calf crops) was near normal.

A study of pine marten ecology, based on live trapping, was started in 1974, continued in 1975, and is now in its final year. Species distribution and habitat use appear to be functions of food supply which consist mainly of mice.

Plans were developed for a co-operative study of mountain caribou which will be cosponsored by the Fish and Wildlife Branch and Northwood Pulp and Timber Company Ltd. The study will be conducted 50 miles east of Prince George under the direction of Dr. R. J. Hudson, Department of Animal Science, University of Alberta.

WILLISTON RESERVOIR STUDIES

A study of the recreational potential of Williston Reservoir was completed in the fall of 1975. The report assesses the recreational opportunities of the reservoir and the associated endemic wildlife; identifies some of the habitat limitations controlling wildlife distribution and abundance; indicates the capability of land to support wildlife populations; and, more importantly, addresses several management options to improve these values within the confines of the reservoir.

TRAPPING AND HUNTING ANALYSIS

Computer analysis of annual trapline data and nonresident guided hunts was completed during the year. Historical data were stored and analysed. Print-outs indicated fur marketing trends and the cyclical nature of certain populations of furbearers.

A survey of northern guides and outfitters was completed during the year. All information gathered in the previous two years was collated and mapped. Preliminary attempts to develop an inventory atlas were undertaken and four map folios were made depicting species distribution and traditional range affinities.

NUISANCE ANIMAL CONTROL

In January 1975 a subregional Predator Advisory Committee was formed to investigate the nature of wildlife/livestock problems and various management/husbandry options to reduce conflicts to acceptable levels. A questionnaire was distributed to members of the agricultural community (farmers and ranchers) in order to determine the types, history, and magnitude of predatory and nuisance wildlife problems. Two broad zones of the subregion were defined for preventive wildlife control measures.

Peace Subregion (Fort St. John)

The deterioration of wildlife habitat through plant succession, overgrazing, cultivation, and mineral development continued to present the most serious threats to wildlife. A lot of effort was required to minimize the effects of these forces. Most successful in this regard was the preservation of many small tracts of land critical for wildlife survival.

The first of four projects involving moose considered productivity of several accessible moose ranges (Murray, Beatton, Pine, and Peace) in terms of both primary (browse) and secondary productivity (moose). A second project involved an analysis of hunter activity and moose kill to obtain useful information in addition to the data obtained from the single Provincial check station at Cache Creek Junction, and to explore differences in hunting between local and nonlocal individuals. A third project involved was classified counts of the major moose populations in the Peace River drainage. This project provided an estimate of annual recruitment and information for establishing relative cow-to-bull harvest seasons. The fourth project involved evaluation of population dispersions in order to identify critical areas for habitat protection.

The north slope of the Rocky Mountains has some of the most superb alpine ungulate populations (caribou, sheep, and goat) in British Columbia and, although isolation has provided security, they are faced with increasing threat from human development of the area and from increased hunting. To minimize the deterioration of these populations, a field program was started to gather baseline population data (population sizes, composition, natality, and mortality as well as ranges) and to examine interactive features of their ecology (dispersion, range quality, and predation).

NUISANCE ANIMAL CONTROL

Management of predators affecting livestock required a lot of regional management effort. However, a good program was developed by the Regional Predator Management Advisory Committee. This program encountered some difficulty in becoming functional, but, as ranchers and the Branch became more familiar with each other's role and responsibilities, significant progress was made.

CRESTON VALLEY WILDLIFE MANAGEMENT AREA

Habitat management activities have encouraged increased wildlife utilization of the management area. More deer and elk are being seen; elk calves were born in the Six Mile Slough Unit this spring. Several species of waterfowl, previously rare on the management area, are showing substantial increases; 1975 brood studies

also indicate small increases in waterfowl production despite drawdowns in two large units for construction.

Another unit, Six Mile Slough Unit, has been divided into manageable compartments. Construction of dykes and water control structures by Ducks Unlimited (Canada) is nearing completion. The Management Authority has installed a power-line to supply the eight electric pumps which will control water levels in the unit.

All staff positions at the new Creston Valley Wildlife Centre have been filled. A full program of summer naturalist activities included slide presentations in Summit Creek Campground every evening, regular nature walks, and the very popular canoe trips at Duck Lake. Displays in the centre are being completed in anticipation of a public opening in early summer 1976.

Summit Creek Campground showed an increased occupancy rate, from 22.7 parties per day in 1974 to 30.4 in 1975. The WIG '75 Program provided funds for hiring campground attendants.

Two new publications were made available to the public by the Management Authority. The brochure *Living Marshes* provides information about the management area and its activities. A waterfowl identification pamphlet was purchased for distribution.

The wildlife management area received a lot of publicity through the Reader's Digest of Canada's book *Scenic Wonders of Canada,* published in February 1976. Also, the spring issue of *Beautiful British Columbia* included a story about the wildlife centre.

A co-operative waterfowling workshop sponsored by the B.C. Fish and Wildlife Branch office at Creston, the Canadian Wildlife Service, the Creston Valley Wildlife Centre, and the Management Authority, was well attended. It is planned to conduct a similar seminar annually.

Recommendations by the public and the Technical Advisory Committees provided valuable assistance to the Management Authority in formulating decisions concerning the proposed crossings of a natural gas pipeline and a 500-kv transmission-line through the management area.

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Provincial Parks Branch

The Provincial Parks Branch functions within the context of two basic objectives. The first of these is the preservation and management of representative elements of the natural and historical heritage of British Columbia. Activities included within this objective are the planning and selection of new park and recreation areas, the management of facilities for visitor use, the provision of educational and interpretive programs for visitor enjoyment and understanding, and the management of the varied land, water and historical resources to ensure their existence in perpetuity for the benefits of residents and visitors to the Province.

The second objective of the Branch is to provide a diverse set of outdoor recreation opportunities equitably distributed and accessible to all residents of British Columbia. These opportunities relate to viewing and sightseeing; wilderness experience and travel; water sports and picnicking; walking and hiking, boating and canoeing; camping and accommodation services; winter sports and fishing and hunting. This objective requires co-operation with various agencies and organizations providing services outside Provincial Parks.

1975/76 HIGHLIGHTS OF THE PROVINCIAL PARKS BRANCH

- **Recreation Research**

Visitor use surveys completed for Bowron Lake, Golden Ears, Mount Robson, Cape Scott, Garibaldi, Mount Assiniboine, and Wells Gray Parks.

The park Attendance Data Collection System was computerized, providing managers with invaluable data.

- **Long-range Planning**

Work was initiated in the following areas: Review and development of Branch goals and objectives, development and co-ordination of recreational corridor policies, study of revisions to classification and zoning mechanisms for parks, completion of report to the Royal Commission on Forest Resources.

- **Master Planning and Site Planning**

Work was completed on the development of short policy statements on the objectives of management for 70 per cent of the parks in the Province.

Study reports were completed on numerous areas throughout the Province, including the Adams River-Shuswap Lake area, the Monkman Pass in northwest British Columbia, and Boundary Bay on the Lower Mainland.

- **Facility Development**

Approximately $8 million was spent on some 140 projects involving 75 parks throughout the Province. In addition to upgrading of existing facilities, this expenditure permitted the establishment of additional campgrounds, beaches, and picnic areas in some 15 parks.

- **Historic Parks and Sites**

In addition to the operation of existing parks, continued initiative was shown on the research and restoration of historic trails, the most outstanding achievement being the Fur Brigade Trail east of Hope, a co-operative program with the Forest Service.

- **Parks Operations**

The Branch's efforts to complete the development of administrative headquarters for each of the Province's seven resource management regions was cut short through a required reduction in staff.

- **Resource Management**

Individual wildlife reports were received for Atlin, Mount Edziza, and Spatsizi Parks.

- **Interpretation and Education**

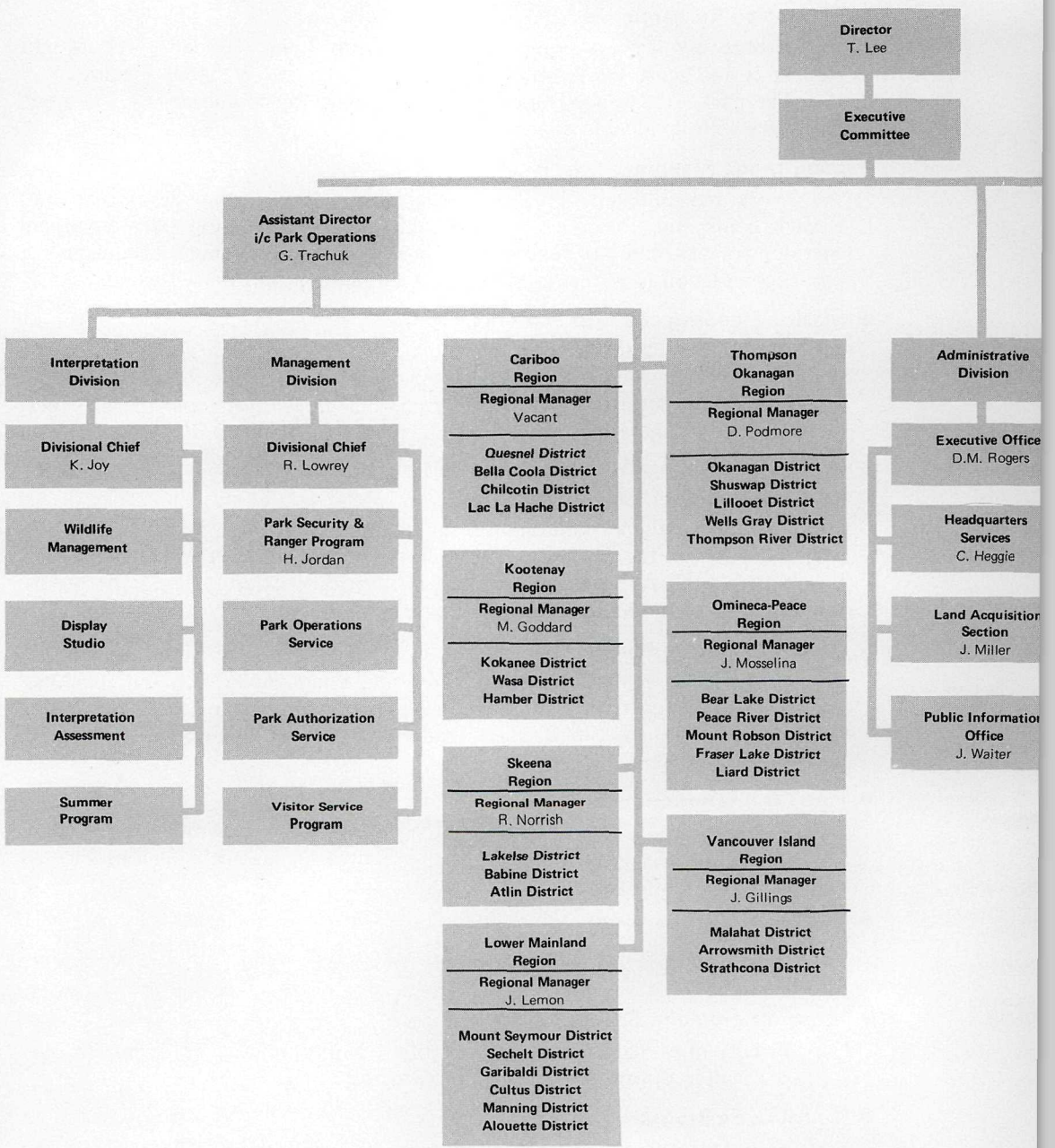
Twenty-three parks in six regions offered interpretative programs to over 210,000 people during the summer months.

- **Youth Crew Program**

This program now covers all regions of the Province (24 camps) and during this past year included 303 males and 45 females in a variety of work, recreational, and educational programs.

- **Acquisition of New Parkland**

Eight major land acquisitions were successfully negotiated. Of particular interest were Conkle Lake, 400 feet of sandy lakeshore; Desolation Sound, 9,500 feet of ocean frontage; and Clements Lake, 4,700 feet of lake frontage.


Director
T. Lee
Executive Committee
Assistant Director i/c Park Operations
G. Trachuk
Interpretation Division
Divisional Chief
K. Joy
Wildlife Management
Display Studio
Interpretation Assessment
Summer Program
Management Division
Divisional Chief
R. Lowrey
Park Security & Ranger Program
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Park Authorization Service
Visitor Service Program
Cariboo Region
Regional Manager
Vacant
Quesnel District
Bella Coola District
Chilcotin District
Lac La Hache District
Kootenay Region
Regional Manager
M. Goddard
Kokanee District
Wasa District
Hamber District
Skeena Region
Regional Manager
R. Norrish
Lakelse District
Babine District
Atlin District
Lower Mainland Region
Regional Manager
J. Lemon
Mount Seymour District
Sechelt District
Garibaldi District
Cultus District
Manning District
Alouette District
Thompson Okanagan Region
Regional Manager
D. Podmore
Okanagan District
Shuswap District
Lillooet District
Wells Gray District
Thompson River District
Omineca-Peace Region
Regional Manager
J. Mosselina
Bear Lake District
Peace River District
Mount Robson District
Fraser Lake District
Liard District
Vancouver Island Region
Regional Manager
J. Gillings
Malahat District
Arrowsmith District
Strathcona District
Administrative Division
Executive Office
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Headquarters Services
C. Heggie
Land Acquisition Section
J. Miller
Public Information Office
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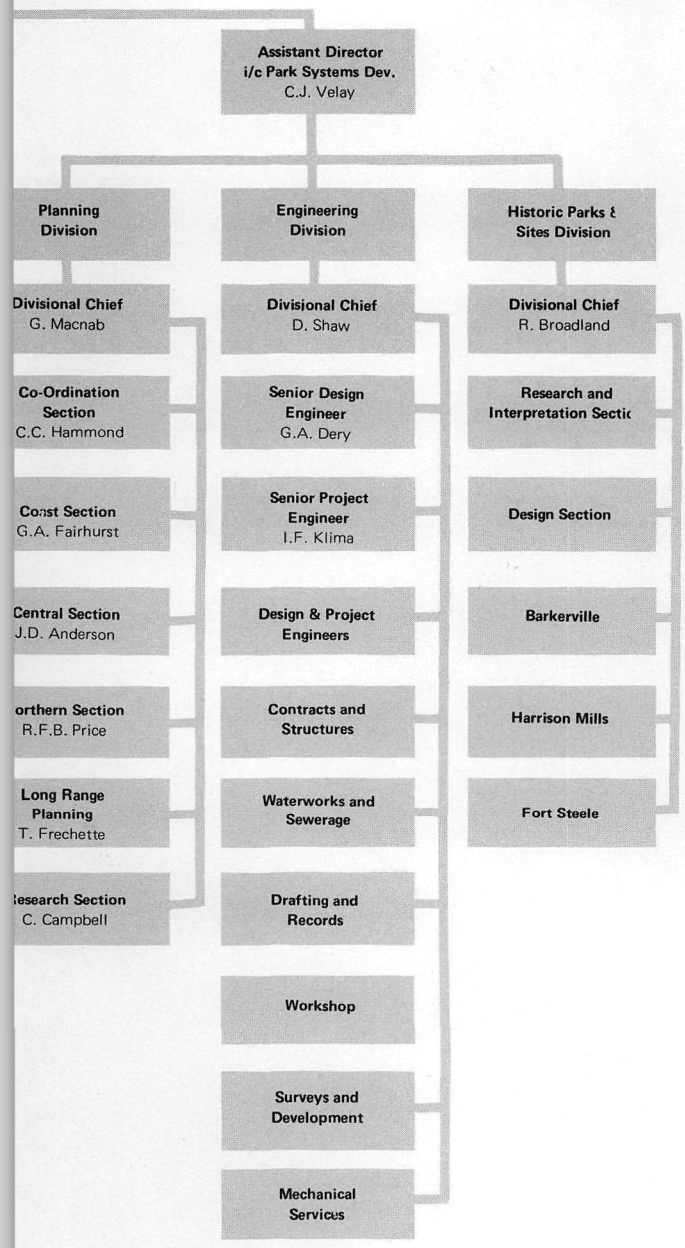
Assistant Director
i/c Park Systems Dev.
C.J. Velay
Planning Division
Engineering Division
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G. Macnab
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I.F. Klima
Design & Project Engineers
Contracts and Structures
Waterworks and Sewerage
Drafting and Records
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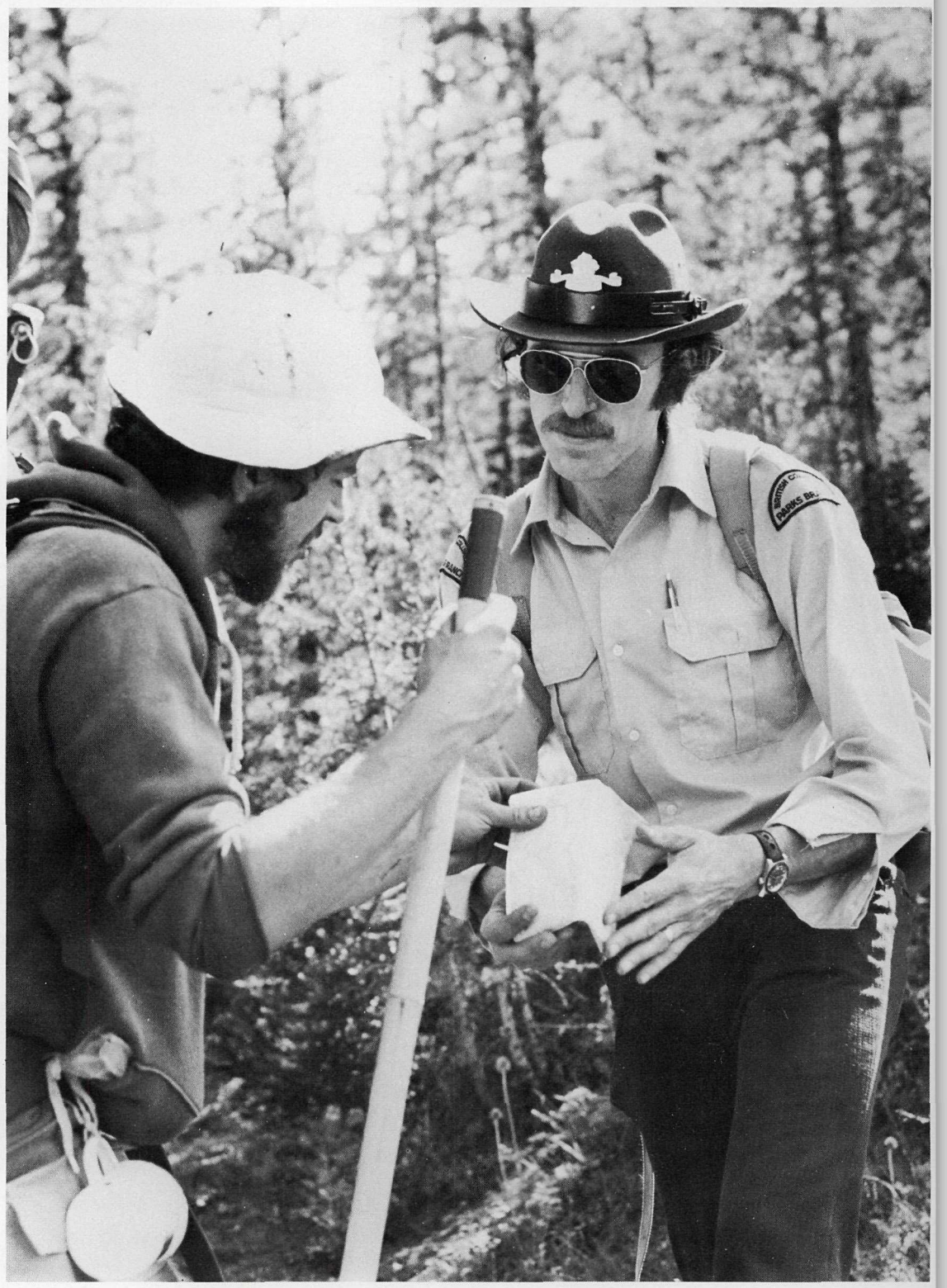
Mechanical Services
Divisional Chief
R. Broadland
Research and Interpretation Sectic
Design Section
Barkerville
Harrison Mills
Fort Steele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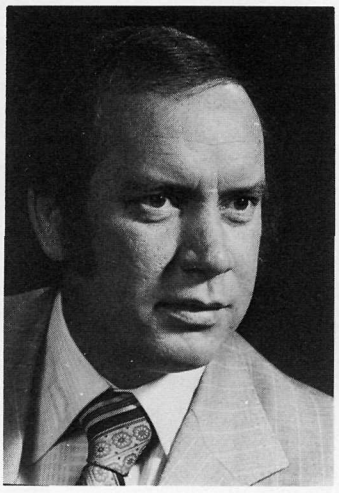


Tom Lee
Director

Provincial Parks Branch

Parks Branch was organizationally modified this year, with the creation of another branch, the Outdoor Recreation Branch, within the Department of Recreation and Travel Industry. Functions formerly within Parks Branch now located within the new branch include liaison with regional districts and municipalities, administration of the Community Recreation Facilities Fund and the *Recreational Land Green Belt Encouragement Act,* and administration of Class C Parks. As part of this Departmental reorganization, it is planned that the Parks Branch will be relieved of the increasing responsibility for co-ordination of the many forms of nonpark recreation.

A major undertaking of the Parks Branch during this past year was a review of our policies as they relate to the management of the some 346 parks and recreation areas within the Provincial system. Initially, this took the form of the development of individual policy statements for the more significant parks within the system. These policy statements consist of a stated set of objectives, zoning and management guidelines, and priorities for action for each park and were completed for approximately 70 per cent of the parks within the system. These statements are intended to provide interim guidelines to managers within the Branch, pending completion of master plans which will more accurately chart the ultimate course of each park. The review of policy continued in a broader sense to include wildlife and fisheries programs, education and interpretation, recreation areas, user permits, and related issues of a Provincial scale. This emphasis upon policy review must be seen as a reflection of the increased complexities of management issues facing the agency as a result of increased visitor use, expansion of the number of parks, and the growth which has occurred in park facilities. It is anticipated that this review will be completed within the coming fiscal year.

The establishment this past year of the Outdoor Recreation Council of British Columbia promises new directions in public participation in parks and outdoor recreation programs across the Province. The establishment of the Council may be viewed as a direct result of the Manning Park Conference on outdoor recreation, sponsored by the Parks Branch, and the subsequent conference on the Recreational

Use of Wildlands, sponsored by recreational user groups. The Council operates as an agent independent of Government and has the expressed intent of providing a public forum for user interest groups and a mechanism for making significant public voices known to Government. The Branch welcomes the availability of the Council as an agent for review and development of appropriate public policies.

T. LEE, *Director*

PARK MANAGEMENT AND OPERATIONS

REGIONAL ORGANIZATION

This was the first full year of operation under the revised regional boundaries created by the Environment and Land Use Committee. Six regions were staffed at preliminary levels before Government constraints on staff were applied. No staff have been allocated to the Cariboo Regional office.

YOUTH CREWS

New Youth Crew camps were established in Tweedsmuir, Strathcona, Wells Gray, Newcastle Island, and Muncho Lake Parks. Girls' crews were increased from one in 1974 to three in 1975. Plans for the 1976 season anticipate having nine girls' crews in six different locations, and 18 boys' crews in 14 different locations. Young men/women equalization of crews in relation to applications received will then be achieved. New camps are being planned for Cape Scott Park on Vancouver Island and Naikoon Park in the Queen Charlottes. All six regions now are engaged in Youth Crew programs.

RESOURCE MANAGEMENT

Work continued on the development of a rationale policy to handle the existing 768 remaining mineral claims in Provincial parks.

In accordance with the policy of phasing out nonconforming uses in nature conservancy areas, it is anticipated that commercial guiding and trapping will be removed from the Murtle Lake Conservancy Area in Wells Gray and Eutsuk and Rainbow Conservancy Areas in Tweedsmuir in 1976.

Revised policy and procedures were completed for the park use permit system and an assessment of the fee structure of permits was initiated.

A co-operative program was initiated in conjunction with Fish and Wildlife Branch to develop a comprehensive policy respecting fish and wildlife management in Provincial parks.

SECURITY

There was no increase in the security establishment over last year, with patrolmen employed in 23 parks, seven of which have gatehouse control.

Enforcement was strict, with 33 prosecutions being initiated by park staff. Of these, 16 were for vandalism with penalties as high as 30 days' imprisonment and $300 restitution being obtained. Other charges dealt with thefts and other assaults under the *Park Act* and other Provincial Statutes.

At Cultus Lake the alternative community service program organized by the Justice Development Commission was used successfully, over and above the regular Courts. In all, 27 adults and five juveniles performed a total of 278 hours of work for offences committed in the park.

Complaints from the public regarding rowdyism and vandalism were minimal, only 15 being received all year.

ACCIDENT PREVENTION

An improvement was made over last year; with the Department of Recreation and Conservation again winning the Premier's award for percentage reduction.

This is no doubt attributable in large part to increased awareness on the part of the work force, and the presence of active accident prevention committees in all areas.

INTERPRETATION

Thirty-eight naturalists introduced 210,000 visitors to the diversified natural history found in 23 Provincial parks. The Community Naturalist Program was once again very well received by the public. Assessment and Wildlife field and office staff completed 28 reports on the status of flora and fauna in six regions. Work continues on planning input for 38 additional study areas. The Display Studio was kept very busy in planning and producing displays for the new nature houses at Goldstream and Kokanee.

A three-day training course at the University of Victoria launched the 1975 Naturalist Program in British Columbia. Popular and accessible parks with nature houses continued to attract many visitors. Manning's naturalists welcomed 37,700 inquiries; Miracle Beach, 42,800; Bowron, 12,200; Mount Robson, 18,600. Shuswap, with 47,340 inquiries, was the highest of any park in 1975.

Community Naturalists operated their popular programs of walks, talks, and slide shows from Victoria, Vancouver, and Nelson. More than 36,000 children and adults were involved in these programs.

Resource analyses and preliminary or conceptual interpretation plans were completed for the following parks and recreation areas: Skagit River, Kalamalka Lake, Driftwood Canyon, Cape Scott, Naikoon, Herald, and Kitsumkalum. Field work was carried out for Ross Lake, Maclure Lake, and Hudson Bay Mountain. In addition to these interpretation assessments, environmental quality control input was provided for park plans proposed for Mabel Lake, Ruckle, Rathtrevor, Ross Lake, Stuart Lake, and others.

Special environmental studies for 1975 were the major ecological study of Liard River Hotsprings Park (field work complete), vegetation study of the Tseax River Park proposal (Aiyansh Lava Flow), marine communities study and compilation of information on the physical features of Mud Bay, as part of the Boundary Bay Recreation Study. Co-operative funding with the Provincial Museum was provided to university students doing vegetation and other resource analysis studies in the Akamina Valley area. Planning and assessment continued for the following: Little Qualicum, Rathtrevor Beach, Naikoon, Driftwood Canyon, Tweedsmuir, Wells Gray, Liard River Hotsprings, Whiskers Point, Lakelse Lake, Tseax River (proposal), Trout Lake, Kokanee Creek, Kokanee Glacier, Mount Assiniboine, Stagleap, Champion Lakes, Nancy Greene, Golden Ears, Cypress, MacMillan, Carp Lake, Anthony Island, Sproat Lake, Petroglyph, Goldstream, Newcastle Island Marine Park, Conkle Lake, Manning (Blackwall area).

The first season of a three-year combined wildlife and fisheries inventory in Tweedsmuir Park was accomplished. Individual wildlife surveys of Atlin, Mount Edziza, and Spatsizi Parks were completed and are available.

Monitoring of the Elk River in Strathcona Provincial Park, and of the Roosevelt elk themselves, continued after the major cleanup along the river in 1974.

The last of the new displays for Manning Provincial Park Nature House were completed, together with a partial revision of the Bowron Lake Nature House displays. The new nature houses at Goldstream and Kokanee Parks are scheduled to open with new displays in time for the 1976 visitor season.

ADMINISTRATIVE DIVISION

PARKS AND OUTDOOR RECREATION SYSTEM

1. *New parks and recreation areas established—*

	Acres
Cypress	5,200.0
Green Lake	280.0
Herald	162.0
Kalamalka Lake	2,200.0
Niskonlith Lake Recreation Area	593.0
Sunnybrae Recreation Area	61.3
Spatsizi Plateau Wilderness	1,668,020.0

2. *Additions to existing parks and recreation areas—*

Burges and James Gadsden	320.0
Cathedral	64,000.0

3. *Deletions from parks and recreation areas—*

China Creek	2.5
Marl Creek	11.0

4. *Change of status—*

Pennask Lake Park reclassified to recreation area	604.0

5. *Land acquisition—Provincial parks*—Eight major land acquisitions were successfully negotiated. Of particular interest were Conkle Lake, 25 acres, 400 feet of sandy lakeshore; Desolation Sound, 161 acres, 9,500 feet of ocean frontage; Clements Lake, 86 acres, 4,700 feet of lake frontage and 120 acres in Cape Scott with considerable ocean frontage. A 2.8-acre parcel with frontage on the Sooke River was purchased and the last three inholdings within the restoration area of Fort Steele were acquired.

The following groups of mineral claims were purchased by the Parks Branch in order to protect park values:

(*a*) Order in Council 77—Wells Gray Provincial Park.

(*b*) Order in Council 872—Wells Gray Provincial Park.

(*c*) Order in Council 78—Golden Ears Provincial Park.

There are approximately 768 valid mineral claims remaining within Provincial parks held by 52 owners.

In line with the policy to phase out private cabins within Mount Seymour Provincial Park, the Parks Branch purchased six cabins, also one park use permit was cancelled. There are currently 47 valid cabin sites remaining within Mount Seymour Park.

Parks acquired through Greenbelt Funding included Cosens Bay-Kalamalka Lake, 2,200 acres in conjunction with the Second Century Fund and the Nature Conservancy of Canada; Osoyoos Lake, 27.4 acres, 750-foot frontage; Herald Park-Shuswap Lake, 162 acres, 4,400-foot frontage.

6. *Pacific Rim National Park*—In the Phase I area, 250 parcels have been acquired, seven parcels are under negotiation and four have not been dealt with. In the Phase II area, eight parcels have been acquired and the remaining two are under negotiation.

7. *Summary of parks, recreation areas, and wilderness conservancies to April 1, 1976—*

	Number	Acres
Class A	253	6,958,147
Class B	6	3,321,163
Class C	66	37,721
Total parks	325	10,307,031
Recreation areas	20	562,613
Wilderness conservancies	1	325,000
Total parks, recreation areas, and wilderness conservancies	346	11,193,990

STAFFING

A comprehensive establishment control system was initiated to provide a mechanism for assessing and directing organization structure. As directed by Government policy, the Branch set out to achieve a 15-per-cent reduction in year-around employees and by April 1, 1976, had reduced its manpower resources by about 10 per cent.

PROCEDURES

Standard policies and procedures were adapted for recording and controlling physical inventories. An estimated $4 million of equipment is now under inventory control.

DEPARTMENTAL LIBRARY

Use of the library increased with one staff member working nearly full-time on the lending of materials, the displaying of new journals on racks throughout the Department, and the copying of articles and papers for staff remote from the library.

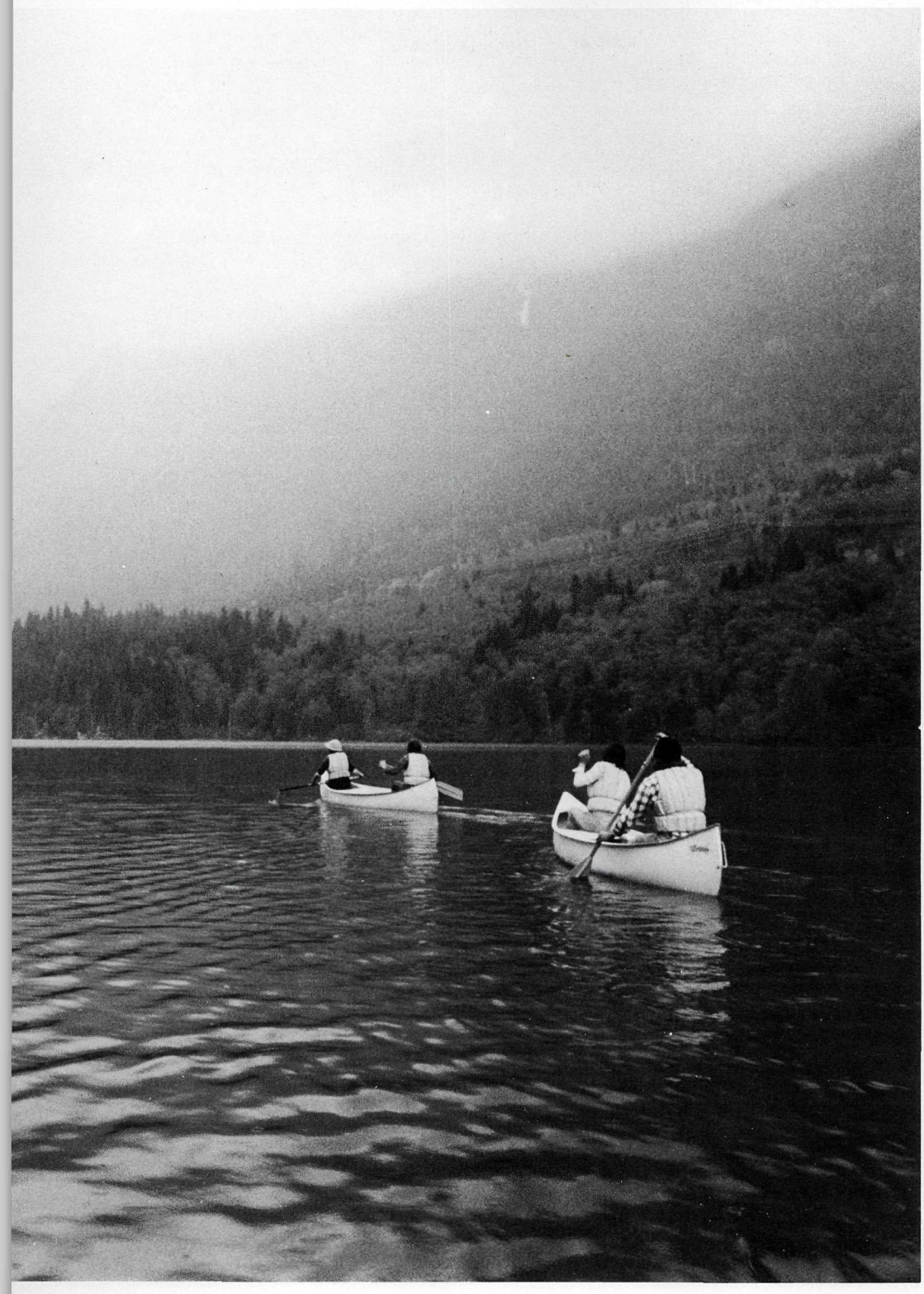
The Librarian visited regional office libraries and published our first duplicate exchange list, providing for regional office collections.

In January 1976 *The Library: A Manual* was produced and distributed to all Departmental offices to increase understanding of library services.

INFORMATION SERVICES

The demand for more diversified types of publications increased, and new folders describing Mount Edziza Provincial Park and Recreation Area, Cathedral Provincial Park, and Naikoon Provincial Park, and a completely revised edition of the Parks List using a new format were prepared and distributed during the year. In addition, draft copies of publications describing Wasa, Kokanee Creek, Champion Lakes, Lakelse Lake, and Carp Lake Provincial Parks, and Provincial parks along the Alaska Highway, were completed by year-end and will be available for distribution early in 1976. In keeping with the metrication of Canada, all publications have undergone change to the metric system of measurement.

Contact with the general public was maintained through the news media and through interested groups and organizations. Special presentations were given to Travel Counsellors' schools in Vancouver, Radium Hot Springs, Dawson Creek,



and Naramata. In co-operation with other branches of the Department of Recreation and Conservation, the Branch was represented at outdoor shows on Vancouver Island and the Mainland. In June, the Information Officer attended the annual conference of the American Association for Conservation Information at Portland, Oregon. The monthly report was restructured and named "Park-S-Scope."

ENGINEERING DIVISION

In co-operation with field offices, other divisions, Government agencies, and contractors, Engineering provided technical support for the capital development and major maintenance works in parks.

The major engineering effort of the Division was applied toward the co-ordination of contracts for the building of Cypress Provincial Park and the upgrading and completion of electrical, water, and sewerage systems at a variety of locations throughout the Province.

Mechanical and survey functions were decentralized to the field offices, with headquarters assigned the responsibilities for Province-wide direction and co-ordination.

The workshop at Langford produced a large quantity of park equipment such as tables, boats, signs, and toilets. Several new products were designed and distributed to Parks and Fish and Wildlife personnel, such as the new beartraps. In addition, the workshop operated the headquarters vehicle pool, transported finished products, and handled several off-yard jobs.

HISTORIC PARKS AND SITES DIVISION

During 1975, through participation at conferences, meetings, and seminars, the Historic Parks and Sites Division maintained and enlarged its valuable contacts with the numerous institutions, associations, and Government agencies in Canada and the United States concerned with the preservation of historic resources. In October an important meeting and workshop was held in Victoria, attended by staff from Barkerville, Fort Steele, Kilby Museum, and Headquarters.

Barkerville Historic Park—While no major development projects were undertaken during 1975, progress was made on restoration of several buildings. Two new operating exhibits, the blacksmith-wheelwright shop and the cabinetmaker's shop, were opened and proved very popular with the visitors. A record 3,257 students in organized groups toured the park in May and June. Revenue from special events and souvenir sales increased significantly over 1974 to a total of more than $230,000.

Columbia River Historic Park—Considerable progress was made toward completion of plans for a picnic area-interpretation centre for the park.

Cottonwood House Historic Park—Visitation to this park was up to over 28,000 in 1975. Work continued on preparation of a small interpretation centre in one of the existing log buildings.

Fort McLeod Historic Park—Foundation restoration and other minor repairs were completed on the log buildings at the site.

Fort Steele Historic Park—In his first full year at the park, the curator made considerable progress in cataloguing, researching, and presenting the collection. A special exhibit was prepared for International Women's Year featuring the clothing and personal effects and outlining the contributions of specific pioneer women.

At Fort Steele and Barkerville a major user survey was conducted by the staff of the Parks Branch Research Section. Revenue from the Wild Horse Theatre, railway, stagecoach, and souvenir sales increased in 1975.

Kilby Museum Historic Park—The slow process of cataloguing the collection continued during 1975. A 10,000-gallon water-storage tank was installed as the second phase of the project water supply and fire-protection system. An old log building from the Mission area was acquired, dismantled, and moved to the Park for re-erection as housing for the water-storage tank and electric pump.

Heritage structures—The Fort Steele Guide Book was continued during the year and is scheduled for completion in the early summer of 1976. Several proposals were prepared for a new Theatre Royal at Barkerville. Historical and architectural authentication was provided for various structures of concern to the Division, to the Provincial Historic Sites Advisory Board, and to the Victoria Heritage Advisory Committee.

PARK HISTORY

During 1975 and into 1976, research and advisory input was provided to both Planning and Interpretation Divisions concerning several established and proposed parks. Summer staff undertook an inventory of the historic resources within Lower Mainland Region parks, recreation areas, and reserves. An assessment of the human history features within established Provincial parks was begun in order to provide a Divisional contribution to the process of preparing concept statements and master plans for parks.

ARCHITECTURAL DESIGN

A study was undertaken and preliminary plans drafted for required alterations to the Barkerville Museum. Also, for Barkerville, several sets of plans were prepared on the proposed reconstruction of the Theatre Royal. Preliminary drawings were begun on a proposed building for Fort Steele which would combine an interpretation centre, souvenir shop, restaurant, and post office.

HISTORIC TRAILS

The clearing of the Hope to Tulameen section of the 1849 Hudson's Bay Company Brigade Trail is now half completed. Restoration of the Dewdney Trail between Christina Lake and Paterson is almost finished and a brochure was produced on this section of the famous trail. There was some consultation with Parks Canada on a proposal for joint development of the Alexander Mackenzie-Grease Trail as a national historic trail under the ARC (Agreements for Recreation and Conservation) Program.

HISTORIC SITES ADVISORY BOARD

Fewer reports were prepared by the Division for the Board in 1975 than the previous year. Among those submitted were reports and proposals on the Skookumchuck Church and Barkerville's Theatre Royal. Divisional contact with the Board is also maintained through representation on the subcommittee on markers, which reviews proposed texts for Stop-of-Interest markers.

PLANNING DIVISION

Planning Division made significant progress this year with a strong contribution to interagency studies in the field of outdoor recreation assessment, recreation inventory, visual and ecological impact studies, and the production of specific park plans.

LONG-RANGE PLANNING

The Planning Division has been instrumental in the technical preparation of policy papers and direction for the Branch, through the Long-range Policy Section. Work in this section includes the critical analysis of papers produced elsewhere.

During 1975/76, this section prepared a concept for a system of recreational corridors, including draft legislation. This concept was presented for discussion with other agencies and public groups during the year. Alternative actions arising from these discussions are now under discussion.

Papers produced by this section to focus internal Branch policy discussion on a number of subjects included

Policy for Recreation Areas.

A Proposal for Park Classification and Zoning.

A Proposed Snowmobile Policy for Parks.

A Draft of Parks Branch Goals, Objectives, and Policies.

A Redraft of the Squamish-Lillooet Outdoor Recreation Study.

A Branch Submission to the Royal Commission on Forest Resources.

A recreational land purchase program.

RESEARCH

Park Surveys

During 1974 a series of surveys was conducted in specific parks to obtain an improved understanding of the background, behaviour, and attitudes of park users. All data from these surveys are now stored on computer files and the following reports were produced in 1975:

Report No.

16. Bowron Lake Park Visitor Use Study.
24. Golden Ears Park Visitor Use Study.
36. Mount Robson Visitor Use Study.
37. Cape Scott Park User Survey.
39. Garibaldi Park Visitor Use Study.
41. Mount Assiniboine Visitor Use Study.
42. Wells Gray Park Visitor Use Study.
44. Mount Assiniboine Visitor Use Study.

In addition, a report was completed which compared destination camper use in two public and two private campgrounds in the Okanagan (31. An Analysis and Comparison of Okanagan Public and Private Campground Markets). Other user surveys were completed on winter use in selected parks in the Lower Mainland and the first draft of a report has been prepared.

This year we moved away from individual park user surveys and a regional survey was completed at ferry terminals to and from the southern Gulf Islands. Passengers were interviewed to identify their preferences for recreational development, and a report is being prepared.

B.C. Parks Graphic Atlas

To broaden perspectives on the total park system, a report was completed in January of 1975 (1. British Columbia's Park System: A Graphic Presentation) which graphically distils pertinent data. Maps for each of the park regions display monthly camping occupancy levels, origins of visitors, relationship between campground size and occupancy. In addition, Provincial maps show the number of camp-sites provided per thousand residents within 100 miles of major population centres and other materials that assist in the development of long-range objectives.

Environmental and Social Impact Study

With our increasing concern to assure use without abuse, we carried out two detailed environmental impact studies. These consultant studies are being used in the formulation of master plans for Mount Robson and Mount Assiniboine Parks.

As part of our participation in the work of the Canadian Outdoor Recreation Research Committee, a paper was prepared (19. Assessing the Social Impact of Recreation Developments) which outlined some of the factors which should be considered in evaluating the social benefits or drawbacks which will accrue from investment in different kinds of recreational provision.

Recreation Facility Inventory

At present, there is no complete inventory of recreation facilities in British Columbia. To attempt to rectify this situation, we developed an inventory format, in close co-operation with the Department of Travel Industry. The concept behind this system was to make it simple and to develop effective mechanisms to provide yearly updates. The initial objective, which will be achieved by May 1976, is to produce an inventory of all camp-sites in the Province. The next phase will be to expand input into the system of a wide range of additional recreation facilities. Relevant Provincial departments have agreed to work with this system.

Attendance Data

Perhaps the most significant innovation in 1975 was the complete computerization of the park Attendance Data Collection System. One of the outputs from improvements is the park campground profile. This profile permits planners and managers to obtain a much better idea of campground markets. With little additional effort or cost, we now have a clear idea of the origins and length of stay of campground visitors. Managers have also found that the "loading" graph is extremely useful in determining seasonal staff requirements. This capability represents a national breakthrough in recreation data collection procedures and means that we can obtain relevant information at the cheapest possible cost.

Program Evaluation

In 1975 a detailed study was conducted in Barkerville and Fort Steele Historic Sites. Management and research staffs have worked co-operatively to evaluate public response to existing programs. In a similar vein of program evaluation, the Community Recreation Facility Impact Study interviewed recipients of grants from the $42 million fund. Information was sought on assessment of the impacts of the facility, problems in obtaining supplementary and maintenance funding, costs of facility operation, design problems or problems associated with running the facility, estimated future fund requests, etc. This study was conducted at the re-,

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quest of the Recreational Facilities and Regional Parks Division of the Outdoor Recreation Branch. It is anticipated that a summary report will be produced by mid-1976.

Committees

Members of the Research Section played a major role in several committees. It provided representation on committees such as the ELUC Data Service Committee, the Canadian Outdoor Recreation Research Committee, and the Olenick Committee on Recreation Training Programs in B.C. It supplied a chairperson for the North Fraser Recreation Study which was completed this year and provided guidelines for recreational planning for the Fraser River from New Westminster to the University Endowment Lands. A chairperson was also provided for the Outdoor Recreation Co-ordinating Committee which was established in 1975 and is attempting to improve co-ordination at the Provincial level between 10 agencies involved in recreation facility provision.

CENTRAL SECTION

Park System Development

New auto-oriented parks were created at Kalamalka Lake, Green Lake, Niskonlith Lake, and Sunnybrae and Herald Parks on Salmon Arm of Shuswap Lake.

A major study resulted in expansion of Cathedral Lake Park from 18,000 to 82,000 acres to provide a large natural area representing southern Okanagan.

The second year of a major fieldwork program to determine a park proposal representative of the Chilcotin natural region was completed. Over the winter of 1975/76, our proposals have been subject to interagency review.

Field work for a possible new park in Valhallas above Slocan Lake was completed. A review of park status will begin during 1976. Also in the Kootenays, possible park proposals adjacent to Mica reservoir were examined.

Park facilities were designed for several locations, including Bull Canyon, Trout Lake, Downing Park on Kelly Lake, Sunnybrae on Shuswap Lake, Conkle Lake, Mabel Lake, and Loon Lake. Development of all but the latter two also commenced.

Park Planning Process

During 1975 the Branch commenced its first full-scale program to provide for public involvement in preparing plans for a park. The purchase by the Province of 2,000 acres of the Coldstream Ranch on Kalamalka Lake provided initial impetus to the process. Public participation through personal contacts, public meetings, and publication of reports was met with considerable interest by residents of Vernon and area. A plan should be finalized early 1976.

An experimental program was initiated with the co-operation of the Outdoor Recreation Council to provide public input into the study of park potentials in the Chilcotin region.

Interagency Studies

Given a Provincial policy to encourage integrated resource management, several interagency study teams were set up to study matters of resource allocation, including park proposals. These study areas included Adams River, Stein River Basin, Bonaparte-Tranquille Plateau, and Chilcotin Ranges. Other study teams

considered resolution of matters relating to mineral development and energy generation and transmission. Included here were Arrow reservoir, proposed Revelstoke Dam, Pend-d'Oreille Reservoir, Libby Reservoir, Coalblock proposals, major Hydro transmission-lines.

COASTAL SECTION

Park System Development

Assessment work was done to determine park opportunities in the following areas: Cape Scott, Howe Sound, Indian Arm, Jones (Wahleach) Lake, Blue Mountain, Stave Lake, Nimpkish Valley, Quatsino Sound, Kyuquot, and the Artlish River Caves. Rugged Point, near the entrance to Kyuquot Channel, has considerable park potential. A proposal to extend Cape Scott Park boundary eastward has been prepared.

Concept plans for the Black Tusk Area of Garibaldi Provincial Park and the road and trail system for Mount Seymour Provincial Park received approval. Work continued on the conceptual plans for Cypress, Manning, Davis Lake, Silver Lake, and Golden Ears.

Design plans were completed for a viewing platform, day-use area, and campground at Brandywine Falls, relocation of camp-sites at Garibaldi Lake, design of the Cultus Lake Portal, a shelter at Diamond Head, a shelter in Golden Ears, and the ski trail system for Cypress. Work continued on summer and winter proposals at Cypress, a day-use area at Davis Lake, a campground at the Skagit-Sumallo junction in Manning Park, and a day-use area in Golden Ears.

A concept and a site plan was approved for the day-use area of Ruckle Park. The development will be completed by the spring of 1976. Site plans were also drawn up for the reconstruction of the day-use area at Rathtrevor Beach, picnic table shelters at Newcastle Island, gatehouse at Miracle Beach, and for developments at Smelt Bay and Filongly Parks.

Interagency Studies

An interagency study, initiated by the Parks Branch, is being undertaken to assess effects of naturally occurring processes and man's activities on the forest cover of MacMillan Park and to devise methods of protecting its recreational integrity. An interagency review was also undertaken on the Strathcona Park boundary in order to make the park more viable for recreation and management by proposing the addition of key access points and altering straight-line boundaries to natural boundaries. The next phase of the study will be to compile a resource inventory of the affected areas. Input was made into the interagency study of the impact of a proposed water storage reservoir on recreational uses of the Silver-Holyoak Lakes area, southwest of Ladysmith.

NORTHERN SECTION

Park System Development

Proposals were prepared to establish new parks at Monkman and One Island Lake. Spatsizi Provincial Park, containing 1.8 million acres, was established.

Plans for Mount Robson Park included facility design for redevelopment of the Mount Fitzwilliam picnic-site; a proposal for a signing and a master plan.

Facility design plans were prepared for a campground at Stuart Lake, expansion of the day-use area at McLure Lake, Ross Lake, and Lakelse Lake Park and a replacement development for Topley Landing Park, including both day-use and camping facilities.

Areas adjacent to Stone Mountain Park and Muncho Lake Park were reviewed for possible addition to these parks. Plans have been prepared for day-use and camping facilities at Boya Lake Park.

An interim development plan has been prepared for Naikoon Park and a review conducted of the recreational potential of Rainbow and Diana Lakes near Prince Rupert.

Interagency Studies

Field work in the Skeena Region was concentrated on the major integrated resource study being co-ordinated by the ELUC Secretariat. Meetings were attended at Smithers, concerning theory and possible application of an integrated resource management policy, with specfic reference to the Babine Range area.

A review of the potential alignment of the Fort Nelson–Fort Simpson Highway was undertaken to determine possible parks along the route.

Ongoing liaison was maintained with interagency groups in relation to resource studies on the Williston Clearing Project and Recreation Survey.

Assistance was given to educational programs at Malaspina College and the Green Timbers Forest Service School.

SKEENA REGION

The Skeena Park Region consists of three Park Districts—Lakelse, Atlin, and Babine. In addition, Bella Coola District is being administered by Skeena as the Cariboo Region is not yet functioning. There are 19 Class A and B Parks in the Skeena Region with a total of 3,519,232 acres (40 per cent of the Provincial total). In addition there are some 10 Class C Parks accounting for 1,119 acres. Finally, three recreation areas exist in the region covering 347,800 acres or 62 per cent of the Provincial total.

Several staff appointments were made to the Skeena Park Region during 1975. A Planner for the Skeena Park Region was assigned to the Smithers office in June 1975. In addition, three Technician 1 positions were filled in Skeena, including a Technician 1 for Lakelse Lake Park, Technician 1 for Babine District, and a Technician 1 for Atlin District.

The year 1975 saw some important planning and management reconnaissance projects involving Naikoon Park, Mount Edziza Park, Boya Lake Park, and Tweedsmuir Park. A management plan for Tweedsmuir Park was completed in early 1975 and phases recommended within this management plan were implemented. In addition a four-year management plan program was compiled by the Skeena Park Region for Atlin District. This management plan proposed a series of objectives to be implemented over the next four years concerning the administration and management of the park and recreation area resource in Atlin District.

Capital Works Projects

The Bella Coola District saw major work inputs along the Atnarko River in Tweedsmuir Park. Improvements were carried out to the Parks Branch headquarters and residence at Atnarko camp. Three wells were drilled along the Highway Corridor and improvements to the Atnarko headquarters water system were

carried out. A highway pulloff was constructed at the base of the "Hill" section coming into the Atnarko River valley.

Babine District

At Maclure Lake the new beach extension was begun with clearing of trees and piling of sand for spreading on the winter ice. A small project was completed at Driftwood Canyon Park where a parking-lot, a foot bridge, and toilet facilities were provided. Topley Landing Park received improvements to the parking and recreational facilities. Negotiations for land purchase to provide a headquarters and workshop service yard at Houston continued during 1975.

Lakelse District

Work continued on the electrical contract for Furlong Bay. A new 22 camp-site loop at Furlong Bay campground was completed. Work began on a water reservoir for the Furlong Bay Camp-site. Also an extension to the present workshop at Lakelse Lake Park was begun to provide office accommodation for staff. Renovations to the Dunes Lodge in Naikoon Park were begun to accommodate a Youth Crew in 1976.

Atlin District

A mobile home to function as an office and residence for park staff was purchased and located at Dease Lake in 1975. In addition, clearing of an access road was provided at Dease Lake for the Park headquarters.

Working in Government Program

The Babine District had some 25 people working within this program. Emphasis was placed on the hiring of native Indian people in the Babine District and some 20 people were hired under this directive. The projects the WIG personnel in the Babine District were hired on included Capital Works Projects such as Driftwood Canyon and Topley Landing as well as projects at Maclure Lake, including firewood and concrete construction. Similarly in the Lakelse District 17 people were hired under the Working in Government Program. This included 12 native Indian people from the Terrace-Kitimat area. Projects included table plank finishing, completion of the new 22-unit camp-site loop at Furlong Bay, and some regular maintenance programs.

Interpretation

For the second consecutive year a naturalist's program was held at Lakelse Lake Park during the spring and summer seasons. Again outdoor naturalist classes with school-children in the Kitimat-Terrace area were held in May and June. Weather unfortunately kept numbers attending the interpretation talks at the park during the summer to smaller levels than the previous year. Emphasis in the naturalists' talks was placed on bears and humans' relationship to bears, particularly in Lakelse Lake Park.

Special Programs in the Skeena Region

1. An intensive wildlife inventory was carried out by a team of wildlife specialists in Tweedsmuir Provincial Park in 1975. Smaller wildlife inventories were carried out also in Mount Edziza Provincial and Atlin Provincial Parks.

2. The Parks Branch was also involved in a study of the Spatsizi Plateau some 200 miles north of Smithers. A number of Government agencies were involved in

this study, including the Department of Mines, B.C. Forest Service, Fish and Wildlife Branch, Environment and Land Use Committee Secretariat, and the Provincial Parks Branch. Recommendations on park status for the Spatsizi Plateau were sent forward to ELUC Secretariat. In November 1975 a 1,660,060-acre park was established over the Spatsizi Plateau.

THOMPSON-OKANAGAN REGION

The only addition to regional staff during 1975 was that of a Planning Officer.

Statistics indicate that the campgrounds of the Thompson-Okanagan Region produced 27 per cent of the total camp-site revenue for the Province. This means more use over a longer period for many of our campgrounds. A significant capital works program which concentrated on the completion of old projects and made provision for the construction of new facilities was capably handled by regional staff in co-operation with the districts. The most important addition to facilities in the regional system of parks occurred in the Lac la Hache and Shuswap Districts, where new facilities were installed in areas that previously had few sites available for public use. Considerable progress was made toward the completion of long-standing projects in the Okanagan, Thompson-River, and Wells Gray Districts.

Okanagan District

A landslide severed road access to Okanagan Lake Park and necessitated the reallocation of capital funds. Work continued toward the completion of a high-

density campground and day-use area within Okanagan Lake Park, and significant refinements were made to the water storage and distribution system.

While use in many areas of the Province are expected to show a decline, it is anticipated that public use of developed facilities within the Okanagan District will show an increase.

Shuswap District

With the assistance of both Engineering and Planning Divisions, a rather innovative development project was brought closer to completion at Cinnemousun Narrows on Shuswap Lake. This work entailed the construction of a somewhat different type of camp-site for use by boaters and it is destined to form the nucleus of a system of marine parks for Shuswap Lake. Other capital works were undertaken at Sunnybrae, a small area on Shuswap Lake, and refinements to the water-storage facilities in Yard Creek Park.

Public use remained at levels similar to those of previous years, most facilities being taxed to their utmost during July and August.

Thompson River District

The program of capital works planned and executed within this district was aimed at the completion of developments started as long ago as 1965. Additional works were undertaken toward the completion of landscaping and beach improvement in the day-use area at Paul Lake Park. The water system was extended to provide irrigation, and the main peripheral camp-site road was paved. Minor works were undertaken in Monck, Lac la Jeune, and Skihist Parks. These works included landscaping, irrigation systems, and the enlargement and improvement of water-storage capacity.

It is anticipated that the continuing improvement of facilities and opportunities within this district has produced an increase in public visitation and appreciation of this portion of the park system.

Lac la Hache District

The capital program formulated for this district concentrated on the development of new facilities in an area that was deficit from the point of view of park development. Green Lake Park was completed and opened for public use, and the former Downing property on Kelly Lake was developed in a simple and less expensive form of development that can accommodate both day and overnight use. The third new development was undertaken in the Bull Canyon Recreational Reserve, fronting on the Chilcotin River near Alexis Creek. Here, again, a somewhat different approach to the normal format was used and a very welcome addition to this district park system was brought close to completion. Other capital works included improvements to the Lac la Hache water system, minor landscaping, and an extension of the garage workshop-office complex.

Despite inclement weather and a heavy construction schedule, public use of available facilities was heavy and indicated an increase over previous years.

Wells Gray District

Much of the capital funding allocated to this district was expended on further refinements to the Clearwater Lake road, the boat-launching and parking facilities at the road terminus, and general preventive maintenance throughout the park. Minor works were undertaken within the Hemp Creek service area to stabilize the

domestic water supply and distribution, and a work program was undertaken to continue with the construction or improvement to the marine facilities on Clearwater and Azure Lakes.

Continued road and facility improvement, and the ever-growing popularity of Wells Gray Park, combined to produce an increase in visitation to this district.

OMINECA-PEACE PARK REGION

In step with name changes for many other resource administrative offices in the Province, the Prince George Park District became the Omineca-Peace Park Region while the areas previously denoted as regions became known as park districts. A regional service yard was established for material and equipment storage and distribution to the park projects in the region. It will serve also as the park furniture refinishing depot for the region.

Peace-Liard District

For the second year in a row flash floods along the Alaska Highway portion of this district caused serious damage to park facilities and resulted in decreased park visitation. The floods completely devastated the facilities in Racing River Park and eroded a significant area out of Kledo Creek Park.

The three permanent district staff received office facilities in the basement of the old Government building in Fort St. John. This was a welcome improvement from the district workshop in Charlie Lake Park where the administration of the 18 Provincial parks within this district had previously taken place.

Summer maintenance staff were supplemented with student labour and a Youth Crew Program (12 boys) was initiated in Muncho Lake Provincial Park. A pilot project centralizing garbage at campground wood corrals successfully proved to be economically expedient. It will be applied in all the Provincial parks throughout the region in 1976.

A number of minor capital projects was completed in 1975.

Bear Lake District

This park district is administered by a regular staff of four which is an increase of one over 1974.

Inclement weather during the latter part of July and the entire month of August discouraged park visitation noticeably.

Carp Lake Park—Rustic campgrounds throughout this park were furnished with picnic tables and fire pits and a start was made on the provision of log toilet buildings.

Crooked River Park—An unprecedented plague of black bears was experienced. In July, 19 bears were live-trapped, marked, and released some distance from the park. None returned and little damage and no personal injury was experienced. A very successful Youth Crew Program was undertaken in the park. Four miles of new hiking trails were constructed. At the year's end the trail system in the park was groomed for cross-country ski-ing and a skating-rink and toboggan slope were developed as a pilot project to assess public desire in this park for an annual winter recreational program.

Purden Lake Park—Located 45 miles east of Prince George on the Yellowhead Highway, the park was officially opened by the Honourable the Minister of Northern Affairs. Facilities consist of a 78-unit campground; a double-width boat

launch; one-quarter mile of developed sand beach area, and 4 miles of woodland trail. The latter was developed by an effective Labour Department sponsored student work project. Unfortunately, the heavy rains in August caused serious erosion damage to the sand beach and parking-lots. A severe windstorm in mid-November devastated the park with extensive forest blowdown.

Stuart Lake Park—Development plans for a lakeside-oriented campground and major boat-launch facility were completed.

Beaumont Park—Insufficient funds were available for the completion of the heavily used beach developments. The popularity of this park as a beach area and highway-oriented campground was very evident in 1975.

Ten Mile Lake Park—Improvements to beach developments and the addition of a playfield were completed in response to the increasing demand in this park for beach-oriented recreational activities. A 75-unit high-density campground designed for tourism was nearly completed.

Bowron Lake District

Visitor use of the canoe circuit has levelled off at approximately 4,000. The park interpretation program was augmented on an experimental basis with an education program in outdoor recreational skills and wilderness ethics development. This proved very successful and was long overdue as noted from the results of a visitor study of the park in 1975 which indicated that 60 per cent of the canoeists travelling the 75-mile wilderness canoe circuit through the park are totally inexperienced in canoeing and wilderness camping. Unfortunately, the first drowning on the canoe circuit took place since the establishment of this wilderness park in 1961.

Capital developments were concentrated on the construction of a new administrative centre. This will be completed in 1976. An extraordinary windstorm in mid-November caused a 1,000-acre blowdown across the first portage on the canoe circuit.

Mount Robson District

The permanent staff in this half-million-acre park was increased by one to a total of three in 1975. A host of small capital and maintenance projects were undertaken. Two all-girl Youth Crews (30 girls) were employed very successfully. This required a major reorganization and some additional facilities in a traditionally all-male operation.

Agreement was reached with the Department of Highways to erect rustic interpretative signs along 45 miles of the Yellowhead Highway located in the park, and many signs were put in place. A significant start was made to control random camping along the highway through the park. A radio communications system for the park was also started with the cordial assistance of the B.C. Forest Service.

Increased public demand to utilize more of the wilderness backcountry of this second oldest park in the Province has resulted in the drafting of a master plan that will guide the future development and management of this park. Completion of this plan is anticipated in late 1976 or early 1977.

KOOTENAY REGION

This season saw a greater emphasis on planning with the appointment of a Regional Planner. The preparation of interim policy statements for most of the

parks in the region have been co-ordinated by the Regional Planning staff with much participation from all management personnel.

The Regional Resource Management Committees containing representatives from all Provincial Government agencies reviewed submissions relating to the establishment of Provincial parks at Whiteswan Lake, Cartwright Lake, and at Gerrard and Trout Lakes. Recreation inventories have been completed for the Duncan Valley, Libby Reservoir, and Valhalla Mountains.

The region established a Wilderness Committee to assemble information on management techniques and to recommend guidelines for wilderness management in the Province. This emphasis follows the implementation and funding of a Back Country Ranger Program initiated by the Branch in 1974.

A Youth Crew Program continued in the Kootenays with a girls' crew headquartered at Kokanee Creek Park and a boys' crew located at Champion Lakes, Kettle River, Wasa Lake, and Mount Assiniboine Parks.

The community naturalist program was initiated in October and continued throughout the winter with classroom and outdoor presentations being given to many classes in the Nelson School District. This program also included sessions with students and teachers from Notre Dame University and Selkirk College and numerous public groups such as girl guides, senior citizens, Naturalist Society, etc.

Kokanee District

The Capital Works Program provided the funding necessary for construction of an Interpretation Education Centre at Kokanee Creek Park. It is scheduled for completion in April 1976 and to be open for public use in July 1976.

A 21-unit campground was started at Conkle Lake Park and should be completed for use in June 1976.

Campground renovations continued at Champion Lakes Park and improvements to the water system were completed.

Improvements were made to the sanitary facilities and staff quarters at Kettle River Park. The cattleguards at King George VI Park were reconstructed.

The trail around Gibson Lake in Kokanee Glacier Park was completed. Also much of the log debris in this lake was piled and burned to ready the site for a small dam to stabilize water levels. The parking-lot, toilets, and new picnic-sites were completed.

A 13-unit campground with day-use facilities was completed at Gerrard on the south end of Trout Lake.

Approximately 3 miles of difficult trail construction were undertaken in the Fry Creek Canyon now contained with the Fry Creek Recreation Area.

Wasa District

The Water Resources Branch of the Department of Lands, Forests, and Water Resources continued to fund the development of Kikomun Creek Park. Works included the construction of an equipment shed, a start on a sani-station, extensions and improvements to the water system, landscaping, general clean-up, and the placement of anchors for the debris boom.

Works continued on the reconstruction of the old Rod and Gun Club development in Premier Lake Park. Revisions are now complete on the boat ramp, parking-lot, campground, and day-use facilities.

The erection of a fence and the installation of a cattleguard in Peckhams Lake Park will prevent cattle from conflicting with public use and also prevent damage to landscaped picnic-sites, road edges, and transplanted trees.

Minor repairs and improvements to the Moyie boat ramp were completed to prevent future erosion of the driving surface.

LOWER MAINLAND REGION

Region

Use continues to increase in all districts. New supervisory staff arrived as staff changes were experienced at Mount Seymour, Cypress, Cultus Lake, and Manning Park Lodge.

Mount Seymour District

Cypress Park was opened to the public at Christmas 1975, offering two double chairlifts, one rope tow, and almost 30 km of cross-country ski trails. Additional areas for tobagganing and snow play were also welcomed by the public.

Skiers on Mount Seymour were served by a new high-capacity twin-rope tow which replaced the original Enquist rope tow.

Throughout the winter, thousands of park visitors enjoyed nature walks and talks conducted by the winter Naturalist at Mount Seymour.

Cultus District

Use at Cultus Lake Park has continued to escalate, as over 1,160,000 visitors, including 84,000 campers, were recorded during 1975.

A new water system replaced the old Clear Creek system which was beginning to fail.

Extensive damage was sustained in Cultus Lake Park by flooding during heavy rainfalls in December 1975.

Alouette District

The new, 139-unit addition to camping facilities at Golden Ears Park completed and has proved very popular with visitors.

Other construction works completed included paving, the Youth Crew camp, a gatehouse, and the installation of a hikers' shelter on Panorama Ridge.

Garibaldi District

Construction of a new, 30-man shelter at Diamond Head has received immediate acclaim by both hikers and skiers.

Preliminary construction was undertaken this year for additional day-shelters and some camp-sites in the Black Tusk Area.

Peace Arch Park

The Peace Arch Portal was the object of a major renovation in a project undertaken jointly by Washington State Parks and the B.C. Parks Branch.

Continued high use reflects the consistent popularity of Peace Arch Park.

SECHELT DISTRICT

A new water-storage facility has greatly improved fire protection capability at Porpoise Bay Park.

Visitation to Marine Parks in Plumper Cove, Desolation Sound, Princess Louisa Inlet, and Copeland Islands has increased considerably.

MANNING DISTRICT

A new road system was introduced at Pinewoods as the Hope–Princeton Highway becomes widened to four lanes.

There was a continued increase in the number of recreational vehicles using the Gibson Pass facilities this winter. In addition, a number of highly successful winter camping and cross-country ski-ing programs had over 18,000 participants.

Renovations were made to the Gibson Pass water system, and a comprehensive water, heating, and building maintenance program was introduced at Manning Park Lodge.

The new 45-unit Silver Tip Campground in the Skagit Recreation Area was welcomed by the numerous visitors there. Forest fires were kept to a minimum through co-operation with the B.C. Forest Service, and only 15 were reported.

The volunteer fire and ambulance service attended 55 accidents and transported 84 injured people to hospital in 1975.

MANNING PARK LODGE

The reservation system has proved highly satisfactory in dealing fairly with the great volume of requests for accommodation during peak periods.

Several dozen school and recreation groups used the lodge facilities as a base from which to go hiking or ski-ing. There has been a steady, marked increase in group visits during winter mid-week periods.

Innovations in the restaurant that proved very successful were the hotdog and cold drink sales area in the lobby to accommodate summer crowds, and the Saturday buffet dinners during the ski season.

For the first time, accurate use figures were recorded that became the basis for a detailed operational report on Manning Park Lodge completed in April of 1976.

VANCOUVER ISLAND REGION

The 1975 operating-year for the Vancouver Island Region was highlighted by the hiring of a Regional Planner and a Regional Construction Superintendent.

Public usage throughout the region was up over the previous year, but all districts were able to keep pace. A number of students were employed by the districts through the availability of specially allocated Working in Government Funds. The numerous programs set up to handle these students were successful.

The Youth Crew Program for the region expanded from one camp to three. Additional camps were placed at Newcastle Island, Malahat District, and at Strathcona Park, Strathcona District. Programs in all districts were successful.

MALAHAT DISTRICT

Activity centred around the conversion of the old Victoria Fish and Game Association Club house on Goldstream flats into a Visitor Information/Nature Interpretative centre. On Saltspring Island the major project was the partial devel-

opment of Ruckles Park. This first phase concentrated on the provision of centralized parking facilities, provision of walk-in camp-sites, extension of trails, and provision of day-use facilities.

Other capital development projects within the district included the construction of three picnic shelters on Newcastle Island, as well as repairs to the floats on Sidney Island and a renovation of the campground.

Strathcona District

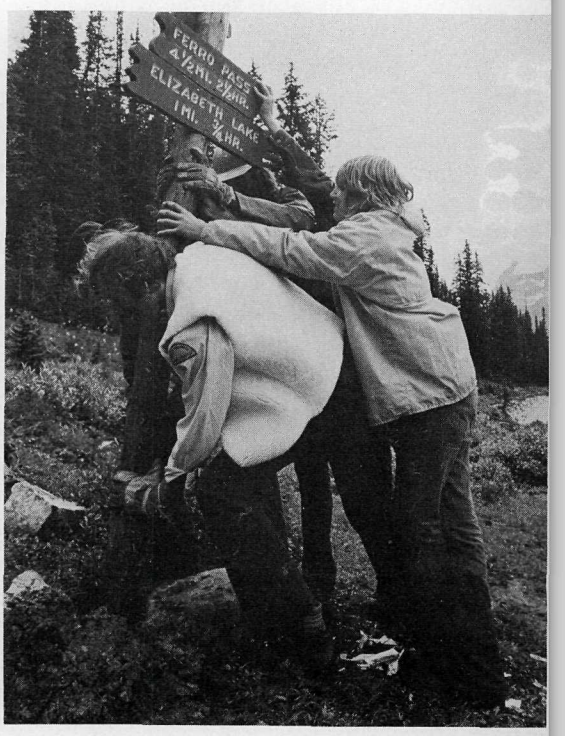
The water system at Miracle Beach was improved with the drilling of a deep well and the replacement of most of the distribution system. Campground control and regulation was improved with the redesign of the campground entrance and the construction of a new gatehouse.

In Strathcona Park, improvements to the parks headquarters electrical system were completed, as was the renovation of boat-launching facilities at Ralph River. In the Gulf Islands, day-use facilities at Rebecca Spit were completed and a well and toilet facilities provided for Smelt Bay.

In conjunction with the Fish and Wildlife Branch, the Parks Branch is continuing a study on the elk population in Strathcona Park.

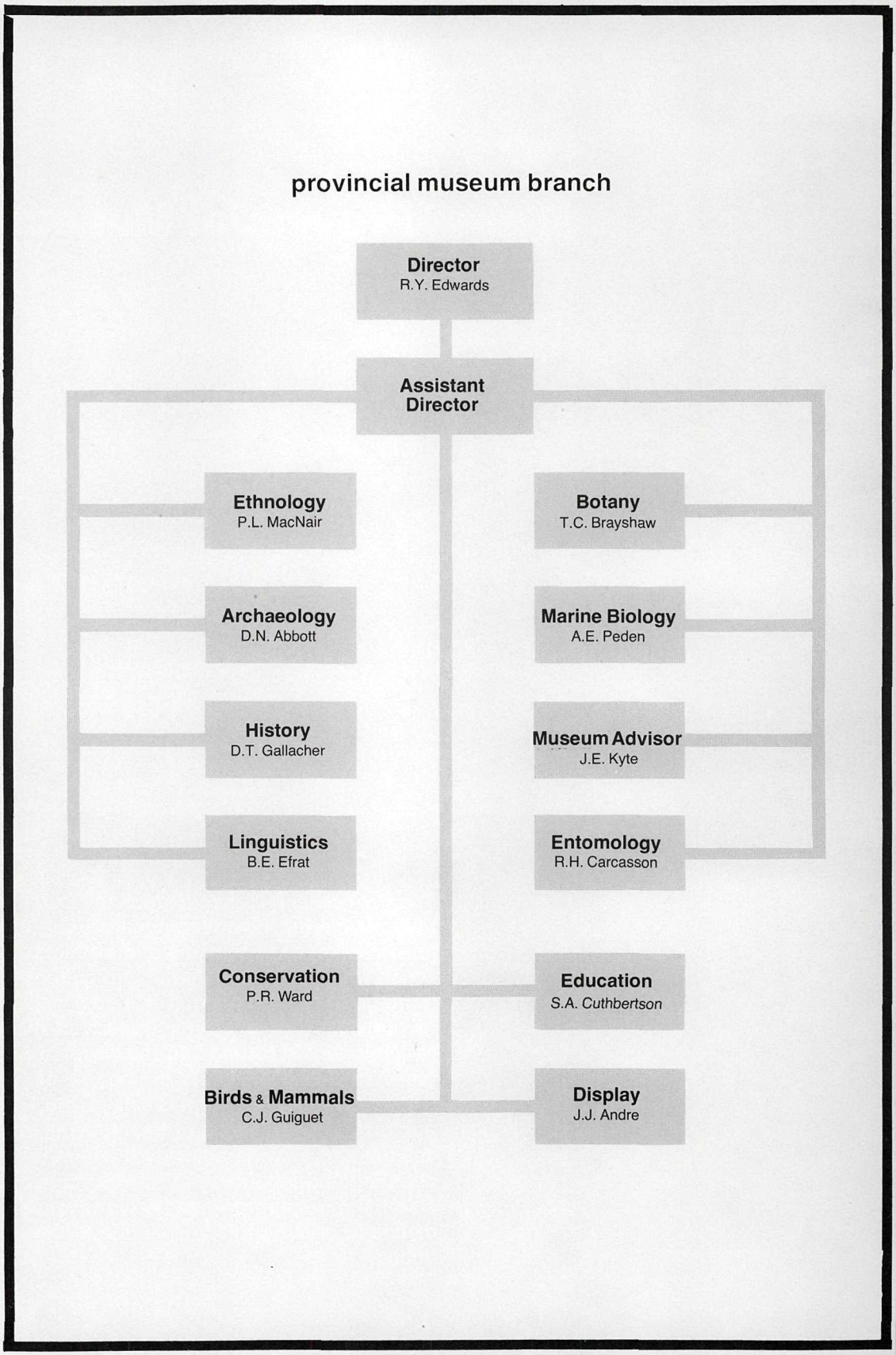
Arrowsmith District

The main emphasis was placed on the seasonal operation of the district, one of the heaviest used districts in the Province. Improvements within the district included the renovation of the day-use area at Englishman River, provision of additional toilet facilities and picnic shelter improvements at Little Qualicum Falls Park. Change-house facilities for Rathtrevor Beach are also under construction.



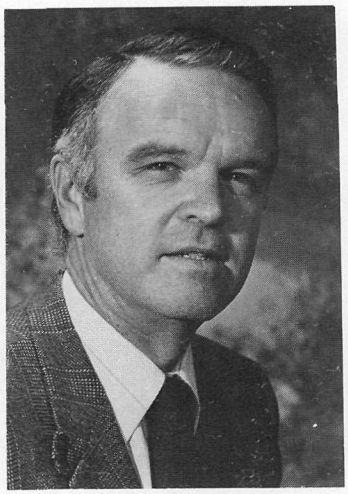
Provincial Museum

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
Director
R.Y. Edwards
Assistant Director
Ethnology
P.L. MacNair
Archaeology
D.N. Abbott
History
D.T. Gallacher
Linguistics
B.E. Efrat
Botany
T.C. Brayshaw
Marine Biology
A.E. Peden
Museum Advisor
J.E. Kyte
Entomology
R.H. Carcasson
Conservation
P.R. Ward
Birds & Mammals
C.J. Guiguet
Education
S.A. Cuthbertson
Display
J.J. Andre

Partially completed totem pole display in the new Ethnology gallery.

Museum train climbing out of Kitsilano (Vancouver) en route to opening-day ceremonies in Burnaby.



R. Yorke Edwards
Director

Provincial Museum

For the Provincial Museum this was a year with sufficient monetary restraint to curtail several activities. Still, the year was hardly uneventful. Reduced Provincial funding, together with Federal project funds being unavailable after March, resulted in a challenging year of maintaining public services on limited resources.

Dr. Bristol Foster resigned late in 1974 after five years as Director, during which he skilfully guided the Museum through the most dramatic period of growth it had experienced in its 88 years of service. During his tenure the staff more than doubled, and the Museum became firmly established as the largest in western Canada. Early in 1975, R. Yorke Edwards, Assistant Director, was appointed the Museum's fifth Director.

A second major loss of senior staff took place in the summer, when Dr. Adam Szczawinski, Curator of Botany and Provincial Botanist, retired after long and productive service to the science of botany in British Columbia.

The Anthropology Gallery, scheduled to open in July and thereby to complete the permanent exhibits on the third floor, received no attention from Display staff through most of the year. Unavoidably, the Display staff bore much of the Museum's program reduction through the year, and is to be congratulated on carrying its disappointment well.

The Provincial Museum Train rolled on its maiden voyage, drawing crowds from Vancouver to Dawson Creek on the British Columbia Railway, and later visiting major centres from Courtenay to Victoria on Vancouver Island. In all, 83,000 people saw the train and the exhibits it carried, telling the story of steam power in British Columbia.

The Provincial Museum's first major travelling exhibition for national audiences, "The Legacy," began its national tour early in the year in Edmonton. The high quality of its objects on display, and of its design, were widely recognized. Unfortunately, its eastward progression across Canada could not be funded past Winnipeg, and "The Legacy" was recalled with the tour just nicely begun. The Museum plans to complete the tour later.

The Division of Archæology continued its work at Hesquiat in co-operation with the people there, and moved within sight of completing a remarkable joint

endeavour in recovering Indian culture. Another year will complete field work. Laboratory analyses and detailed reports will follow.

During the year the Museum added to its reputation for an impressive array of practical and attractive publications. A new handbook, printed with many photographs in full colour, has the theme *Food Plants of British Columbia Indians.* This is the first part of a two-part series. It features the coastal peoples. The Manual series, designed to help smaller museums and others on how to do things, added a title on "Planning Docent Programs," which offered guidance for small museums on how to organize volunteers (docents) to help museums with visiting classes of school-children.

A museum can be only as good as the support it receives. Once again the Friends of the Provincial Museum and the Heritage Court Society added strength to the Museum's services, and gave generous gifts of equipment to improve the Museum's research and communications to the public. Each society is served faithfully and well by an impressive number of dedicated volunteers which make the work of their organizations possible.

The Museum is blessed in addition by many docents or volunteer teachers who help the Museum staff meet and communicate with the hundreds of children that frequently crowd into the Museum from their school buses. The Museum received almost 32,000 such children during the year, a figure made possible by the generous and hard-working people who dedicate many hours to children, and to opening their minds to British Columbia in the Provincial Museum.

It was a year of survival, and of moving forward on some fronts as well. Some years will always be leaner than others, but this institution of several hundred people (some paid, some not), doing thousands of interesting and often unusual tasks, will, lean years or otherwise, always be a place of surprises and the unexpected.

Out front in the exhibit halls it is unfortunate that most visitors can glimpse only part of the Museum's activity and excitement. Behind the scenes there is much more going on than one person could ever keep track of. But there is a lot of action in the exhibit galleries, too, as the more than 1,300,000 visitors to the Museum discovered in 1975.

ARCHÆOLOGY

DONALD N. ABBOTT, CURATOR

A major reorganization of space within the Archæology Division was made possible this year by the removal of Archæological Sites Advisory Board and Historic Sites Advisory Board personnel to the St. Ann's Academy building and by the acquisition of new compact "Fullspace" storage units donated by the Friends of the Provincial Museum. Our Systems Section occupied the former ASAB-HSAB space while the Bioarchæology Section now has offices, storage areas, and faunal and soils laboratories in the rest of the sixth floor mezzanine of the Curatorial Building.

Despite severe funding problems resulting in the loss of trained personnel, the Systems Section made great strides in bringing order to the collection and accessibility of archæological data within the museum, provincially and nationally. New terminals connected with the National Inventory's Ottawa computer came into use and 80 per cent of the first, most basic, file—archæological sites—was available "on line" by the end of the year.

With the assistance of summer students a good start was also made in describing artifacts in National Inventory format and entering them into the computer. Some 8,000 specimens, including all of the prehistoric artifacts from Hesquiat, were processed during the summer. At a national meeting on the inventory it was decided that, in view of our progress, processing of British Columbia collections shall now have higher effective priority for Federal contributions than all other regions of the country.

A major concern during the year has been the establishment of consistent minimum standards for operations in several areas and at various levels. The National Advisory Task Force for Archæology adopted standard entry formats for the National Inventory and recommended our documentation procedures for implementation as the national standard. Our developments in this area during the year have included preparation for publication early in 1976 of a third, revised, and enlarged edition of the *Guide* and *Dictionary* and the development of a complete integrated suite of field recording forms, and guidelines for their use, to promote in-field recording standards consistent with the National Inventory.

The new Bioarchæology Section also made excellent progress in 1975. Again with the assistance of summer students, and with the co-operation of other divisions and institutions, the development of a sizeable faunal comparative collection proceeded rapidly. This was put to use in the continuing analysis of faunal remains recovered by the Hesquiat and Maple Bank Indian cultural recovery projects.

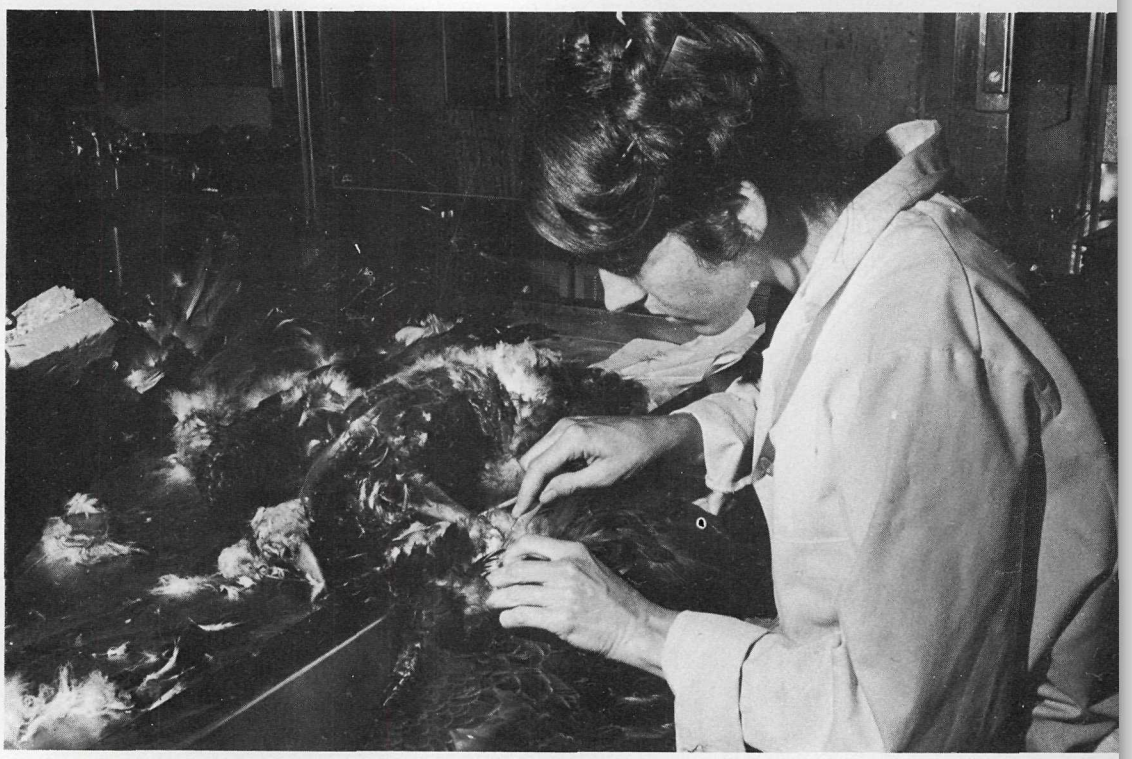
Other developments related to this section included the training of two staff members in the techniques of preparing pollen samples for identification by Dr. Glen Rouse at The University of British Columbia; the manufacture of a specialized saw for our dendrochronology program; and the construction of equipment for the sectioning of mollusc shells to determine their season of collection.

Our co-operation with the Hesquiat and Songhees Indian Bands in their major cultural recovery projects continued during 1975 with field work carried out during the summer and major programs of analysis during the winter, funded by LIP grants to the Bands.

The Division continued its program to obtain a permanent record of all rock-art sites in the Province. Thirteen petroglyph sites have now been completely moulded and another 13 partially moulded. Fibreglass casts were made for each of the Indian bands whose traditional territory is involved.

A number of "inside" research projects were also carried out or continued during 1975. Several were related to the display program. Others included ongoing analysis of earlier fieldwork, continued work on a list of radiocarbon dates with tree-ring corrections for British Columbia, research and illustration of native Indian house architecture, numerous illustrations for reports, a report on rock-art sites of national importance, and others to Parks Branch recommending measures for the protection of petroglyph sites under their jurisdiction.

Extension activities and other services to the public continued to occupy much staff time. These included answering requests for information, sometimes involving considerable research, assistance to Indian bands and local museums on archæological matters, presentation of numerous lectures to school classes and to various organizations, participation in training seminars, and conducting tours for classes and special-interest groups.



A volunteer summer student preparing a specimen of a bald eagle for the Museum collections.

BIRDS AND MAMMALS

CHARLES J. GUIGUET, CURATOR

The Birds and Mammals Division houses and administers the Provincial collections of birds, mammals, amphibians, and reptiles. This involves the collection, preparation, and maintenance of these collections for scientific study, display, education, and extension.

This year the four-month Working In Government Program provided 10 students and their supporting finances, which assisted greatly in carrying out the above functions. These students, in conjunction with 10 permanent staff members also carried out mammal inventories and collections on the Gulf Islands, sea bird nesting inventories of all known colonies around Vancouver Island, a nesting survey of barn owls on the Lower Mainland, and a number of short collecting sorties for coast forest and marine displays now in preparation.

Collections from these activities included 537 mammals, 182 birds, and seven specimen lots of four species of amphibians and reptiles. The Provincial collections now total about 15,300 specimens of birds, 9,300 of mammals, 1,350 of amphibians and reptiles, and 1,800 clutches of bird eggs. Of these specimens 451 were out on temporary loan to eight institutions in the United States, Great Britain, and Canada during the year.

Several large mammals were prepared in the taxidermy laboratory for permanent display, as well as scientific study. These included grizzly bears, sea lions, seals, cougars, wolves, coyotes, and a number of smaller birds and mammals.

Some of these specimens were provided by the Fish and Wildlife Branch through their enforcement and predator control establishments.

Four continuing major "paper" projects progressed favourably during the year. The British Columbia Nest Records Scheme, involving card-indexing, filing, and mapping, was carried out by staff members, students, and volunteer help. Some 40,000 cards have been processed since the project began at The University of British Columbia in 1958. Similarly the Photo Duplicate File (PDF) was carried on; six new Canadian records for birds were added in 1975, bringing to 30 the number of new records for the Province since the inception of the PDF in 1971. The Sight Record Project for higher vertebrates was also continued during the year. A total of 150,000 cards has been processed since its inception in 1974. This work has been carried out largely by volunteer and student help. The fourth project, a Published Record File, instituted two years ago, is proceeding as planned. This project involves the Xeroxing, filing, and cross-indexing, by species, of all pertinent published material dealing with British Columbia birds, amphibians, and reptiles. Nearly 1,500 papers have been processed, bringing this file up to date. A backlog of literature on mammals is expected to be completed in 1976.

The Assistant Curator took part in 12 public lectures, including radio and television shows dealing with British Columbia birds. He also attended an international symposium on *The Conservation of Marine Birds in North America,* held in Seattle.

The Division co-operated with the Archæology Division in providing osteological specimens and instruction and preparation facilities for a new osteological reference collection being assembled by that division.

A comprehensive distribution map of sea-bird nesting colonies around Vancouver Island, prepared by the Assistant Curator from data collected in 1975, awaits publication.

The Display Curator, in co-operation with the Director and the Natural History Exhibit Committee, was active in a thorough revision of present and projected natural history exhibits. This work, the preparation of scale models and specimens, plus collecting, utilized his time completely during the year.

The technician in charge of herpetology has completely reorganized those collections and instituted data retrieval systems.

Staff members were kept busy throughout the year answering queries regarding higher vertebrates in British Columbia. Other inquiries from the general public, Government agencies, and educational institutions were handled by correspondence and telephone.

BOTANY

T. Christopher Brayshaw, Acting Curator

The Botany Division has four main functions—to maintain a herbarium, to conduct research, to provide information, and to advise on botanical displays. The herbarium is a filing system for a reference collection of British Columbian plants which is accessible for researchers, both on-staff and visiting, and from which loans and exchanges are made with other institutions. Research is carried out by the curators with the floristics of the Province being the main theme. Research is also carried on under contract, and by volunteer researchers not on staff, for whom space and facilities are provided. Publications, lectures, and direct replies to inquiries from the public or other elements of the Public Service are the principal media through which the Division's information responsibilities are carried out.

An E. S. Curtis print of a Clayoquot berry picker, *circa* 1915, the basis for the cover illustration on the Museum's Handbook, No. 34, Food Plants of British Columbia Indians, by Nancy J. Turner.

Photo—Provincial Archives, Victoria.

The Curators also assist and advise on the botanical aspects of displays being planned or built.

The Division sadly said farewell to Dr. Adam F. Szczawinski, who retired at the end of July after 20 years as Curator. He is deeply missed, and remembered for many activities, especially as one of the originators of the Ecological Reserve Program in this Province.

The vascular plant collection now contains 80,000 specimens. A new Cryptogamic Herbarium has been started. This collection already contains 1,500 specimens of mosses, liverworts, and lichens.

The Assistant Curator's research on the flora of Mount Robson Provincial Park, and on the bryophyte flora of the Province continued and a check-list of 650 species native to Mount Robson Park has been prepared. Dr. T. M. C. Taylor has completed his work on the Sedge, Pink, and Crucifer Families of the Province, and manuscripts are in preparation. Dr. and Mrs. G. Douglas continue their research on the Composite Family toward a publication on this large family. Dr. Nancy J. Turner completed research on the food plants of the coastal native Indian peoples, and has produced a handbook on the subject. Work on the food plants of the Interior peoples has been started.

Eighteen plant species new to our records of the Province's flora have been identified from collections made mainly this year and in 1974.

The Assistant Curator wound up a two-year field program on the flora of Mount Robson Provincial Park, a joint project with the Provincial Parks Branch. The Associate Curator, with the assistance of Chris Carrigan, continued the botanical inventory of the northern border areas of the Province, sampling the Swan Lake-northern Cassiar Range area, Lake Tagish, and the Alsek Valley. Extensive assistance in accommodation and in air transport was provided by the Inventory Division of the B.C. Forest Service, and is greatly appreciated. Brief side trips were also made to assess ecological reserve proposals near Port Renfrew, Vernon, and Lumby.

David Polster was supported in a field program of study of alpine vegetation communities in the Rocky Mountains of extreme southeastern British Columbia, and is contributing a plant collection from that area. This work is toward a master's degree thesis on the subject.

Sizeable collections have been received from the following: Harvey Janszen, Saturna Island, plants of Saturna and adjacent Islands; Miss K. Kromm, Victoria, plants of Aiyansh district; Ron Long, Burnaby, plants of southern British Columbia and Alberta; Dr. J. Pojar, Victoria, vascular and cryptogamic plants from Gladys Lake Ecological Reserve; David F. Polster, Victoria, plants of southern Canadian Rockies; Mrs. R. Rosie, Watson Lake, Y.T., plants of Yukon, Northwest Territories, and northern British Columbia; Dr. A. K. Skvortsov, Moscow, U.S.S.R., plants of Soviet Union; and Golden Stanley, Powell River, plants of Powell River district.

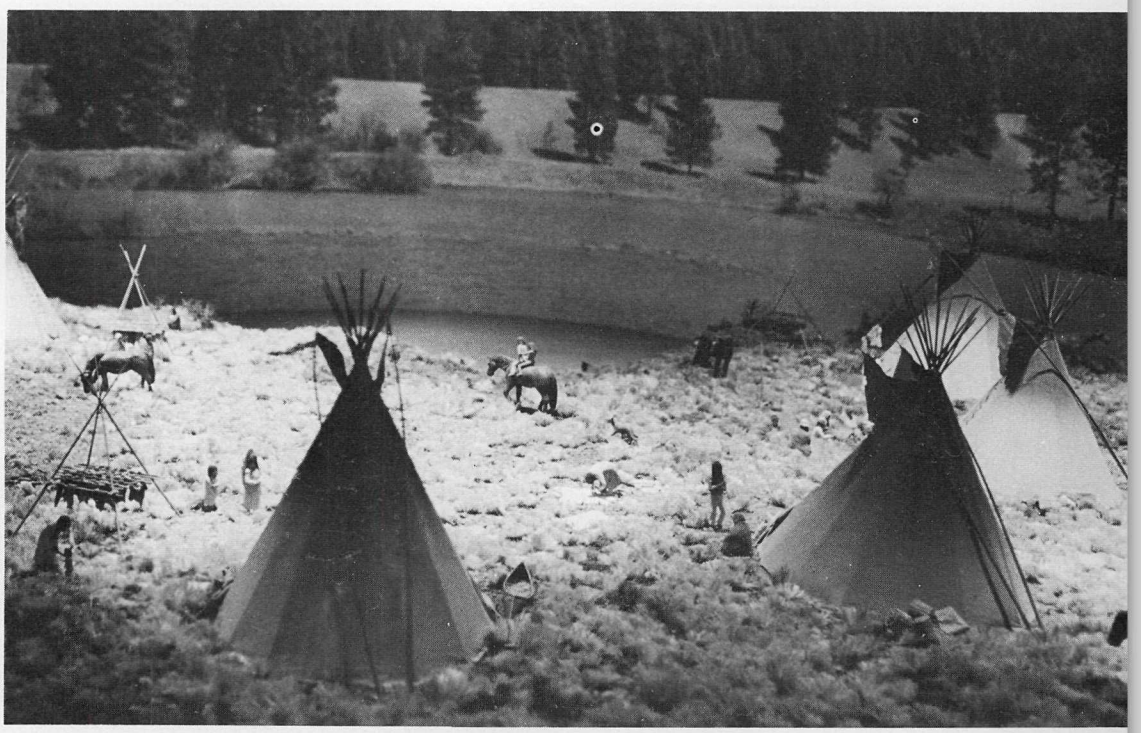
A number of plants were sent from field parties for the Native Plant Garden and have been cared for by V. W. Ahier in preparation for moving to the garden. The garden itself has suffered severely from drought at a time when an acute shortage of gardeners has made watering and other maintenance almost impossible.

ENTOMOLOGY

ROBERT H. CARCASSON, CURATOR

The Entomology Division had a highly productive year, due in large part to the acquisition of a technician in the fall of 1974. This enabled us to clear up a large backlog of mite material that had been awaiting preparation for microscopic

Tracing pictographs at Dock Point, Saltspring Island.



A model of a pre-contact Kutenai camp, part of the new Ethnology gallery.

study. Several thousand specimens were treated and incorporated into the ongoing systematic study of the urpodine mite fauna of North America.

During the year, more than 100 extractions were made from soil and leaf-litter samples, each producing residues of several hundred anthropods. Most of these collections were made in Goldstream Provincial Park, where a number of selected sites were sampled fortnightly between December 1974 and December 1975. The study successfully demonstrated seasonal fluctuations in the biology of a number of species of uropine mites and suggested the possibility of parthenogenesis in two undescribed species of the genus *Trachytes,* a hitherto unknown phenomenon in these mites.

Additional collections of soil fauna, as well as of butterflies, moths, and beetles, were made in the Okanagan and Kootenays. These revealed the presence of a new species of mite of the genus *Polyaspinus,* soon to be described.

A number of trips to other institutions were made. Among these were visits to the United States National Museum in Washington, D.C., the Institute of Acarology in Columbus, Ohio, the Field Museum of Natural History in Chicago, Ill., and the University of California in Riverside, Calif. All of these visits were highly productive, offering as they did opportunities to meet colleagues, exchange ideas, and to arrange for the loan of acarine material for study. Subsequently, more than 4,000 specimens were received on temporary loan.

The Division's collection of spiders has been sent to the Canadian National Collection in Ottawa on temporary loan. It is being used as part of a revision of the spider fauna of Canada.

The Division conferred with other members of the Museum staff on the design of the new Natural History Gallery and a school exhibit involving spiders.

ETHNOLOGY

PETER L. MACNAIR, CURATOR

The focal point of the Ethnology Division is its collection of British Columbia Indian cultural material. In the past year the Division has continued to maintain, interpret, and study the ethnological specimens in its care. These efforts were manifested in a variety of lectures, tours, exhibits, and services provided for the public, enabling the Division to share its knowledge and collections widely.

Progress continued on the permanent Ethnology Galley, the opening of which was regrettably delayed this year. However, the hiatus permitted staff to improve a number of details which should provide an exhibit which is visually more exciting and which contains more information than otherwise might have been possible.

A travelling exhibit was also designed and started on a tour of major Canadian centres. Entitled "The Legacy," this exhibit contains some 100 examples of contemporary British Columbia Indian art. Masks, rattles, painted boxes, gold and silver jewellery, argillite carvings, baskets, and blankets are all included in the exhibit which is displayed in such a manner that every object is presented individually. During the calendar year, "The Legacy" was exhibited in Victoria, Edmonton, Regina, and Winnipeg. Next year it will continue across the country, allowing viewers to study and appreciate what is probably the finest single yet comprehensive collection of contemporary British Columbia Indian art.

The Division continued to make progress recataloguing the ethnological collection. Archival and field research has added considerable information on a significant number of specimens. The large collection of ethnohistoric photographs received similar attention, giving this resource far more scholarly potential than it

Summer student Bernice Touchie transcribing tapes of Nitinat linguistic material.

had previously. The Division was fortunate in obtaining copies of some 600 slides dating from 1950, showing a considerable variety of southern Kwakiutl artifacts in use at potlatches.

Members of the Division continued a long-range program of recording southern Kwakiutl potlatches both on magnetic tape and on film. This service has always been seen as mutually beneficial to both Museum and potlatch-giver. It provides the potlatch-giver with a fairly detailed record of his event, one which will be maintained in the Museum under adequate conditions, as well as providing the ethnologist with an opportunity to view and study aspects of traditional Indian culture.

The Division continues to be responsible for the operation of the Thunderbird Park carving program. It was a great relief to all concerned when in the fall of 1975 a new carver's workshop was completed. The workshop now provides adequate facilities for carving smaller objects as well as massive totem poles. Externally, the workshop represents a southern Haida house and it was intended this way so that yet another coastal Indian architectural style could be shown. This building provides the Museum visitor with an opportunity to compare Haida Indian architecture with that of the Kwakiutl, because the house of the late Kwakiutl chief Mungo Martin stands beside it in Thunderbird Park.

As usual, during the year, the Division provided a number of services to the public. These included tours of the collection for students and scholars, filling requests for ethnohistoric photographs and lectures, slide and movie presentations, for a variety of school, college, university, and public organizations.

The Ethnology Division was fortunate in that it was able to add a number of significant specimens to its permanent collection in 1975. These included several argillite carvings, some of which dated back to about 1835, two Kwakiutl frontlets, and a Chilkat blanket. A very important Kwakiutl Tsonoqua mask and Kwakiutl echo mask were also purchased. Ethnology Division staff were surprised and delighted to receive an unexpected gift from the estate of Janet Duff Wilson. The gift was a circular plate 14 inches in diameter, carved of argillite, *ca.* 1885, and decorated with semi-relief carvings of bears and eagles.

LINGUISTICS

BARBARA EFRAT, CURATOR

The Linguistics Division was established in 1973 to aid in the preservation of the native Indian language heritage of British Columbia, to encourage research to this end by professional linguists and the native people concerned, and to provide information on these languages to the public through talks, publications, and displays.

To implement these goals during the year, the Division concentrated on establishing the following new programs as well as expanding projects initiated in 1974:

Preservation of materials—To collect a representative sampling of native language data from throughout the Province a program of small grants for field work was initiated. Thus, in addition to materials gathered by its staff in the field, the Division contracts with professional linguists to collect specified taped and written language data. Such a program will not only help preserve the most immediately imperilled languages but it will also aid independent research.

Two grants were awarded during the year, one to Prof. John Dunn, University of Oregon, for research in Coast Tsimshian, and the other to Lawrence Morgan, University of British Columbia for work in Kutenai. The implications of this work are very exciting for the future alignment of the British Columbia native language families.

Plans have also been drawn up for a set of basic reference grammars in selected British Columbia languages to be published in *Syesis*. The Division has contracted with the following scholars to produce volumes for this series: Prof. Eung-Do Cook, University of Calgary, for a grammar of either Chilcotin or Carrier (Athapaskan language family); Prof. Bruce Rigsby, University of Queensland, Australia, for a grammar of Tsimshian; Prof. Laurence Thompson, University of Hawaii, for a grammar of Thompson (Interior Salish); Prof. Wayne Suttles, Portland State University, for a grammar of Halkomelem (Coast Salish).

Service to native communities—The Division expanded its collection of curriculum materials of native languages from Canada and the United States. Many native visitors from both countries made use of this collection, which should serve as a model for them to develop similar materials for their own cultural groups.

Both curators participated in the preparation of practical materials with native groups. As the linguistic consultant to the Hesquiat Band, the Curator worked with elders and two young artists from the Band to produce calendars and colouring books, all incorporating language data from the Hesquiat dialect of Nootkan. The Associate Curator prepared a set of language lessons for the Skidegate dialect of Haida and held a workshop for Haida people on teaching this dialect.

During the summer the Division was fortunate to hire as summer students three linguistically trained native people from the Nootkan area of Vancouver

Island. Aided by the artwork supplied by two Hesquiat Band members, these consultants worked on several projects, including simple native language curriculum material in their own dialects.

Involvement with scholarly community—During the year the Associate Curator participated in the Native Language Diploma Program at the University of Victoria where he helped devise lessons in Southern Kwakiutl. He presented a paper titled "Evidentials and Old Information in Skidegate Haida" at the Tenth International Conference of Salish Languages in August. Both curators gave lectures to linguistics and anthropology seminars at The Universities of British Columbia and Washington.

In September, Prof. Eung-Do Cook, one of the foremost Canadian Athapaskan experts, began work as a visiting scholar in the Division.

Service to the community—Work progressed on the permanent linguistics display, as well as on a small temporary exhibit to appear during summer 1976. Information on the status of native languages was brought to the public through interviews on the media, participation in a YM-YWCA course on the city's resources, and through the wide distribution of a map showing the language situation in the Province.

MARINE BIOLOGY

ALEX E. PEDEN, CURATOR

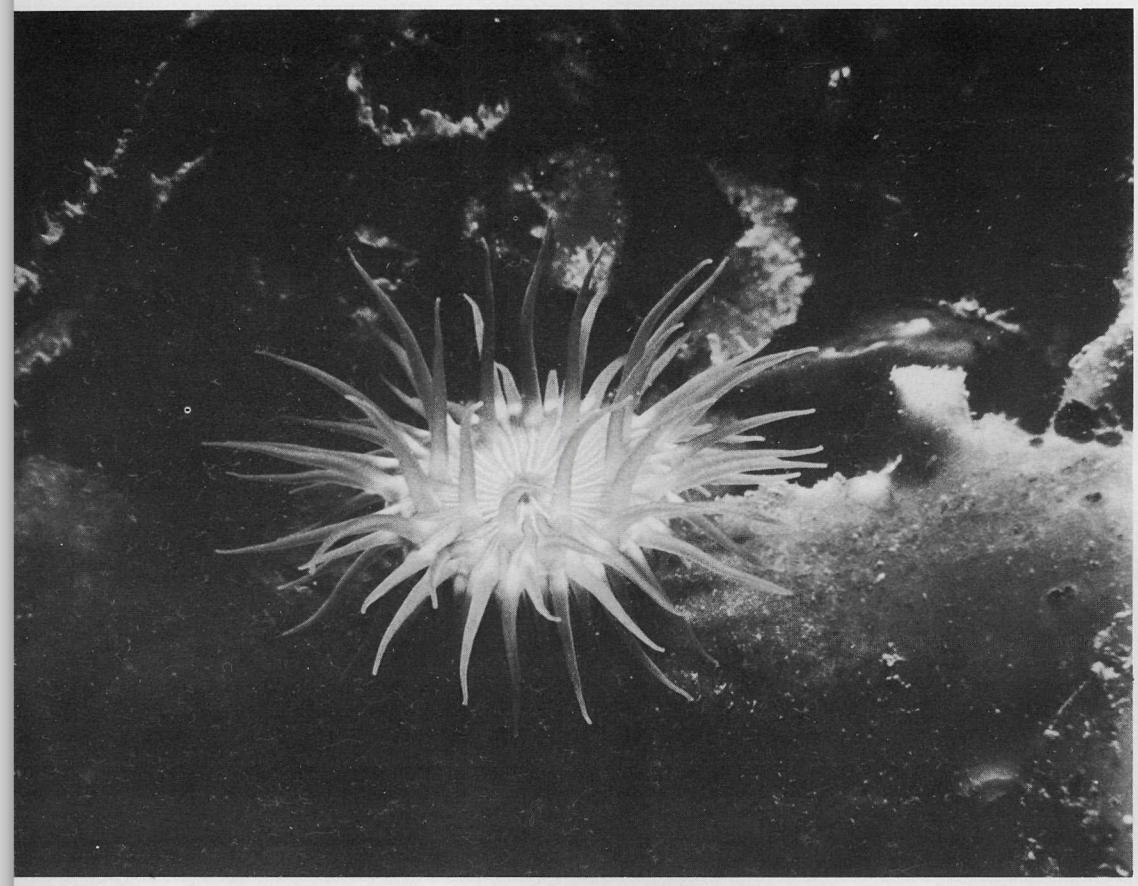
The Marine Biology Division, being the only Museum division responsible for a habitat, namely, the sea, rather than a type of organism or artifact, has the rather unenviable task of answering to the public on a greater diversity of subjects, for example, all the organisms of the sea. Given the usual limitations of staff and funds, this formidable challenge can only be met by concentrating on specific tasks with limited objectives and completing them before turning to new ones.

In this regard, during the year, the Marine Biology Division became the repository for the invertebrate collection of The University of British Columbia, making our collection now one of the largest in the Pacific Northwest. A spin-off of this welcome acquisition was the task of cataloguing and reorganizing it under a new taxon coding system for collections. The Division also supported work on Reptant decapods (crabs) and opisthobranchs (sea slugs) which will result in handbooks on these important marine animals.

During the year the Division's research vessel *Nesika* was used largely in a survey of potential marine habitats for eventual use in exhibits. The Division also assisted the Education and Extension Services Division in the revision and preparation of a new Marine Biology Kit for schools. Field trips were also conducted for the Canadian Nature Federation during that organization's 5th Annual Convention held in Victoria in June, for the YMCA, and for the Museum's Education and Extension Services Division.

The Division was fortunate to obtain some ship time aboard Environment Canada's Institute of Ocean Services research vessel *Parizeau,* which resulted in valuable mid-water collections of fishes from Juan de Fuca Strait in January and Johnstone Strait in December.

Several research projects were pursued by the curators of the Division during the year, among them a study of large collections of asteroids (starfish) in preparation for a scientific paper and a Museum handbook on the group, a study of fish distribution in northern British Columbia which resulted in a major paper, and an



The brooding anemone (*Epiactus prolifera*).

ongoing study of the genus *Lycodapus* (a type of eelpout) toward a paper on the subject expected to be completed in 1976.

The year was not without tragedy in the untimely death of Katherine D. Hobson, whose volunteer work, and collections of polychætes, were an invaluable asset to the Division and the Museum.

MODERN HISTORY

DANIEL T. GALLACHER, CURATOR

The Modern History Division collects, preserves, researches, interprets, and exhibits materials significant to British Columbia's human experience for the period between the 1740's and the 1970's.

This was a demanding year for the Division. In addition to its regular routines of cataloguing, research, and exhibit work, the staff planned, prepared, and operated the Province's first Museum Train.

Major accessions included the Avis Walton collection of historical costumes (1860's–1950's), a significant portion of Gerald Wellburn's antique toy and household accessories collection (1870's–1940's), photographs and blueprints depicting colliery equipment (1889–1936) from R. E. Swanson, and the Dr. Fraser Buckham

collection of books and documents pertaining to Vancouver Island's coal industry (1860's–1960's). Of special note, too, was the Division's direct involvement in the negotiations and transport required to repatriate three British Columbia Electric Railway interurban streetcars from the United States on behalf of the National Museum of Science and Technology and the British Columbia Transportation Museum.

Exhibit work in the main building was confined to upgrading and maintaining the Modern History Galleries, together with considerable assistance given to the Status of Women Action Group in the preparation of their display "Our Hidden Heritage."

Extension activities other than the Museum Train were confined mainly to research for community museums. Among those assisted were Mission and District Historical Society, Atlin Historical Society, Alberni Valley Museum, British Columbia Museum of Mining, Fort Steele Historic Park, and Teslin Historical and Museum Society. The Curator presented papers at both the Canadian Museum's Association annual meeting in Winnipeg and a conference of history curators in Ottawa.

Research was directed chiefly toward colonial road-building methods and equipment; the machines, vessels, vehicles, and structures using steam in British Columbia; styles and materials for clothing manufacture since the 1850's; historical objects symbolic of women's activities; and coal mining as it occurred in this Province.

Cataloguing and its related activities—identifying, photographing, repairs, storage—continued at a brisk pace throughout the year. The Division still has a large backlog of objects inherited from the Provincial Archives and other Government agencies between 1967 and 1975 that remain to be accessioned. At least four staff members work regularly at this task, which is approximately half completed.

The Museum Train, however, was the Division's most significant accomplishment in 1975. Planned as a major historical restoration capable of transporting Museum exhibits throughout British Columbia, it appears to have fulfilled this aim and more. The rolling stock consisted of two steam locomotives (CPR 3716 and MacMillan Bloedel & Powell River Co. 1077) as the main and backup engines, a water car, two flatcars with live steam exhibits, a power car, two display coaches, a theatre coach, and a crew coach. Actual restoration of the rolling stock was performed by CPR Vancouver under the direction of Robert E. Swanson, while the exhibits were prepared by the Museum's Modern History Division and installed in their respective coaches at the E & N Railway roundhouse, Victoria.

Fully one third of the Province was travelled by the train between July 1 and September 15 over routes that covered southern Vancouver Island, Greater Vancouver, and the central Interior from North Vancouver to Fort St. John and Dawson Creek. A total of 22 communities was visited with upwards of 83,000 people in attendance. Community museums participated directly in the project, first by making local arrangements in preparation for the train's visit, and second by operating the information and sales desk located in the theatre coach.

The Museum Train exhibit theme was "Steampower and British Columbia, 1830's–1950's." A combination of artifacts, photomurals, diagrams, models, dioramas, films, and handout literature was used to convey a distinct impression of the nature and impact of steam power on the Province's industries, transport, domestic life, and recreation. It is intended to operate the train with essentially the same exhibits in both 1976 and 1977.

Part of the House Beautiful display, an exhibition of household items which showed the influence of *art nouveau* and international arts and crafts in British Columbia.

CONSERVATION

PHILIP R. WARD, CHIEF CONSERVATOR

The most fundamental of a museum's responsibilities is the preservation of its collection, and the relatively new museum discipline of conservation embodies the technology by which that is achieved. The British Columbia Provincial Museum was the first Provincial museum to recognize the importance of preservation by creating a Conservation Division. Founded in 1966, it is still the most active conservation facility in Western Canada and the largest outside the Federal Government.

During the year the Division's development was completed by the appointment of its ninth staff member, Mrs. Kay Allan. Mrs. Allan is a micrographer of international repute who will provide the scientific support demanded by the increasing complexity of conservation techniques and the growing need for original research.

With the increasing recognition of the necessity for a sound scientific foundation for all conservation practices, the delay in the completion of the anthropology display, so unfortunate for other reasons, allowed several members of the Conservation Division to develop and modernize their skills. Courses in microscopy and textiles conservation, and major technical conferences on general and archæological conservation, were attended and a grant from the Secretary of State's Consultative Committee on National Museum policy enabled one technician to undertake a two-month internship at the Royal Ontario Museum.

At the same time the Division's staff shared their experience with others. More than 40 lectures were given to university students, to art and historical societies, and to the staffs of other British Columbia museums. In addition a series of lectures was given, at the request of the American Association of Museums, to museum employees from every corner of the United States at a conservation seminar at Portland, Ore.

Despite these extramural activities, productivity in the Division's routine duties increased substantially. More than 350 objects from the Museum's collections received major treatment this year, as against 285 during the previous year. Also the Division's advisory and research functions in connection with the preparation of permanent displays were increasingly in demand. The Division continued to play a major part in the travelling exhibition program. Packaging was designed and constructed for "Images, Stone, B.C." and for "The Legacy," and their initial packing was done by Division personnel, who also assisted at the first assembly of "The Legacy" at Edmonton. The Division's staff supervised the packing and unpacking of every travelling exhibit which entered or left the Museum and each object was examined and a detailed condition report prepared. Many were also fumigated, and a number were repaired at the request of their owners.

Services were provided to other branches of the Government, notably the Provincial Archives, for which several paintings and documents were treated; the Archæological Sites Advisory Board, for which artifacts were treated, on-site conservation service provided for excavations, and several surveys made of petroglyphs. Other services to the Department of the Provincial Secretary included repairs to clocks from Helmcken House and paintings from Craigflower Manor.

A brief reconnaissance was made of the Ninstints' site on Anthony Island by the Conservator of Archæology, and on-site conservation service was provided during excavations at Owikeno, Deception Island, Maple Bank, and Little Qualicum River. The Conservator of Textiles worked at Fort Steele for two months at the request of Historic Sites and Parks. Advisory visits were made to the Anthropology Museum at UBC, the B.C. Transportation Museum in Vancouver, and to the B.C. Forest Museum at Duncan.

Several promising and important research projects were initiated. These included experiments with methods of consolidating waterlogged wood, the microscopic identification of native copper in artifacts, and the establishment of microscopic references for pigments, wood, and fibres.

DISPLAY

JEAN JACQUES ANDRE, CHIEF

Despite the disappointment resulting from budget cuts which prevented the completion of the Division's most challenging endeavour during the year—the new Archæology and Ethnology exhibits—a considerable amount of progress still was made on them. Most of the display cases were built, the totem poles were erected and put in position, even the carpet was installed on schedule. Most of the labelling and copy panels for the Ethnology Gallery were silkscreened and mounted. Moulds, taken in 1974, of 144 petroglyph sites were combined into two composite wall panels each 45 feet long and 8 feet high. The fibreglass Cave of the Animals was completed and is ready for the floor. The model of the Skedans village, a five-year construction effort of John Smyly, was put in place. The Kootenay Encampment model was also completed and installed. Field trips were made to complete the research for the underwater diorama of fishing techniques in the Food Gathering exhibit of the Ethnology Gallery.

During the year a carpenter was loaned to the Modern History Division to assist in the preparation of the Museum Train exhibit and a number of display technicians pitched in for the final touches to the exhibit. One stayed with the train through the summer to maintain the exhibits and to assist local museums in arranging their temporary displays for the train.

A major step was taken this year toward a completely integrated sound and visual control in the Display Gallerys with the arrival of four Bin Loop, 14-track, control consoles. One is now in operation providing the background sounds for the Modern History exhibits. The others will eventually support the Ethnology and Natural History exhibits. No other museum in Canada has such a sophisticated system.

One of the unsung heroes of the year was Richard Hunt, who adzed all the bases for the totem poles, the cave entrance, and showcase bases and panelling.

In conjunction with the History Division and The Maltwood Museum, an amended version of the successful *art nouveau* exhibit was produced for the summer. Graphic and design technicians prepared the lay-out for eight new penny folders for the Modern History Division as well as for two new Museum Manuals.

Early in the year our plastic curing oven was started up and during the summer a large freeze dryer, built by us, started producing freeze-dried specimens. Both units will be valuable assets when the Natural History exhibit program gets into full swing.

EDUCATION AND EXTENSION SERVICES

SHIRLEY CUTHBERTSON, CHIEF

There are two major operational areas in this Division—Education, which includes volunteer recruitment and training, school programs, and teacher training; and Extension, which includes the co-ordination of in-house temporary exhibits, travelling exhibits, and public information programs.

Each year, many more people work with this Division than are actually on staff. There are docents, the Museum-trained volunteers who teach the special programs for school classes; "work-experience" students who volunteer as office and program assistants; and many other individuals and groups, such as the University Women's Club, assist in compiling program notes and gathering materials. It it difficult to estimate the value of such community support to the Museum, but the docent group alone contributed 4,915 hours during the year.

Each year, from May through August the staff is also augmented by students. This year there were eight tour guides, four teachers, and one research-assistant. The teachers' family programs, Pioneer Kitchen and Neptune's Doorstep, were the hit of the summer programs. Altogether, 715 children and adults participated in 15 programs, which ran from two hours to three days in length.

Three Museum teachers planned, prepared, and helped the docents teach some 15,303 students using the exhibits and Museum collections. The collection material, purchased or especially donated for the purpose, is selected so that children may touch, handle, or use it. Altogether, 31,893 students visited the Museum during the year.

One of the Museum teachers, Mrs. Emma Hunt, travelled to elementary schools in Abbotsford, Chilliwack, Hope, and Agassiz school districts, with her program "Son of Raven, Son of Deer," based on George Clutesi's book. After the program teachers wrote saying that not only the children but the adults, too, discovered a new and warm appreciation of native Indian culture. Two other travelling exhibit-kits, "Journey Through Time" and the "Marine Biology Kit" circulated throughout the Prince George, Cranbrook, and Castlegar school districts. This pilot project ended in June, as funds for further circulation were curtailed in May. A total of 4,997 students participated in the travelling programs from January to June.

The Educational Research Institute of British Columbia evaluated and reported on these kits. In their words: "This evaluation study has demonstrated the need, demand, and value of duplicating the present kits, in revised form, and the desire on the part of teachers, children, and parents for further development of other kits with similar purpose and methodology." The Head of the Programs Section at the National Museum of Natural Sciences asked for a duplicate of the Marine Biology Kit for circulation in Ontario, and as a model for exchange on a national scale. The duplicate kit was delivered to Ottawa in August.

Teacher groups continued to request the Museum's workshop for teachers. There are 27,000 teachers in the Province, and only about 25 Museum staff who plan school programs, so teacher education in the use of museums as a curriculum resource is considered an essential function of this Division. Teacher use of museums is increasing rapidly throughout the Province. Other groups, such as service and community clubs, request talks "about the Museum." These are given once or twice a month by the Division head. Adult programs were given to 2,606 people during the year.

As a service to communities, three travelling exhibits were shown in three community museums between January and June. Again, because funds were cur-

tailed, these were returned to storage for the remainder of the year. This also brought the cross-Canada tour of "The Legacy" to a halt at Winnipeg, after it had visited provincial museums at Edmonton and Regina. One of the Museum's travelling exhibits, "Sternwheelers," was planned with the help of the Curator of the Kelowna Centennial Museum. "Our Hidden Heritage" was developed by a Victoria community group for International Women's Year, with the help of Museum staff. Highlight of the evening lecture program at the Museum was the "Heritage Court Presents" series related to the "Challenger" exhibit from the Nova Scotia Museum. Programs related to "Alternate Energy," a B.C. Hydro exhibit, were also very successful. Other highlights of the year were two ethnic group presentations in the Newcombe Auditorium, a noon-hour series of films from the National Film Board, the "Music in the Museum" series, and the presentation by visiting lecturer Emmanuel Amati on the recording and preservation of a major petroglyph site in Italy.

MUSEUMS ADVISER

JOHN E. KYTE, MUSEUMS ADVISER

With a mandate to provide assistance and advice to a hundred or more community museums throughout the Province, the Museums Adviser Division endeavoured to achieve its objectives through programs geared to the varying needs of individual museums. However, the noticeable acceleration of museum development over the past three years substantially increased demands for assistance and this year proved no exception. The Division concentrated on two distinct areas of operation in 1975—Advisory Services and the Museum Training Programs, both of which were supplemented to a large degree with resource personnel from the B.C. Provincial Museum as well as from the museum community itself.

The Advisory Services Section of the Division continued to handle an increased number of requests for assistance from the smaller community museums which, as a group, includes more than 60 per cent of the museums in the Province.

The Training Program continued its use of the two-day seminar which has been adopted as a basic museum training unit and which has the flexibility of being easily scheduled into outlying areas of the Province. One-day "mini" workshops provided training where the larger training seminars were considered impractical. Programming called for a slate of eight basic seminars plus two with content for advanced levels. Instruction in all phases of museum operation and management was provided for approximately 150 museum workers.

Throughout the year a liaison was maintained with most of the culturally oriented organizations and more particularly with those where direct benefits could accrue to the museum field. Of these, the B.C. Museums Association, the Canadian Museums Associations, the Canadian Conservation Institute, and the West Coast Art Association were the most prominent.

Lack of adequate museum funding still constitutes the major obstacle in the development and efficient operation of cultural institutions in the Province. Despite this, however, some capital assistance, made available through the Community Recreational Facilities Fund and the National Museums of Canada, resulted in the construction of two National Exhibition Centres and the opening of several smaller community museums.

A significant factor in the growth and development of museums in British Columbia has been the sudden upsurge of municipal interest and support in their

local community museums. This trend could result in a network of intermediate museums being created and an increasing degree of operational professionalism. The outlook generally indicates continued improvement in all areas of cultural development and increased use of the services provided by this Division.

FRIENDS OF THE PROVINCIAL MUSEUM

The Friends of the Provincial Museum (the Friends) is a nonprofit society which helps support special programs of the Provincial Museum. It was formed in 1972 and is now made up of more than 400 individual members and 14 affiliated societies, two of which—the Heritage Court Society and the Docents' Association of the Provincial Museum—provide important direct services to the Museum. The Heritage Court Society operates the Gift Shop in the Museum (the proceeds of which go to the Friends for Museum projects) and the Docents' Association provides volunteers who present the school programs in the Museum.

This year the Friends agreed to act as co-ordinators for the National Museum of Natural Sciences, Ottawa, and handle the finances required for the construction of a marine biology travelling exhibit. The exhibit was designed and its preparation supervised by the Education and Extension Services Division with $21,000 toward its cost being received from the National Museum.

Donations for the benefit of the Provincial Museum fell off sharply during the year with no large donations received from the public. In all, $3,930 was received.

Rediscovering the gold rush on a class visit to the Provincial Museum.

Expenditures on behalf of the Museum, from the donations of previous years, totalled $20,700; $14,400 of which went toward the purchase of 20 important ethnographic specimens.

For the Heritage Court Society, this was a successful year. Under the able direction of Mrs. E. Ross, who supervises the staff of volunteer workers who run the Gift Shop, this facility showed an increase of 38 per cent in sales during the year and a profit of more than $31,000 over 1974.

The nonprofit status of the Society created some difficulties in transferring these funds to the Friends for the benefit of the Provincial Museum. However, the money that was transferred helped to support 16 projects at a total cost of $19,559. In the past four years more than $83,000 has been expended on 57 Museum projects. This remarkable accomplishment would not have been possible without the dedicated help of many volunteer workers. They deserve our sincerest appreciation.

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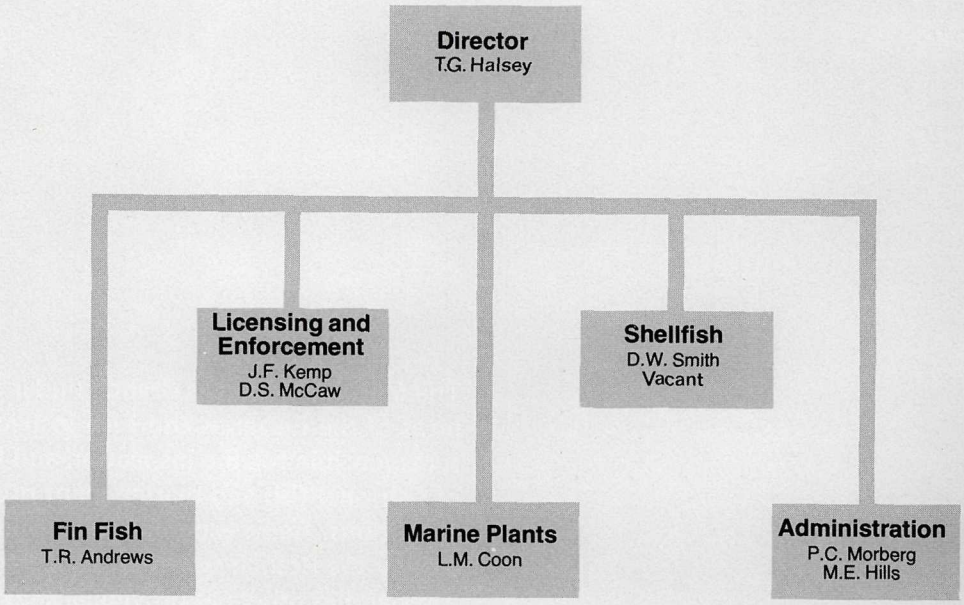
Marine Resources Branch

(formerly Commercial Fisheries Branch)

The Marine Resources Branch under the auspices of the Fisheries and Fish Inspection Acts, is responsible for the inspection and licensing of fish, shellfish and marine plant processing operations. As an economic development agency the Branch serves as manager in some cases and in others as provincial spokesman for renewable marine resources and endeavours to ensure that the optimum sustainable utilization of those resources provide maximum benefits to British Columbians. To this end the Branch conducts research and development of its own and often jointly with private industry and federal agencies in management, planning and environmental protection of commercial and sport fisheries, commercial and recreational shellfish and marine plant resources. Through this cooperative approach, the Marine Resources Branch has developed an important liaison role with federal fisheries and with provincial land and water management agencies. The Branch represents provincial policies and perspectives on international fisheries agreements which are negotiated by the federal government.

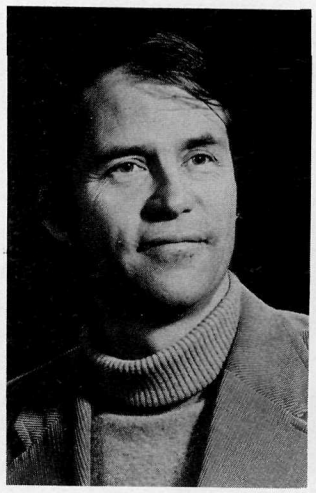
marine resources branch



1975/76 HIGHLIGHTS OF THE MARINE RESOURCES BRANCH

- A significant increase in the number of independent fish-processing plants resulted in the highest annual revenue of any post-war year.
- Marine Resources Branch inspectors, in co-operation with the Federal Fish Inspection Branch, have brought about very significant improvements in the processing standards of almost every plant in British Columbia.
- Co-operation with the Federal Department of Consumer and Corporate Affairs has provided 24 ex-officio inspectors of retail fish outlets for Marine Resources Branch.
- Provision for floating processing plants, through changes in the British Columbia *Fisheries Act,* will provide further opportunities for expansion and diversification of the processing industry.
- Feasibility and planning studies for the proposed joint Federal-Provincial Salmonid Enhancement Program will result in significant increases for the British Columbia salmon fisheries. (This joint program is dependent on an agreement between the two Governments in 1977).
- British Columbia commercial fisheries and processing industries stand to gain considerable benefits through international negotiations currently in progress at the Law of the Sea Conference—some implications of the proposed Canadian coastal 200-mile economic control zone.
- A joint Federal-Provincial cost-sharing project developed a herring sorting and sexing machine which has greatly increased processing efficiency. (Female herring, because of their roe, have a very much higher market value than the male, but the sexes are indistinguishable to the naked eye.)
- A cost-shared exploratory fisheries project discovered new prawn stocks near Klemtu and Kitimat and are estimated to produce 75,000 pounds annually at $1 per pound landed value.
- A joint initiative from Marine Resources Branch and other Provincial resource agencies has resulted in the first pilot-planning attempt at an integrated coastal zone management strategy for British Columbia's 17,000 miles of coastline.
- The 1975 oyster spatfall (seed setting) was extremely successful and a good commercial "set" was obtained. At current prices the landed value of this set, at maturity in 1978/79, will be worth $1.2 million.
- New markets for British Columbia oysters and clams were established in California and the demand for British Columbia shellfish products in that area exceeds supply.
- Plans were concluded this year for the construction of an oyster-processing plant at Fanny Bay (Vancouver Island); this facility will provide an improved profit margin for shellfish producers and diversify the market potential.
- Ten recreational oyster reserves were established and stocked periodically with oysters for the exclusive use of the recreationist.
- Joint Federal-Provincial support of professional management assistance to the British Columbia oyster industry has resulted in improved marketing, improved quality control, product diversification, and increased production.

- Kelp resources totalling 66,390 harvestable metric tonnes were located in beds covering 2,166 hectares in Nootka Sound, on the west coast of Vancouver Island.
- Investigations of kelp growth population dynamics and the association between kelp and kelp bed fishes were initiated to provide the data base for the regulation of harvesting.
- Mariculture technological development programs were initiated for the carrageenan-containing alga *Iridæa* and the agar-containing alga *Gracilaria.*
- Seaweed harvesting regulations were completely rewritten to give better control over harvest area and quotas and the method and manner of harvest.



T. Gordon Halsey
Director

Marine Resources Branch

INTRODUCTION

In mid-1975, R. G. McMynn resigned his position as Director of the Branch to assume duties at Law of the Sea Conference. T. G. Halsey was appointed to the position of Director in the autumn of 1975.

The new Provincial capability for the management and development of British Columbia's renewable marine resources has continued to evolve during 1975 and early 1976. A core of effective professional capability has developed a wide diversity of in-house and joint Federal-Provincial programs for the development of marine resource industries and for some recreational pursuits.

In light of the highly successful operation of foreign factory ships, the Provincial *Fishery Act* was changed to allow British Columbia entrepreneurs an opportunity to develop the same kind of operation. Some interest has been expressed by the industry, but no plants of this kind have been licensed to date.

Persistent efforts and effective Provincial-Federal co-operation on inspection of fish-processing plants has produced significant upgrading of sanitary conditions.

Considerable growth in markets for British Columbia oysters, a wide-spread interest in mariculture generally, and progressing development and use of British Columbia's coastline is placing ever-increasing demands for services on the resources of the Maritime Resources Branch. Established and developing primary marine resource industries are provided the bulk of the Branch's time and effort. These areas are assisted with direct services and through programs for industrial product and gear development and management assistance which are jointly funded with the Federal Government. Principal among these is the proposed Federal-Provincial Salmonid Enhancement Program. Increased referals from other Provincial resource management agencies on matters affecting the marine environment and the resources reflect an improved approach to integrated resource management. The public, too, continues to increase its interest, awareness, and use of marine resources and demands for information bulletins and pamphlets continue to accelerate.

Provincial renewable marine resource concerns for the anticipated 200-mile economic control zone are represented by a delegate to the Law of the Sea Conferences. Other international fisheries negotiations conducted by the Federal Government continue to receive inputs by regular representation from the Marine Resources Branch.

INDUSTRY LICENSING AND INSPECTION

Objectives—(1) To monitor through licensing the fish-processing and wholesale buying sectors of the British Columbia fishing industry; (2) to provide consumer protection and improved industry performance by upgrading the quality of all fish products through enforcement of the *Fish Inspection Act*.

FISHING INDUSTRY PRODUCTION

Preliminary figures available at time of writing show that the total landed value of all the fisheries fell from $101 million in 1974 to $77 million in 1975. Landed value of salmon declined from $74 million in 1974 to just over $44 million in 1975. The decline in value was largely because of lower quantities of fish landed, which was partly due to a strike during the salmon season.

SALMON CANNING

Commercial Production

The canned salmon pack for 1975 was 508,766 48-pound cases, which was 918,648 cases fewer than the 1974 pack of 1,427,414 cases. Salmon landings were the lowest since 1960. Pink salmon was the only species to show an increase in landed value although actual landings dropped by 2.1 million pounds. The sockeye catch was greatly decreased over 1974 and fell by just over 75 per cent from 47 million pounds in 1974 to 11.5 million poounds in 1975.

Eighteen salmon canneries were licensed to operate in 1975. The locations were as follows: Skeena River-Prince Rupert area, five; Central area, one; Vancouver Island, three; Fraser River-Lower Mainland, nine.

Comparative Pack by Species (48-pound Cases)

	1974	1975
Sockeye	707,662	162,467
Chinook	20,453	13,608
Steelhead	1,557	536
Blueback	2,727	395
Coho	157,312	59,109
Pink	307,040	236,934
Chum	230,663	35,717

SPORT FISH CANNERIES

Four canneries designed to custom-can sport-caught fish operated during 1975. They were located at Brentwood, Cowichan Bay, Nanaimo, and Quadra Island. The Cowichan Bay operation started late in the year and its production was so small that it has not been included in the totals. Production to the end of December 1975 was 211,255 cans, down 4,363 cans from the previous year's total. A total of 5,175 sportsmen used these facilities, of whom 4,159 were residents and 1,016 nonresidents. The following number and species of fish were canned: Chinook, 10,398; coho, 11,523; pink, 860; chum, 116; sockeye, 998; steelhead, 77; and trout, 205.

HALIBUT FISHERY

Halibut landings in 1975 by the combined Canadian and American fleets increased by 6 million pounds, the average price paid was 89.5 cents a pound—the highest price on record. In 1974 the price was 72.9 cents a pound. In a recent statement the International Pacific Halibut Commission warned that "abundance of halibut remains low and the North American fishery still is in a precarious state, but the long-term prospects for recovery have improved. Last year after many years of continuous decline there was a slight rate of increase in the catch of adult halibut."

Canadian halibut fishermen landed 7.8 million pounds of halibut worth $7.1 million at Canadian ports and they delivered an additional 3.5 million pounds valued at $3.1 million to United States ports.

HERRING FISHERY

The 1975 catch (65,740 tons) of herring for roe and food purposes was worth $13.3 million to fishermen. This was 16,501 tons and $1.2 million greater than in 1974. A total of 1,451 boats (1,219 gillnetters and 232 seiners), was licensed in the 1975 herring fishery, 1,103 of these reported landings.

REVIEW OF FISHERIES PRODUCTION AND INDUSTRY STATISTICS FOR 1974

General

The total wholesale value of all British Columbia fish products marketed reached a total of $220.5 million, the second highest on record.

As marketed wholesale, the principal species was salmon, with a value of $165.8 million, herring valued at $29.8 million, and halibut with a value of $6.9 million.

The herring catch for roe and other food purposes was 98.5 million pounds. Herring roe accounted for 83 per cent of the total wholesale value and food herring 7 per cent.

North Pacific halibut production in 1974 was the lowest in over 60 years. Only 21 million pounds were landed by the combined Canadian-American fleet.

In 1974 the total wholesale value of shellfish amounted to $5.3 million. The value of the clam production was $795,000; oyster production, $1.1 million; and crab and shrimp production, $3.5 million.

Tuna landings of 2,675,000 pounds valued at $871,000 were 124,000 pounds and $353,000 less than 1973.

Fishing Vessels

During 1974 the fishing fleet of British Columbia was comprised of drum seiners, 304; table seiners, 6; gillnetters, 2,391; trollers, 1,451; trawlers, 13; and longliners, 36.

Salmon Canning

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.

The total canned-salmon pack for British Columbia according to the annual returns submitted to this Branch by canneries licensed to operate in 1974 amounted to 1,428,882 cases, down 121,232 cases from the 1973 pack of 1,550,114 cases.

Sockeye salmon—The 1974 sockeye pack was 709,180 cases. This was an increase of 66,579 over 1973's total of 642,601.

Sockeye landings were 46.9 million pounds worth $29.8 million, a decrease of 397,000 pounds in weight but worth $3.3 million more compared with 1973 value.

Pink salmon—Pink salmon landings declined from 29.3 million pounds in 1973 to 24.7 million pounds in 1974. Average price per pound dropped from 26.9 cents per pound to 23.4 cents per pound. The combination of lower landings and price per pound lowered the wholesale value by over $5.0 million from the previous year. The canned pack of 307,192 cases was down by 48,503 cases from the 1973 pack of 335,695.

Chum salmon—Landings of 27.5 million pounds with a landed value of $10.7 million meant a loss to the fishermen of 44.6 million pounds (61.9 per cent) and

$22 million (67.3 per cent) compared to 1973. The canned pack of 230,634 cases was down 192,730 cases from 1973.

Coho salmon—Coho, along with chinooks, were the only species to show an increase over the previous year's pack. Coho, with a pack of 160,051 cases, were up 43,854 cases over 1973's pack of 116,197 cases.

Chinook salmon—As stated, chinooks showed an increase over the previous year's pack, up 9,021 cases to 20,279 cases from 11,258 in 1973.

Steelhead—The 1974 pack amounted to 1,546 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 1974, six shellfish canneries were licensed to operate in British Columbia and produced the following packs: Fish spreads, 159,594 cases; creamed salmon, 20,797 cases; creamed tuna, 8,069 cases; oyster stew, 5,354 cases; salmon chowder, 8,169 cases; clam chowder, 14,597 cases; shrimp, 3,600 cases and 10,280/5-pound cans; crabs, 185 cases; oyster soup, 115 cases; pickled oysters, 2,306/6-ounce jars; sea urchin roe, 15,702/22 gram-plates.

Fish-curing—Twenty-seven smokehouses processed the following: Salmon, 953,000 pounds; cod, 740,692 pounds; mackerel, 12,000 pounds; eels, 400 pounds; sturgeon, 1,900 pounds; steelhead, 7,045 pounds; bass, 1,800 pounds; trout, 42 pounds; oysters, 26/48-pound cases and 2,302/6-ounce jars; herring fillets, 36,800 pounds.

Pickled herring—Pickled herring production in 1974 amounted to 27,631 cases of 12/12-ounce jars; 784 cases of 16-ounce jars; 7,556 cases of 12/32-ounce jars; 2,215 cases of 6/56-ounce jars; 1,043 cases of 4/128 ounce jars; 1,525/20-pound pails; 594/25-pound pails; 61/50-pound pails.

Miscellaneous production—Herring roe, 9,249,000 pounds; mild-cured salmon, 489,000 pounds; salmon roe, 4,715,000 pounds; frozen food herring, 8,340,000 pounds; herring-oil, 501,538 pounds; herring meal, 4,695 tons.

SUMMARY TABLES, 1970–74

Table I—Total Landings and Effort

	Landed Value of Fish and Fish Products	*Wholesale Value of Fish and Fish Products*
	$	$
1970	56,909,000	123,280,000
1971	55,664,000	120,100,000
1972	70,817,000	159,132,000
1973	130,400,000	285,000,000
1974	101,000,000	220,500,000

	Number of Licensed Boats	*Number of Licensed Fishermen*
1970	6,975	11,647
1971	6,698	11,015
1972	6,670	9,902
1973	6,589	11,717
1974	7,084	11,906

Table II—Licences Issued and Revenue Collected, 1971–75, Inclusive

Licence	1971		1972		1973		1974		1975	
	Number	Revenue	Number	Revenue	Number	Revenue	Number	Revenue	Number	Revenue
		$		$		$		$		$
Salmon cannery	14	5,600	15	6,000	15	6,000	15	6,000	18	7,200
Herring cannery	-----	-----	1	25	1	25	1	25	1	25
Herring reduction	-----	-----	2	800	2	800	3	1,200	7	2,800
Tierced salmon	3	300	3	300	3	300	3	300	3	300
Fish cold storage	23	3,550	27	3,825	30	4,075	38	4,975	51	6,525
Fish-processing	63	2,500	67	2,900	91	5,300	117	8,090	122	8,780
Shellfish cannery	6	600	7	700	7	700	6	600	5	500
Tuna cannery	1	100	2	200	2	200	1	100	1	100
Fish-offal reduction	5	250	4	200	4	200	5	250	7	350
Herring dry-saltery	1	25	-----	-----	1	25	1	25	-----	-----
Fish-buyers	200	15,000	324	16,200	352	17,600	407	20,350	365	18,250
Pickled herring	2	50	2	50	2	50	2	50	3	75
Sport-caught fish cannery	3	75	3	75	4	100	4	100	4	100
Aquatic plant harvesting	51	2,550	25	1,250	27	1,350	11	550	1	50
Aquatic plant processing	-----	-----	-----	-----	1	200	-----	-----	2	400
Dogfish reduction	-----	-----	-----	-----	2	100	2	100	2	100
Salmon dry-saltery	-----	-----	-----	-----	1	25	1	25	-----	-----
Oyster-picking permits	131	1,310	94	940	85	850	92	920	117	1,170
Province of B.C. receipts	250	3,014	153	1,751	149	3,371	388	2,787	271	2,590
Totals	853	34,924	729	35,216	779	41,271	1,097	46,447	980	49,315

Table III—Species and Value of Fish Caught in British Columbia, 1970–74, Inclusive

	1970	1971	1972	1973	1974
	$	$	$	$	$
Salmon	99,597,000	96,926,000	114,349,000	221,642,000	165,841,000
Herring	682,000	2,256,000	12,612,000	34,641,000	29,856,000
Halibut	14,025,000	11,367,000	16,904,000	12,963,000	6,996,000
Crabs and shrimps	1,775,000	1,303,000	1,730,000	2,920,000	3,472,000
Lingcod	1,038,000	1,003,000	981,000	1,266,000	1,766,000
Grey cod	752,000	1,299,000	3,428,000	3,128,000	4,531,000
Oysters	590,000	575,000	798,000	1,081,000	1,064,000
Sole	1,819,000	1,829,000	1,504,000	1,796,000	2,192,000
Black cod	226,000	219,000	806,000	896,000	492,000
Clams	457,000	503,000	759,000	393,000	795,000
Tuna	984,000	1,499,000	3,088,000	1,618,000	1,356,000
Other species	1,335,000	1,310,000	2,173,000	2,653,000	2,091,000
Totals	123,280,000	120,089,000	159,132,000	284,997,000	220,452,000

Table IV—British Columbia Salmon Pack, 1970–74, Inclusive, Showing Areas Where Canned

(48-pound cases)

1970

Species	Area		Total
	Fraser Area and South Coast	North Coast	
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	2,424
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

Table IV—British Columbia Salmon Pack, 1970–74, Inclusive, Showing Areas Where Canned—Continued

(48-pound cases)

1972

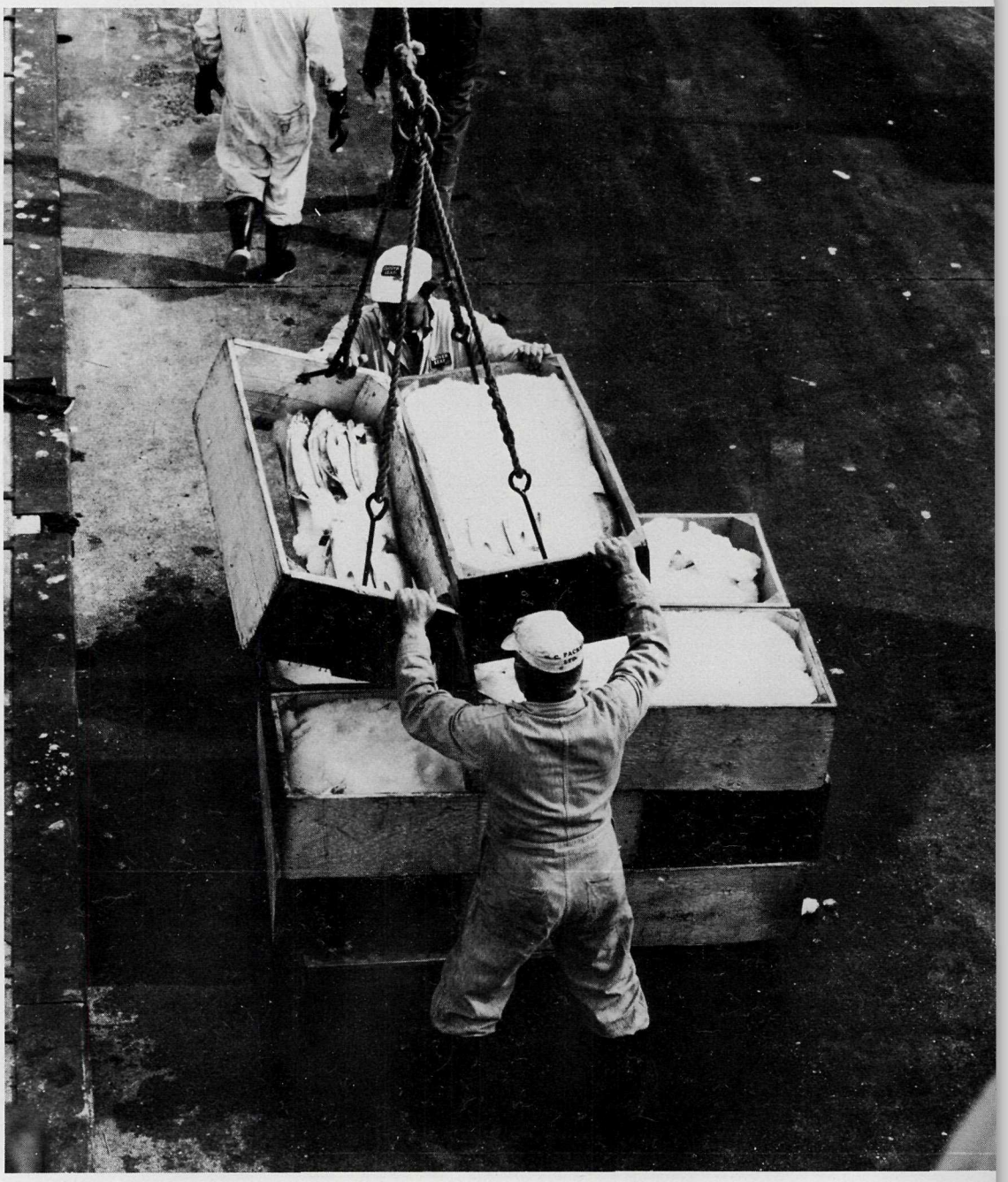
Species	Area		Total
	Fraser Area and South Coast	North Coast	
Sockeye	199,890½	113,016½	312,907
Red spring	927	874½	1,801½
Pink spring	4,292	2,047½	6,339½
White spring	3,024½	442½	3,467
Steelhead	393½	473½	867
Blueback	----------	----------	----------
Coho	52,878½	30,877	83,755½
Pink	225,502	259,662	485,164
Chum	187,415	91,036	278,451
Totals	674,323	498,429½	1,172,752½

1973

Sockeye	470,960	171,640½	642,600½
Red spring	367	548	915
Pink spring	4,783½	1,656½	6,440
White spring	3,551	351½	3,903½
Steelhead	788½	210½	999
Blueback	705	----------	705
Coho	98,610½	16,881½	115,492
Pink	280,047½	75,647½	335,695
Chum	305,732	117,631½	423,363½
Totals	1,165,546	384,567½	1,550,113½

1974

Sockeye	488,699½	220,481	709,180½
Red spring	1,297½	1,370	2,667½
Pink spring	7,187½	2,324½	9,512
White spring	7,177½	922	8,099½
Steelhead	624½	921½	1,546
Blueback	2,726	----------	2,726
Coho	128,377	28,948	157,325
Pink	161,805½	145,386	307,191½
Chum	92,067	138,566½	230,633½
Totals	889,962	538,919½	1,428,881½



FIN FISH SECTION

Objectives—(1) To serve as technical support for provincial input to international fisheries negotiations; (2) to interface with industry, other Provincial agencies, and Federal agencies on policy and research matters relating to British Columbia marine fisheries resources; (3) to provide some technical input to the Salmonid Enhancement Program.

INTERNATIONAL FISHERIES NEGOTIATIONS

Although no formal negotiations were held in 1975 with the United States on problems centred around the interception of each other's salmon, several informal and advisory meetings were held to discuss possible solutions. The bases for formal negotiations were informally agreed to by the two countries and formal negotiations will recommence in mid-1976.

Bilateral fisheries agreements with several foreign countries (i.e. Poland) that wish to fish in what will be British Columbia's 200-mile offshore economic zone were negotiated by the Federal Government; these agreements were reviewed at various stages to ensure that the Provincial interests were safeguarded.

ENVIRONMENTAL PROTECTION

Impact of Log Dumping and Booming on Benthic Marine Habitat

This project was initiated to analyse the impacts of log dumping and booming on a shallow sand bottom marine animal community. The study area encompasses 2 500 m of coastline in Saanich Inlet, 3 km south of Mill Bay on lower Vancouver Island. Bark and wood debris has been deposited on the underlying sand sediments along 1 500 m of the study area.

In 1975 a sediment coring survey was instituted to map the distribution and thickness of the bark layer and to determine the nature of the underlying sediment.

Water analyses showed no impairment to quality within the water column or at the bark-water interface. However, dramatic alterations were noted in the burrowing invertebrates community. Species such as sedentary polychætes and bivalves were reduced in numbers and diversity in the bark deposit to near exclusion in areas where bark was being actively deposited. No trend toward a return of sand-dwelling fauna was apparent in a log dump area abandoned 20 years ago.

FISHERIES RESOURCE DEVELOPMENT—SALMONID ENHANCEMENT PROGRAM

A primary goal of this Federal-Provincial program, if it receives joint Government approval, is to double the present catch of salmon in British Columbia by implementing a broad range of enhancement projects over the next 10 to 15 years. As 1975 was the first full year of a two-year planning and program development phase, the efforts of this section were expended in conducting research designed to broaden the base upon which the 10–15 year program rationale can be developed.

Incidental Exploitation of Steelhead Trout by Commercial Fisheries

With the assistance of WIG '75 funding, a project was undertaken to assess the effect of the incidental catch of steelhead trout in the commercial salmon fishery. When enhancement of salmon stocks occurs, the increased fishing effort necessary to harvest these stocks may result in over-exploitation of steelhead which are harvested incidentally in a particular salmon fishery. Thus, it is vital to the preservation of steelhead stocks that this incidental exploitation be understood and that remedial action be taken where necessary.

From 1963–74 an annual average of 18,000 steelhead was reported caught in commercial salmon fisheries. This compares to an annual average catch of 35,000 steelhead taken in recreational sport fisheries. Of the steelhead taken in commercial fisheries, nearly 40 per cent of the total is derived from the Skeena

River stocks. A further 10 per cent is taken in each of the three areas—Johnstone Strait, the Fraser River area, and the Bella Coola-Dean River area. In virtually every case the identity of steelhead stocks exploited is unknown.

In an effort to clarify the identity of stocks of steelhead which are commercially exploited, further studies have been planned in early 1976 which will be implemented during the 1976 commercial salmon fishing season. This study will be integrated with other freshwater steelhead studies within the Salmonid Enhancement Program.

Estuarine Ecology of Juvenile Salmonids

A preliminary investigation of the estuarine ecology of juvenile salmonids was conducted in the Quatse River estuary near Port Hardy. The objective of this project was to determine the temporal and spatial distribution, growth, feeding, and migration of juvenile salmonids in the estuary. The information derived from this study was to used to provide an insight into enhancement possibilities in the estuarine environment and to provide a basis for present and future management of estuarine fisheries for anadromous gamefishes such as cutthroat trout. Although considerable preliminary data were collected in 1975, reassignment of research priorities within the Salmonid Enhancement Program will not permit the completion of this study at present.

Exploratory Fisheries and Gear Development

Efficiency of operation and a significant reduction of costs of processing herring has been achieved through a joint Federal-Provincial project that developed the herring sorting and sexing machine (female herring because of their roe have a very high market value compared to the males, but the sexes are not distinguishable to the eye). Five machines were built under this project and placed into operation with very high efficiency rates. Testing is continuing throughout this herring season; a final report will be made at the end of the season.

Exploratory fisheries for new prawn stocks were conducted under a joint Federal-Provincial cost-sharing project. During September to December 1975 an area in Laredo Sound near Klemtu and in Gardener Channel near Kitimat were discovered and estimated to be capable of producing 75,000 pounds annually at $1 per pound landed value. A similar survey in 1974 located an area in Queen Charlotte Sound subsequently yielded 50–60 thousand pounds of prawns—the value of the catch *exceeded* the cost of the survey.

Coastal Zone Management Planning

In recent years the pressing need for integrative shoreland classifications has become increasingly apparent in British Columbia. This need is especially acute in responding to proposals for shoreland development for industrial, residential, and recreational purposes. At present such proposals are dealt with on an *ad hoc,* individual agency-by-agency basis. Such an approach, necessitated by the lack of good background information of shoreland capability, has often resulted in the irreversible alienation of valuable fisheries and wildlife habitat for industrial or other purposes. Until integrative shoreland classification information is available in a useful and retrievable form, such alienation can be expected to continue at an accelerating rate.

To reverse this trend a joint Federal-Provincial planning activity has been initiated to consider methodologies and implementations of this methodology to

assess, in an integrative manner, the biophysical capability of the shorelands of British Columbia for shellfish, fish, waterfowl, and marine plants. This section, Fish and Wildlife Branch, Federal Fisheries and Marine Service, and the Provincial Lands Branch are jointly participating.

SHELLFISH SECTION

Objectives—To manage and develop the British Columbia oyster resources and industry and to participate in joint Federal-Provincial management of other shellfish.

In 1975 the role of the Shellfish Section continued to evolve in response to changes in the oyster industry and the recognition of resource developmental potentials.

An increase in effort was placed on the Industry Extension and Liaison Program to meet the demands of the expanding public interest and investments in oyster farming throughout British Columbia. Emphasis was placed on on-site assistance to industry in the form of biological and technical direction of commercial spat collection techniques, operational planning, and managerial input in all aspects of oyster culture.

The main emphasis in shellfish management continued to be the development of the shellfisheries, particularly the oyster industry. The main activities of this program were the administration of the oyster lease areas in the Province, management of commercial harvesting of oyster shellstock from vacant Crown foreshore, assessment of new areas to determine suitability for oyster culture, and providing resource folio information on shellfish habitat referrals for other Government agencies.

Shellfish development during the past year has been directed in the area of oyster culture demonstrations. Projects conducted under this program are designed to investigate some of the immediate problems confronting the shellfish industry, particularly the oyster industry.

Projects on the tray culture of Pacific oysters, and the evaluation of veneer cultch methods for oyster culture were completed this year. The first year of a two-year joint Federal-Provincial project was initiated to evaluate exposed areas for spat collection ability, develop floatation and moorage systems that will withstand exposure, and assess new "cultch" collection methods.

The recreational shellfish program was continued in 1975 to provide educational and general interest information that will aid in developing public awareness and understanding of British Columbia's marine resources. Activities such as the preparation of brochures and pamphlets describing the biology and utilization of the more common shellfish species and the establishment and enhancement of recreational shellfish reserves have proven very popular with the recreationist and have served well as an information and education medium.

INDUSTRY EXTENSION AND LIAISON PROGRAM

A. Spatfall Prediction Service

In British Columbia the spawning of the Pacific oyster and subsequent spatting is extremely uncertain in most areas.

Three areas in the Strait of Georgia—Pendrell Sound, Hotham Sound, and Ladysmith Harbour—historically have been areas where successful setting occurs with relative frequency. Oyster spawning is usually very sudden, the spatting

erratic, so prediction of time and intensity of spatfalls is necessary for the industry and, therefore, collection of seed has come to be based almost entirely on spatfall forecasting.

Spatfall forecasting is based on monitoring the number of plankton, the distribution of oyster larvæ, and trends in water temperature and salinity.

Pendrell Sound

In 1975, favourable water temperatures and salinities in Pendrell Sound were recorded as early as late June as the weather was clear and hot during this period. Mean surface water temperatures of 20°C or higher were recorded from July 1 to August 1. Surface salinities remained near the optimum (16‰) for oyster larvæ development from July 7 to August 1. A commercial spatfall was predicted at this time. A light spawning first occurred in late June with a few larvæ developing to the "eyed" stage. Extensive spawning occurred July 4 or 5 with large numbers of straight-hinge larvæ being found in plankton tows in July 7. Growth and survival of larvæ from this spawning was excellent and a commercial set was predicted to peak on July 20. Spawning continued on a regular basis into the first week of August with straight-hinge larvæ occurring in all the daily plankton tows.

Spatfall was monitored at seven locations in Pendrell Sound—Stations 1, 2, 3, 4, 5, 6, 10. Initial settlement occurred July 11; maximum setting on July 22 and light spatting continued to August 25. All experimental cultch was removed September 17 and the mean spat counts and lengths were recorded (Tables 1 and 2).

Table 1—Ranges and Mean Counts/Shell of Live and Dead Spat, and Starfish on Cultch Exposed on July 14 and Removed on September 17, 1975, in Pendrell Sound

	Live Spat (No./Shell)		Dead Spat (No./Shell)		Starfish (No./Shell)	
	Range	Mean	Range	Mean	Range	Mean
1	27–196	101.6	0–8	3.7	1–8	2.5
2	4–234	156.5	0–7	2.8	0–1	0.1
3	71–207	126.3	0–10	2.4	0–1	0.1
4	40–533	320.2	5–104	40.0	0–7	2.1
5	2–426	138.2	0–81	21.9	0–3	0.5
6	0–174	81.3	0–15	5.2	0–15	1.8
10	57–300	205.1	1–37	12.0	0–20	5.3

Table 2—Means and Ranges of Spat Lengths on Cultch Exposed July 14 and Removed September 17, 1975, in Pendrell Sound

Station	Mean (mm)	Range (mm)
1	5.8	1.0–10.0
2	8.6	5.0–13.0
3	7.4	5.0–12.5
4	4.3	0.5– 7.5
5	4.0	1.0– 8.0
6	7.9	0.5–25.0
10	5.5	2.0–11.0

Heaviest spatfalls were observed at stations 2, 4, and 10 with station 4 recording the highest spatfall. The length of spat on September 17 at the seven stations ranged from 0.5 to 30 mm with a mean of 7.7 mm (Table 2).

The oyster industry exposed 25,000 strings of Pacific oyster cultch, 22,000 strings of Phillipine oyster cultch, and 1,500 bundles of cement-coated veneer with a commercial set of 20–25 spat per shell being collected. The oyster *seed* produced in Pendrell Sound for 1975 was valued at $127,500.

Hotham Sound

Suitable water conditions for Pacific oyster breeding were recorded in Hotham Sound during the month of July. Extensive spawning took place during the first part of July and a commercial spatfall was observed which peaked around July 27. There was no commercial or experimental cultch exposed, but bleach cultch was examined for spat, and the range was found to be 0–12 spat per shell with a mean spat count of 3.5 per shell. No commercial cultch was exposed.

Ladysmith Harbour

Marginal water conditions for Pacific oyster-breeding were recorded in Ladysmith Harbour from July 14 to August 8. A light spatfall (Table 3) was observed and the failure to obtain a commercial set was largely attributed to the water temperatures not obtaining sustained adequate levels required for extensive spawning and larval development.

Table 3—Mean Spat Counts per Shell on Cultch Recorded Weekly at Six Stations in Ladysmith Harbour

Date	Stations				
	2	3	4	5	6
July 6–12	0	–	–	–	0
July 13–19	–	0	0	0	–
July 20–26	0	0	–	–	–
July 27–August 2	.4	.3	0	0	.22
August 3–9	.5	.33	.5	.33	.2
August 10–16	0	0	.25	.1	–
August 17-23	0	0	0	0	0
August 24-30	.7	.36	.4	.1	.1
August 31–September 6	0	0	0	0	0

No commercial cultch was exposed in Ladysmith Harbour in 1975.

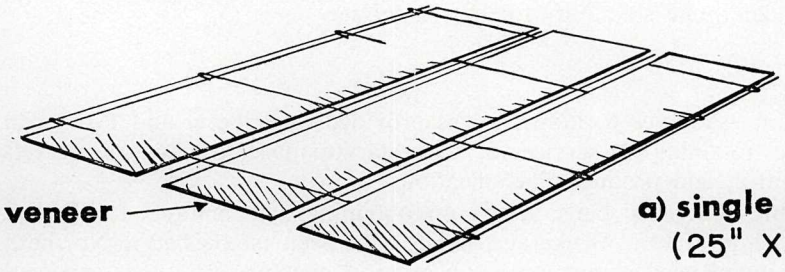
Pacific Oyster Breeding Newsletter

The newsletter which informs the British Columbia oyster industry of Pacific oyster-breeding in the Province and assists with seed collection operations was continued in 1975; 12 weekly editions were issued.

B. Shellfish Culture Advisory Management Assistance

The Shellfish Section maintained close contact with the oyster culture industry during the past year, with considerable effort being concentrated on providing biological and technical assistance, especially to new culturists who have just become established in the industry.

Figure: 1



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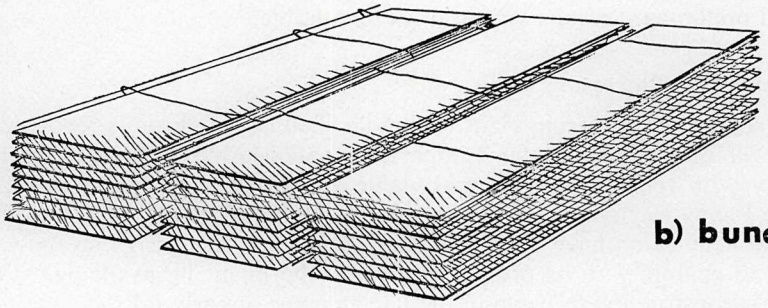

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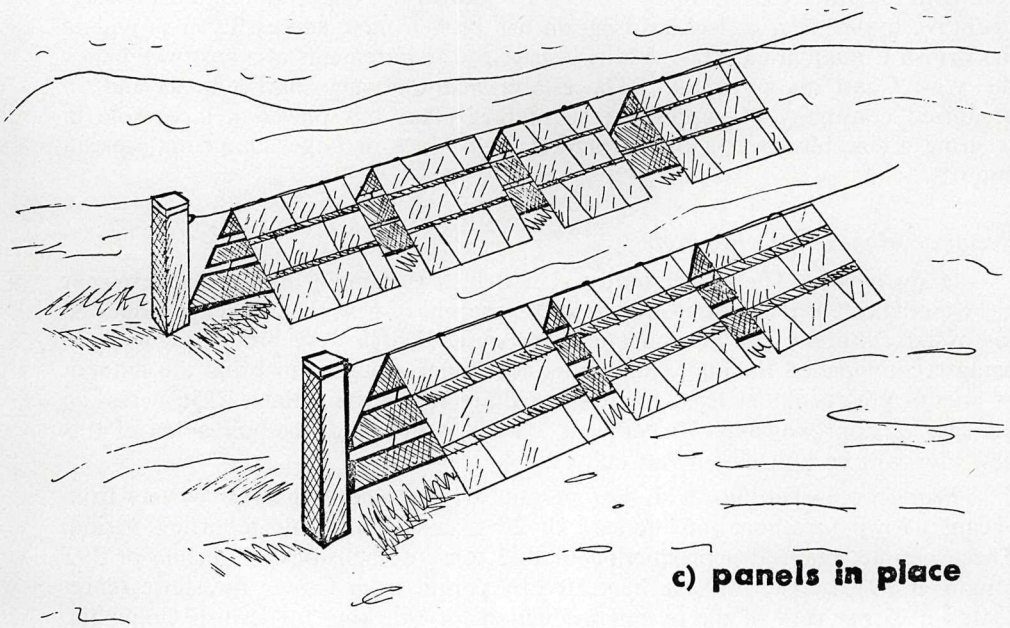

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Examples of the types of assistance provided include information of the economics and methodology of culture techniques, monitoring of oyster-growing areas to provide data of seasonal growth rate, and conditioning and fouling to assist the grower in developing his operational procedures, and assessment of new lease applications to determine suitability for oyster culture.

Marketing

Management assistance to industry was provided by Federal and Provincial fisheries agencies retaining the services of a secretary-manager to assist in marketing, quality control, and product diversifications.

Considerable effort has been placed on obtaining new markets for British Columbia shellfish products. Brokerage outlets have been established in Northern California, and initial market reaction has been most encouraging. It is expected that export shipments to this area during the coming year will value over $200,000 for shucked oysters and over $100,000 for clams. This new market outlet should realize an increase of approximately 20 per cent in British Columbia's landed value for oysters during 1976.

Test marketing for the Los Angeles area and Hawaii are at present being conducted, and preliminary results appear most favourable.

Proposed Shellfish Processing Plant

The need for a processing plant to handle shellfish products is recognized by both the Gulf of Georgia Oyster Cooperative and Marine Resources Branch if the industry is to remain a strong and viable entity. New efforts to establish a plant in the Fanny Bay area have begun, and the major stumbling blocks of financing and land acquisition have been resolved. Plant size and design are now being formulated to comply with its present needs and the financing available. Present plans call for construction to begin in the late summer or early fall.

The managerial assistance projects to the oyster industry has been most encouraging in other aspects of oyster culture industry. The organization of a cooperative oyster seed collection program has proven most successful in providing the British Columbia industry with its yearly seed requirements at a cost well below the West Coast market value. The establishment of new market areas and an organized continuity of supply to the market place has played a large role in securing a sizeable portion of the market in the face of large competing Korean imports.

Resource Management Program

Assessments—The oyster industry in British Columbia during the past year has experienced a tremendous growth in the amount of new ground being requested for oyster culture. Thirty applications for oyster leases were processed, with 26 being recommended for approval. This additional ground will bring the amount of area at present under lease for oyster culture to approximately 2,156 acres, an increase of approximately 10 per cent. Twenty-nine and one-half acres of this new area will be utilized for raft culture.

Production—During 1975, 117 permits were issued to harvest oysters from vacant Crown foreshore, an increase of 27 over the previous reporting period. These permits realized a production of 852 tons of shellstock, a decline of 293 tons over 1975. The tonnage harvested by permit from Crown foreshore represented 25.5 per cent of the oyster production for shucking for British Columbia,

which totalled 3,342 tons of shellstock for 83,541 U.S. gallons of shucked meats. This represents a total decrease of 730 tons or 18,347 gallons of shucked meats compared to 1974. Production of half-shell oysters increased from 22,467 dozen for 1974 to 35,031 dozen in 1975, an increase of 36 per cent. The total landed value for oyster production was $937,029, a decline of $1,654 over the previous year (Table 4).

Table 4—Summary of British Columbia Oyster Production

	1974 Revised Shellstock			1975 Revised Shellstock		
	Gallons	Dozens	$ × 1000 Value	Gallons	Dozens	$ × 1000 Value
January	9,062	.....	77	7,155	1,824	70
February	9,734	.....	74	6,848	5,505	71
March	10,754	2,821	79	8,778	2,294	88
April	8,599	2,291	87	7,657	9,281	92
May	9,260	1,944	81	7,724	1,775	86
June	8,454	1,278	76	7,245	1,544	77
July	7,012	2,201	69	5,519	1,240	66
August	6,049	2,603	64	3,227	754	36
September	5,772	2,013	61	4,891	1,762	76
October	8,704	1,838	84	6,919	3,388	75
November	8,860	2,403	86	7,359	1,487	85
December	9,537	3,076	100	10,220	4,178	114
Totals	101,796	22,467	938,683	83,541	35,031	937,029

The decline in total production for shucked meats is attributed to the following:

(1) Softening of market demand for table-grade oysters for the period of January to August 1975.

(2) Slow "fattening" of oysters during the fall season, resulting in a significant gallonage decline per ton of shellstock.

(3) Almost total loss in traditional markets for soup-grade oysters to imported Korean oysters.

SHELLFISH DEVELOPMENT PROGRAM

A. Oyster Tray Culture Project

A joint Federal-Provincial pilot commercial project on the tray culture of Pacific oysters for the "half-shell" trade has been completed by the contractor and Sabine Seafoods. The objectives of this project were to construct a tray-suspension system to support 3,000 grow-out trays; to conduct empirical studies on growth, mortality, fouling, etc.; description of cultural procedures evaluated; cost analysis of the operation; and the market reaction and potential of the product.

Summary of Results for Suspension Systems

Two tray-suspension systems were evaluated—cedar log floats and steel drum floats—and each with its own advantages and disadvantages for suitability, stability, and carrying capacity, etc. The significant difference was in construction costs of cedar logs evaluated at $1.70 per linear foot on a three-year life expectancy and the steel drum floats at $1 per linear foot on a five-year life expectancy.

Suitability of Seed Sources

Seed acquisition—Of the several varieties of seed available to growers in British Columbia, four types were evaluated—seed on cultch shells, seed on plywood panels, seed on cement chips, and hatchery seed from the United States (Table 5).

Table 5—Summary of Seed Suitability for Tray Culture

Type	Basic Cost/1,000	Comments	Sources
Seed on cultch	$0.25	Unacceptable due to loss and labour	Various.
Panel seed	$3 (plus about $5/1,000 labour)	Acceptable. Initial labour high. Mortality initially 20–30%.	Wes Parry, White Rock, B.C.
Diamond chip	$10	Acceptable. Initial labour medium to low; mortality low (5 per cent).	Ken Lawrence, Prince George, B.C.
Hatchery—			
(*a*)	$10 for 5 mm or less	Acceptable. Initial labour low; mortality low (5 per cent).	Dennis Wilson, Bay Center, Washington, U.S.A.
(*b*)	$20 for seed larger than 10 mm		

Economics—The economic viability of culturing oysters for the "half-shell" trade appears most favourable. Production, harvesting, and packaging (marketing) costs for 10,000 dozen oysters are shown in Table 6.

Table 6—Production Costs for 10,000 Dozen Oysters—Two-year Growing Cycle.

Year One		Subtotal	Year Two		Total
		$		$	$
Seed	Panel type	750	.....	.....	750
	(Other types)	(1,500)	.....	.....	(1,500)
Trays	720 × $0.50	360	2,880 × $0.50	1,440	1,800
Labour	335 × $3.00	1,005	2,040 × $3.00	6,120	7,125
Floatation	180 × $1.67	300	720 × $1.67	1,200	1,500
Materials	.....	50	.....	200	250
Totals		2,465	.....	8,960	11,425
(If other seed is used)		(3,215)	.....	.....	(12,175)

Marketability—Market reaction has been most favourable, as the tray-grown Pacific oyster is said to be superior to the famous "Blue points" from the Eastern United States. Market potential for the Pacific half-shell appears "unlimited" at the present time, but definitely will outstrip production capability in the immediate future.

If quality can be maintained, and if production can be increased, there will be a large market for West Coast tray-cultured oysters, at a price that will make the production of them economic on a large scale.

B. 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 proven superior to shell cultch when tested under research conditions. The purpose of this project was the further testing of veneer cultch on a semi-commercial scale. Veneer cultch bearing about 8 million seed oysters was purchased with Federal-Provincial funds and has been cultured to define problems associated with nursery culture of oyster seed.

Culture Methods

Methods used, problems encountered, and size-range of oysters after one year of culture in various sites are briefly summarized in Table 7.

Table 7—Summary of Comments on Veneer Cultch in May 1975

Test Locality			Size Range
Baynes Sound	Cultch laid on ground at 4-foot tide level	Wave action displacement of panels	1–1.5
Baynes Sound	Cultch held on low fence at 5-foot tide level	Damage to fence by floating logs	Up to 1.5
Baynes Sound	Cultch secured to line between 4 and 5-foot tide levels. Moved to sheltered ground in September	Minor silting	1.5–3
Ladysmith	Cultch held on a fence 3 feet off the ground	Wave action—20% predation by crabs and seastars	1–3.5
Barkley Sound	Cultch laid flat on beds	Heavy predation (60%) by crabs and seastars	.25–1.25
Cortes Island	Cultch hung on wire strung between stakes, panels resting on the ground	Ice laying on panels, seastar predation	.5–2
Ladysmith	Cultch panels were wired in pairs and placed tent-fashion over poly rope supported by stakes (Fig. I)	Oyster drill and seastar predation	.5–1.5
Sooke	As above	Wave action	1–3
Duke Lagoon	Used as over-winter shelter for Sooke cultured seed	Seastar predation (5%).	

Recreational Shellfish Program

The recreational shellfish program was continued in 1975/76 with the existing reserves being inspected during the summer and some areas restocked in the winter. In addition, general information on common shellfish species has been made available to the public through brochures and pamphlets.

To this date there are 10 established recreational reserves. The reserves located at Patricia Bay, Boulder Point, Yellow Point, Nanoose Bay, Francisco Point, and Heriot Bay had map reserves placed over them in 1975 under the direction of the Marine Resources Branch. The four established reserves at Mill Bay, Pipers Lagoon, Union Bay, and Kye Bay were reserved by other Government agencies in previous years for the use and enjoyment of the public.

Restocking of the existing reserves was carried out during the winter with a total of 14.5 tons of shellstock or 1,775 recreational limits (25 oysters per person per day) being relayed to the various areas.

A brochure on the Pacific oyster was prepared and distributed through the Marine Resources Branch and other agencies of the Department of Recreation and Travel Industry. This brochure will be distributed again this year.

Oyster-farming has attracted considerable interest in recent years in British Columbia. In response, a handbook which has been prepared to provide a guide to the methodology, economics, and other aspects of oyster culture will be of interest to prospective growers, small growers who wish to increase their present production, and as a source of information to the general public. The handbooks, entitled *A Guide to Oyster Farming,* will be available to the public at the beginning of the new fiscal year.

MARINE PLANT SECTION

Objectives—To undertake and co-ordinate basic research and development work, in co-operation with the Federal Government, that will provide the rational basis for development of a British Columbia marine plant industry; to conduct inventories of the resource and to develop harvesting and culture strategies.

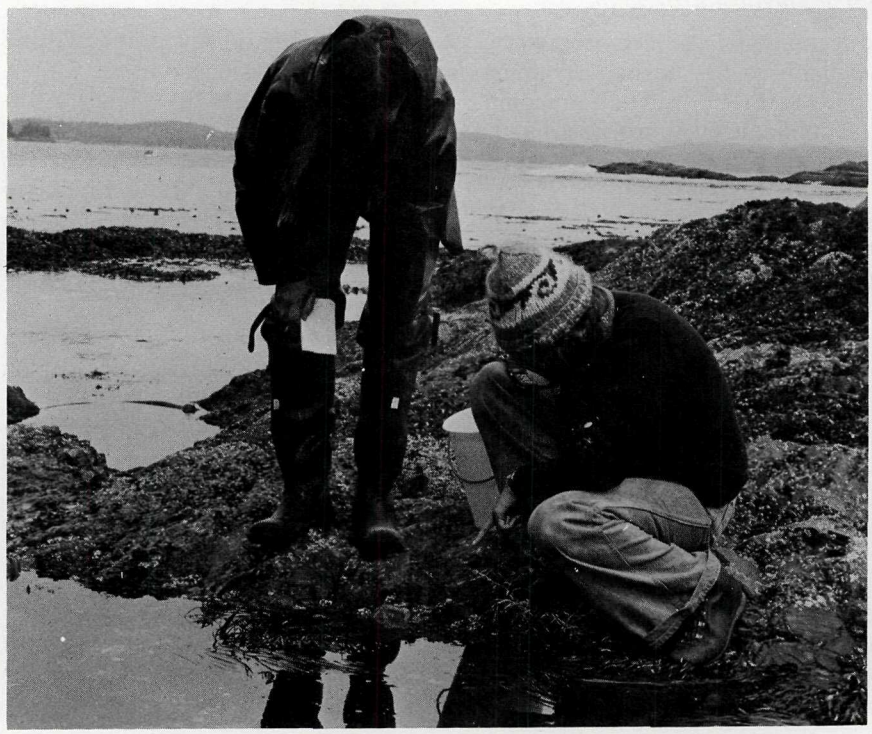
The second year in the existence of the Marine Plant Section can best be described as dynamic. Significant advances were made in defining marine plant resource development policy, in updating legislation, and in broadening the scope of research and development projects needed to achieve our resource management objectives.

RESOURCE DEVELOPMENT

Large-scale commercial developments in the marine plant industry remain a prospect for the future, perhaps the near future. Any major development would be premature until accurate stock estimates are in hand and the restraints of informed resource management have been defined. Provision of this information is therefore the prime objective of this section.

As with any industry, the market will determine the type, quality, and quantity of products which could profitably be produced from seaweed and will, in the end, control the development of the seaweed industry in British Columbia. Our research and development projects have therefore been designed to provide basic biological and technical data pertaining to those species which we believe are sources of products having greatest market demand.

We continue to encourage small enterprises and provide as much biotechnical assistance as possible to these individuals or small groups of prospective harvesters.



One partnership was licensed to harvest and dry *Porhyra* (purple laver), *Ulva* (sea lettuce), and *Rhodymenia* (dulse), all edible and highly nutritious seaweeds.

REGULATIONS

A Federal-Provincial working group was struck to draft seaweed harvesting regulations under the *Fisheries Act* (Canada). A final draft was completed early in 1975 but has not been promulgated. The question of jurisdiction and ownership of marine plant resources has not been ratified to the satisfaction of either Government, yet the proposed Federal regulations clearly delegate management responsibility to the Province.

Provincial regulations under the *Fisheries Act* (British Columbia) were rewritten and promulgated by Order in Council. These new regulations give the resource managers control over the quantities of each species which may be harvested in any defined area, the manner in which harvesting may be conducted, and the type of harvesting apparatus that may be employed. Harvesting can be ordered suspended in any given area for any given period of time should it become necessary for conservation of the species being harvested or for the associated flora or fauna. Harvesting licences are now based on groups of special similar biologically and (or) on the basis of their industrial product potential.

Firms that produce seaweed-based products using imported, semi-refined seaweed material are now required to have a marine plant processing licence. This provision will allow the Branch a more complete picture of the activity and volume of production of the processing sector.

PROJECTS

Nootka Sound Kelp Inventory

The KIM-1 inventory method developed last year was applied to assess the kelp stocks in Nootka Sound in a project partially funded by the Federal Fisheries and Marine Service and jointly conducted with Canadian Benthic Limited of Bamfield, B.C. Three monthly field trips were made to assess seasonal change in the biomass of kelp. Infra-red black and white aerial photographs of the Nootka Sound beds were taken in early September. The KIM-1 method allows accurate estimation of the biomass (in tons) and area (in hectares) of *Nereocystis* (bull kelp), *Macrocystis* (giant kelp), and mixed beds of both high and low-density using mean water level (MWL = sea-level) as a reference point. Estimates are also given for harvestable yields in metre increments above and below MWL. A total of 66,390 metric tonnes of kelp was located in beds covering an area of 2,166 hectares (Table 1).

Table 1—Summary of Nootka Sound Kelp Biomass Estimates for Three Sampling Periods, and Bed Area at MWL on September 9, 1975

Location	Bed Type	Biomass (Metric Tonnes)			Bed Area (ha), Sept. 9
		July–Aug.	End Aug.	End Sept.	
Nootka Sound	*Nereocystis*	28,255	35,327	36,426	862
	Macrocystis	2,861	2,465	3,007	226
	Mixed	4,400	5,005	5,367	168
Hesquiat Peninsula	*Nereocystis*	13,249	16,567	17,081	513
	Macrocystis	2,452	2,113	2,577	210
	Mixed	4,319	4,913	5,269	187
Totals		55,536	66,390	69,727	2,166

Nereocystis Ecology and Population Dynamics

The goal of this four-year-long project is to complete a harvesting strategy model for bull kelp through a comprehensive series of studies of the life-cycle stages, with emphasis on reproductive phenology. The objectives of the first year's work were to examine sporophyte development and energy portioning, the timing and quality of reproductive output, and gametophyte and sporophyte development and survival. Much of this work is incomplete and requires observations over several years. However, bed density changes over time have been monitored and a sporophyte mortality rate curve has been developed. It has become patently obvious that *Nereocystis* beds in different geographical areas behave quite differently in such aspects as the timing of initial sporophyte development, growth rate, and reproductive output. The reasons for such differences are being investigated. This project is being conducted under contract by a University of British Columbia team under Dr. R. E. Foreman.

Kelp Bed Ichthyofauna

A University of British Columbia graduate student, Bruce Leaman, was awarded a grant to assess the nature of the relationship between bull kelp beds and resident fishes commonly found associated with *Nereocystis* and to determine the effects on the association caused by experimental kelp harvesting.

Benthic (bottom) fishes appeared to be adversely affected by removal of the *Nereocystis* canopy in the middle parts of the bed, but not at the edges. The diversity of benthic fishes increases toward the middle of the kelp bed. Benthic fishes utilize crustaceans, primarily amphipods, as food items.

Fishes, such as the black rockfish and tubesnout, appear to be adversely affected by canopy removal at the edges of kelp beds, but appear to gain an advantage by an increase in the amount of "edge habitat" when the mid-bed canopy is removed. The black rockfish, *Sebastes melinops,* utilized herring as a prime food item; the tubesnout was found to be a planktivore.

Macrocystis (Giant Kelp) Growth Strategy

The development of a harvesting strategy for *Macrocystis* requires understanding of the pattern of growth of this kelp and how the growth strategy is influenced by removal of the upper portions of the plant. Chris Lobban, a Simon Fraser University doctoral candidate, was awarded a grant to study this growth/harvesting interaction. Frond growth rates and frond and blade initiation rates were determined at three sites in Barkley Sound. A frond growth curve was developed which could be divided into a phase of very slow growth (while the parent fronds enters exponential growth), a phase of more rapid growth while the stipe is 0.25 to 0.50 m long, a phase of exponential growth, and a phase of slow growth and senescence.

An unusually heavy settlement of bryozoans, hydroids, and tube worms resulted in an erratic pattern in the translocation of photosynthates and, concommitantly, a depression in frond growth rates. Removal of the frond apex resulted in a strong but temporary "sink" for photosynthates at the wounded surface. Experiments showed that both the apical scimitar and the immature blades are sinks for photosynthates produced by mature blades, and that each is capable of attracting photosynthates in the absence of the other. Immature fronds continued to elongate for some time after removal of the apex, but older fronds did not.

Iridæa Spore Ecology and Cultivation Technology Development

The shared-cost project is being conducted by Dr. A. Austin and Robert Adams of the University of Victoria. The growth of *Iridæa* on artificial substrates is being investigated as a culture technique. *Iridæa* density per linear metre of rope seeded by placement in a natural bed increased from 0.16 kg after one year to 0.84 kg after two years. Growth rate as affected by current velocity and the orientation of ropes relative to currents is being evaluated.

Studies on spore dispersal, attachment, and germination and the survival of sporelings were initiated in the hope of developing means of enhancing the density of native *Iridæa* beds.

A second cultivation technique, the growth of unattached *Iridæa* fronds inside netted enclosures, is being evaluated by observing frond growth rate and reproductive conditions. Enclosures are located in several locales in northern Georgia Strait.

Gracilaria Population Dynamics, Harvesting, and Cultivation

Gracilaria is our prime source of the valuable industrial colloid agar. This jointly funded study, conducted by Canadian Benthic Limited of Bamfield, B.C., was the first investigation of an agarophyte on this coast and was very comprehensive in scope.

Harvest/regrowth studies are incomplete, but preliminary data suggest that it would be unprofitable to harvest subtidal beds due to their low density. Intertidal beds of the fragment mat type could be harvested in strips; but the width of the harvest and "leave" strips is critical to preservation of the bed.

Gracilaria is a widespread algæ and exhibits a number of growth forms. Preliminary agar analysis indicates that both the quantity and quality of the agar extract vary significantly between the different growth forms.

The seeding of oyster shells with *Gracilaria* spores, followed by outplanting to suitable growth sites, was tested as a method of enhancing the density of wild *Gracilaria* stocks. Creating new free-floating populations inside netted enclosures (using material transferred from an existing bed) was also tested as a means of enhancing *Gracilaria* abundance. Both techniques proved to be technically simple, but require economic evaluation.

PUBLICATIONS

FIN FISH SECTION

Andrews, T. R., and H. M. McSheffrey, 1976. Commercial Interception of Steelhead Trout Stocks in British Columbia. A preliminary Report. 31 p.

SHELLFISH SECTION

Quayle, D. B., and D. W. Smith (*in press*). A Guide to Oyster Farming in British Columbia. 60 p.

MARINE PLANT SECTION

Coon, L. M., and E. J. Field, 1976. Nootka Sound Kelp Inventory, 1975. Fisheries Management Report 2 (*in prep.*).

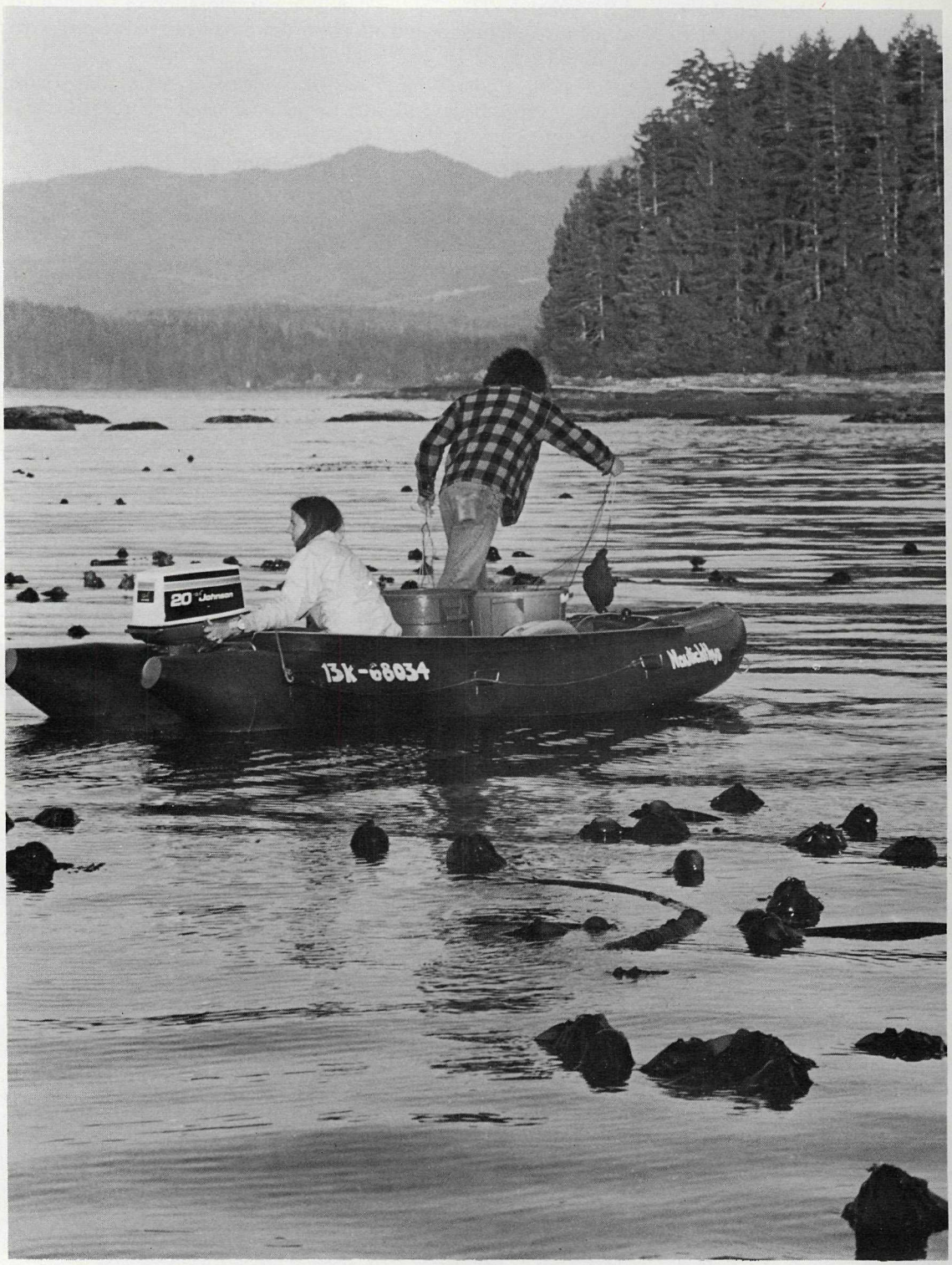
Lobban, C. S., 1976. Growth, Translocation and Harvesting Interactions in *Macrocystis integrifolia*. Final Report to the Marine Resources Branch, February 1976. 88 pp.

Saunders, R. B., 1976. Growth and Reproductive Phenology of *Gracilaria verrucosa*. Report to the Marine Resources Branch and the Industrial Development Branch, Fisheries and Marine Service.

AUSTIN, A. T., and R. ADAMS, 1976. Methodology for Exploration of Cultivation and of Enhancement of Natural Populations in the Red Seaweed *Iridæa cordata*. Program for May 1, 1975, to March 31, 1976. 15 pp.

LEAMAN, B. M., 1976. The Ecology of Fishes in British Columbia Kelp Beds. Barkley Sound *Nereocystis* beds. Report to the Marine Resources Branch, March 1976. 108 pp.

FOREMAN, R. E., 1976. Ecology and Population Dynamics of *Nereocystis luetkeana*. Annual Report, April 1, 1975 to March 31, 1976. Submitted to Marine Resources Branch. BERP Report 76–2 (*in press*).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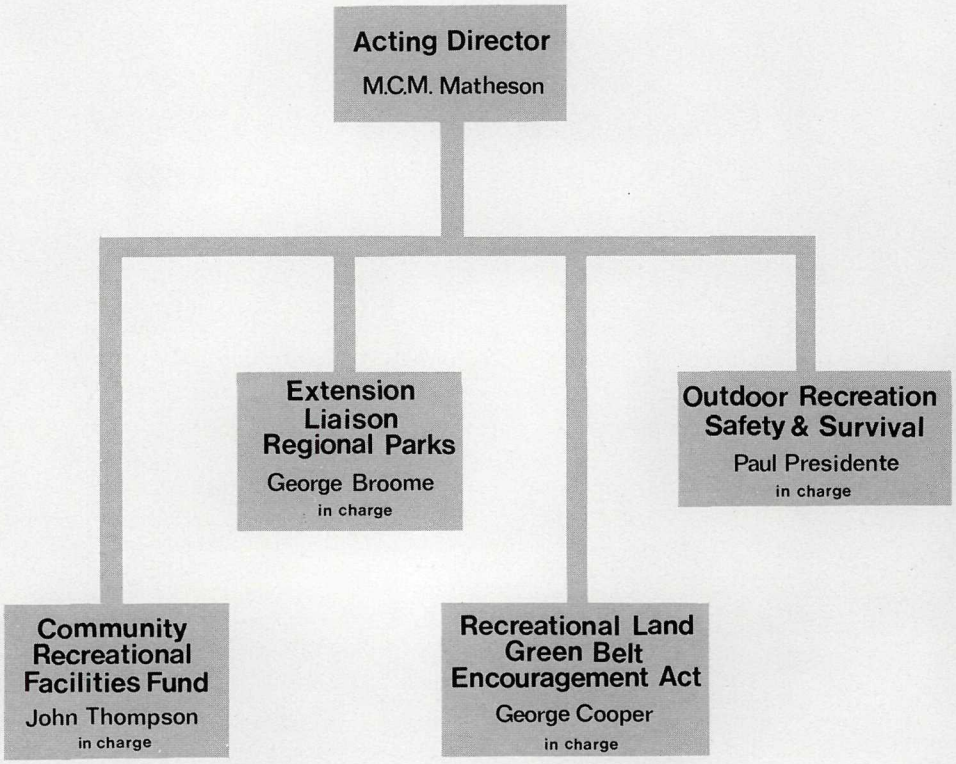
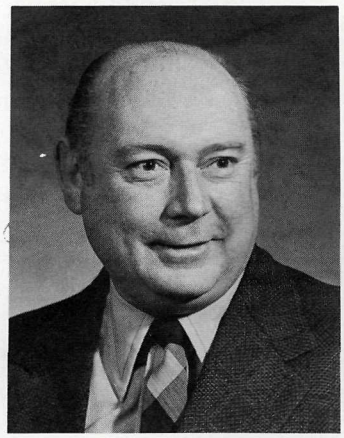
Outdoor Recreation Branch

This Branch is responsible for the administration of the Community Recreation Facilities Fund Act, the Recreational Land Green Belt Encouragement Act, the Regional Park Act, the All-terrain Vehicles Act, Small Vessel Regulations, the Outdoor Recreation Safety and Survival Program, and to act as co-ordinator between outdoor recreation users and the Provincial Government.

outdoor recreation branch





Murray Matheson
Acting Director

Outdoor Recreation Branch

The Outdoor Recreation Branch was initially funded for the fiscal year 1975/76 and slowly evolved throughout the year as existing functions were assembled into one unit and gradually separated from the parent branches—Parks Branch and Fish and Wildlife Branch. A real sense of unity was achieved when all staff were moved to new quarters on the third floor of the Weiler Building, 609 Broughton Street, in November 1975.

The Outdoor Recreation Branch is responsible for administration of the *Regional Park Act,* the *Recreational Land Green Belt Encouragement Act,* the *Community Recreational Facilities Fund Act,* and the *All-terrain Vehicles Act,* and certain aspects of Small Vessel Regulations. With the assistance and co-operation of the Parks Branch, the Outdoor Recreation Branch, on behalf of the Parks Branch, administers that portion of the *Park Act* pertaining to Class "C" Provincial parks.

In addition, responsibility for the following key functions has been assigned:

(1) Conducting study of, and research into, public outdoor recreation activity and needs, recreational resource-user conflicts involving outdoor recreation, and desirable outdoor recreation program priorities in relation to available funding, for policy planning guidance as required by Government:

(2) Assisting, in a co-ordinating capacity, existing Government agencies which operate facilities and programs for outdoor recreation:

(3) Serving as a focal point of contact for the public, for Governmental agencies, and for commercial nonurban recreation enterprises on matters pertaining to outdoor recreation not within the purview of existing agencies:

(4) Assisting in the development of operational safety standards for commercial outdoor recreation enterprises, and regulations for these activities:

(5) Organizing public safety training programs in outdoor recreation:

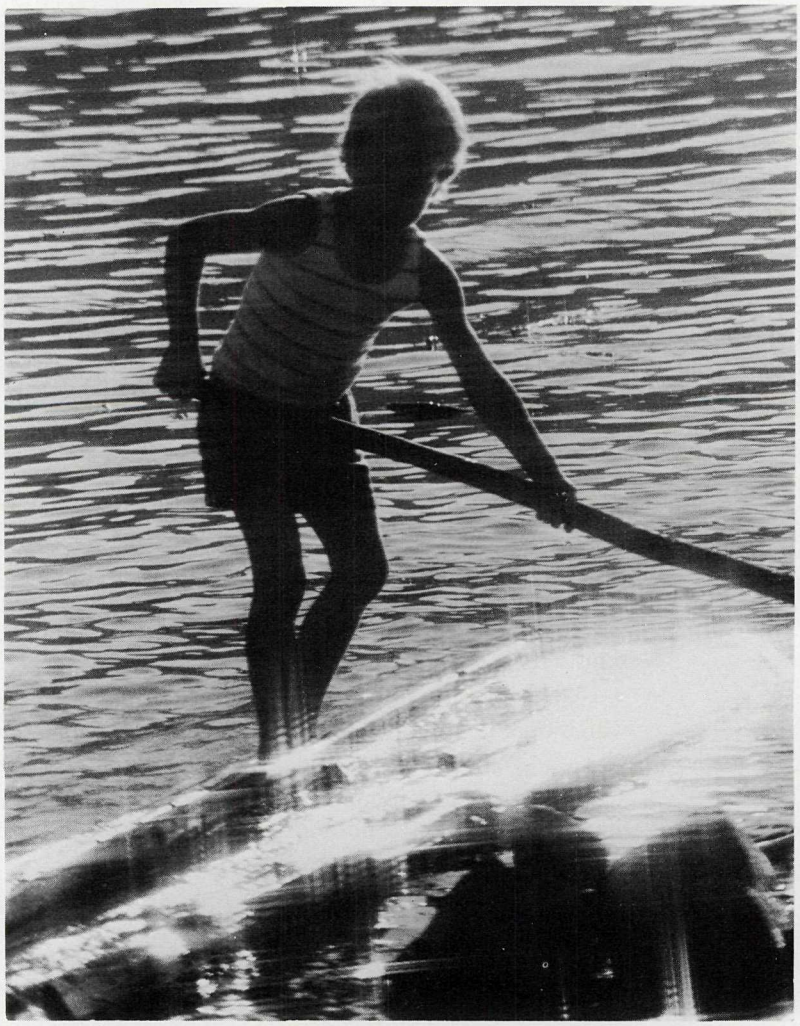
(6) Co-ordinating the assembly of, and public access to, a complete Provincial inventory of recreation resource capabilities, features, and facilities:

(7) Assisting communication between recreation-user groups and resource management agencies at the Provincial and resource management region levels:

(8) Ensuring co-ordination between recreation space provision and facility development at the Provincial level with that at regional and community levels:

(9) Preparing recommendations to Government on policies for the administration of outdoor recreation in British Columbia.

The principal spheres of Branch activity have been the Community Recreational Facilities Fund, Regional and Class "C" park administration, the *Recreational Land Green Belt Encouragement Act,* and the Outdoor Recreational Safety and Survival.



OUTDOOR RECREATION SAFETY AND SURVIVAL

During the past year this section has participated in 55 programs on wilderness survival. Approximately 1,200 people took an active part in the various programs which were of 1, 3, 5, or 12 days' duration. Courses ranged from elementary survival to training instructors in wilderness survival techniques.

The Co-ordinator also took part in numerous meetings with a variety of safety and recreational organizations as well as with the B.C. Safety Council, the B.C. Mountain Trail Committee, and the YMCA.

Brochures on *Hypothermia* and the *A.B.C.'s of Survival* were produced in co-operation with the Provincial Emergency Programme and a wilderness survival booklet was prepared for publication in co-operation with the Forest Service.

EXTENSION LIAISON

This section is responsible for administration of the *Regional Park Act,* liaison with regional districts through their Technical Planning Committees, and providing guidance to Class "C" Park Boards concerning their administration of Class "C" Provincial parks.

The purpose of the *Regional Park Act* is to assist the development of regional recreation opportunities through the provision of Provincial assistance in the acquisition and development of regional parks. It involves the administration of acquisition and development grants, assistance to regional district staffs in the planning of regional park systems as well as park plans, and liaison between the Department and the districts in the preparation of by-laws under the *Regional Park Act.*

The Technical Planning Committee function is to provide co-ordination and liaison between the Department and regional districts in all planning matters such as regional plans, by-laws, land use contracts, and any matters referred to the committee by the Regional Board.

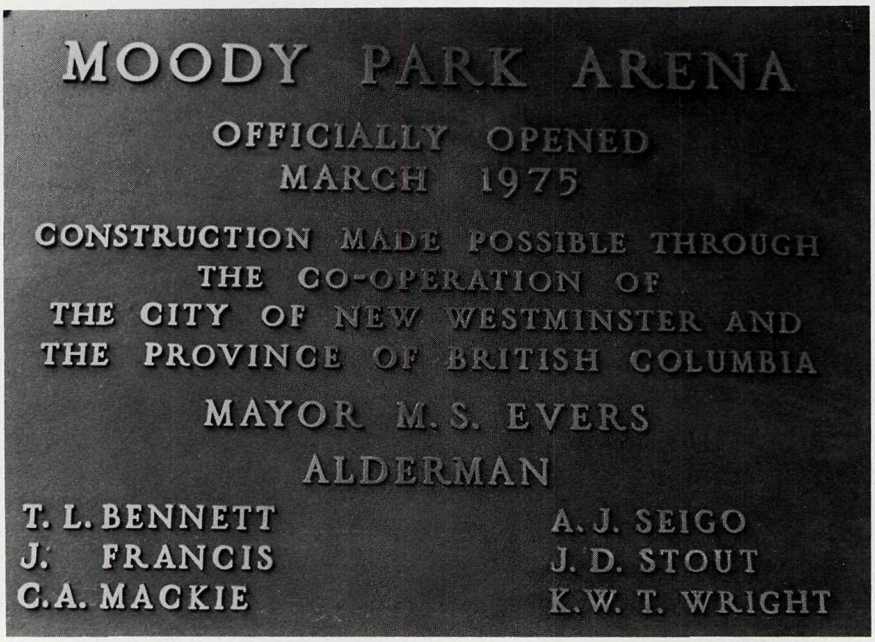
Class "C" parks are established under the *Provincial Park Act* but in fact fulfil a municipal or regional park function in areas where local levels of government are not organized or do not have the park function. Increasing awareness of the scope and application of the *Regional Park Act* is gradually eroding the need for Class "C" parks.

Escalating land values will probably result in applications for regional park grants exceeding the budget allocation of $1.3 million. It is expected that demands during the next fiscal year will be even greater.

Sixteen of the 28 regional districts have the park function and several others are currently considering adopting it. Increasing use of the *Regional Park Act* has indicated a possible need for the passing of formal regulations. In particular the leasing of regional park areas for specialized developments such as ski-ing should be closely examined by the Department. It is also becoming evident that official regional park plans should be subjected to the same scrutiny as official regional plans. Greater public awareness of the *Regional Park Act* and its function would lead to an all around better system of regional parks.

RECREATIONAL LAND GREEN BELT ENCOURAGEMENT ACT

The above Act was intended to encourage the retention of privately held recreational land and ensure public access to such land by the initiation of a tax rebate system. The need for such assistance arose out of the 1973 amendment to


MOODY PARK ARENA
OFFICIALLY OPENED
MARCH 1975
CONSTRUCTION MADE POSSIBLE THROUGH
THE CO-OPERATION OF
THE CITY OF NEW WESTMINSTER AND
THE PROVINCE OF BRITISH COLUMBIA
MAYOR M. S. EVERS
ALDERMAN
T. L. BENNETT
J. FRANCIS
C. A. MACKIE
A. J. SEIGO
J. D. STOUT
K. W. T. WRIGHT

the *Assessment Equalization Act* which removed the limitations on assessment increases in certain land uses.

The rather indefinite wording of the Act has, despite the efforts of the Advisory Committee and staff, resulted in something of an impasse. More than 80 applications have been received to date, including 23 golf clubs, 10 ski clubs, and 21 fish and game clubs, and all are partially processed. Although two applications are ready for final approval, they are being held in abeyance pending completion of a full review by Government of the Act and its implications.

It is apparent that, unless changes are made in the legislation and regulations, the Act will be almost impossible to control.

COMMUNITY RECREATIONAL FACILITIES FUND

Since establishment in 1973, a total of 827 grants has been given to 227 communities in the Province. Total allocation of funds is $43,360,944.99. During 1975, 550 applications resulted in 320 grants totalling $11,611,139.81. Awarding of the above grants resulted in an over-allocation of funds to the extent of $2,861,671.42.

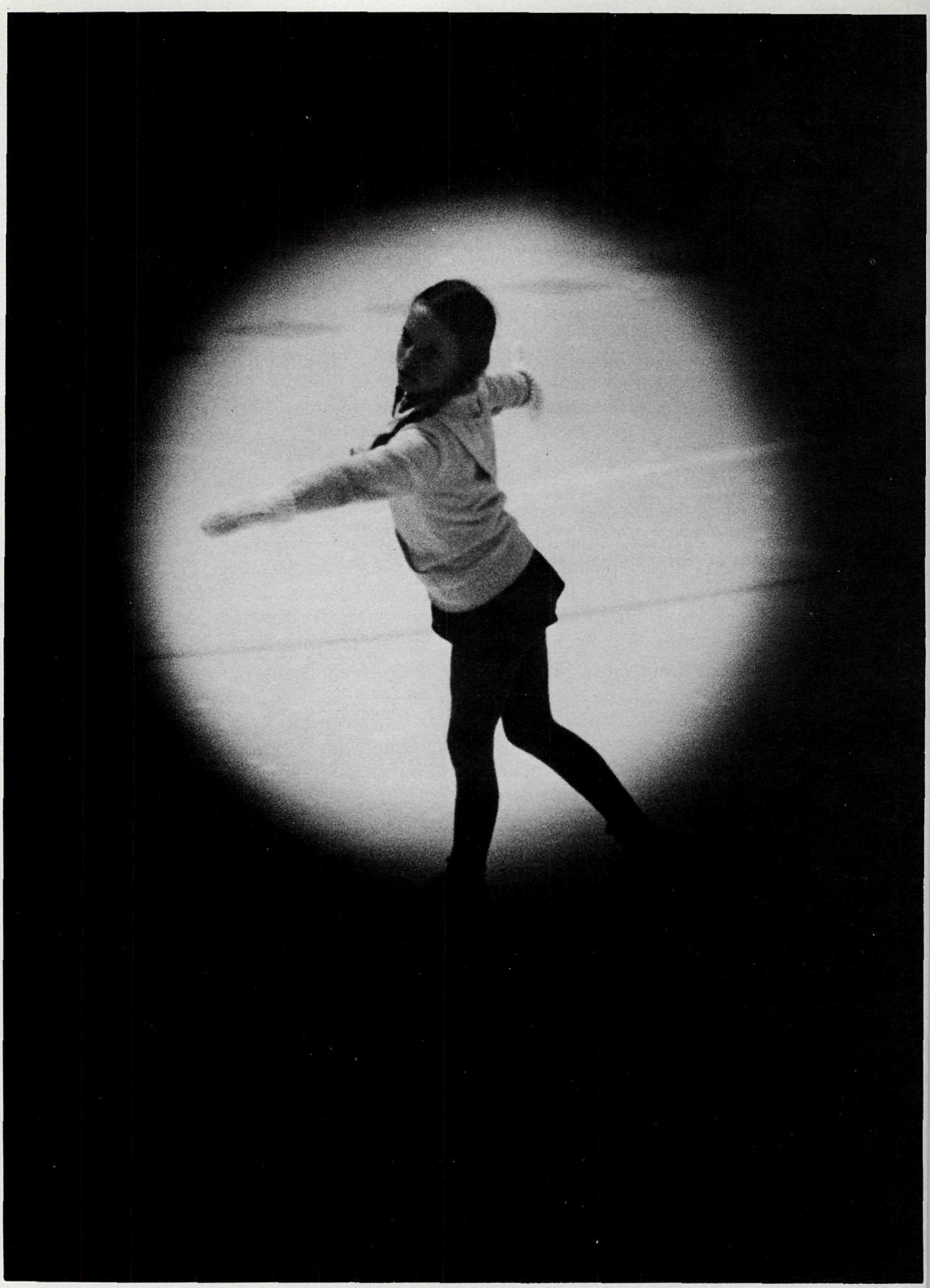
By April 1 a further 149 applications were on hand but, because of the unresolved financial situation, no grants were made at that time.

The Advisory Committee to the fund was restructured during 1975. Four members had completed a two-year term and a fifth, Roger Adolph, withdrew because of pressure of other work. Mrs. E. Dawson and E. Broom, N. Olenick, and D. Russell retired and were replaced by Ms. Y. Kennedy, Mrs. N. Sealey, D. Basham, and W. Young. Mr. Adolph was replaced by Simon Moses of Kamloops.

Apart from more intensive screening of applications, staff involvement has increased through an attempt to provide better service and information to applicants and potential applicants. Greater assistance has been given to applicants in the preparation of submissions and attempts have been made to locate better sources of information on facility planning and design as well as maintenance and operation procedures and costs.

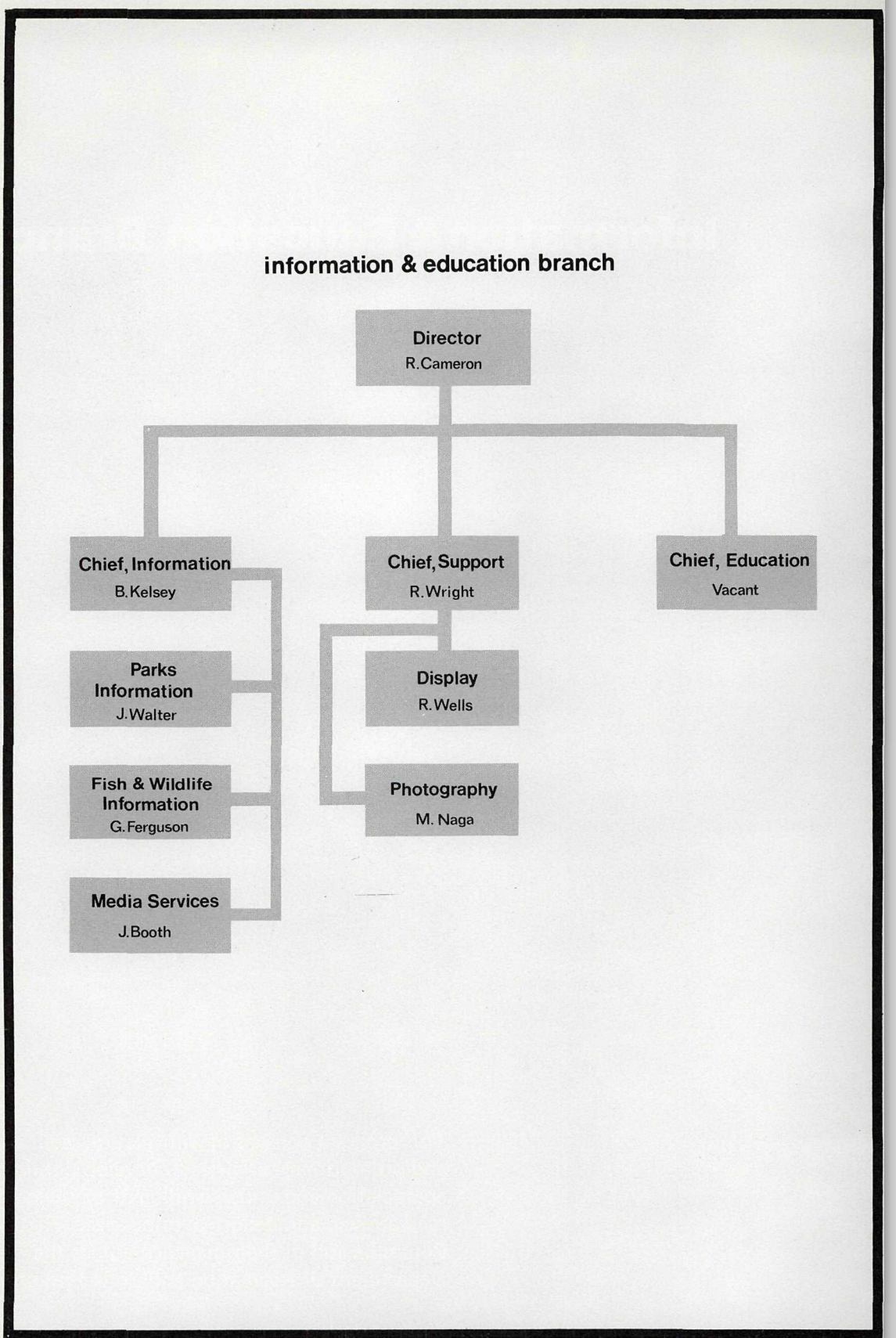
The need for intensive screening of applications and responding to routine inquiries makes it virtually impossible to expand the above service with the current staffing level.

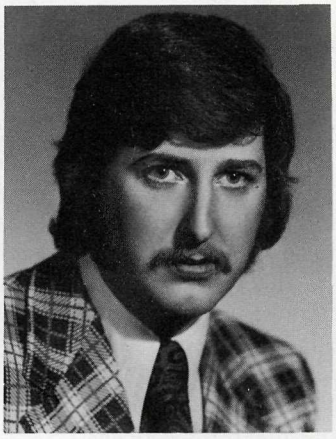
The stated objective of the fund is the provision of sufficient recreation facilities to allow adequate opportunities for participation by interested residents. Because increased leisure time and mobility are producing an expanding demand for recreational facilities, it is evident that attainment of the objective can only be achieved through an established long-range program.



Information & Education Branch

This program consists of information, education, and promotional activities to develop public appreciation and understanding of the living, recreational, and historical resources of British Columbia and of their management by the Department of Recreation and Conservation.


information & education branch
Director
R.Cameron
Chief, Information
B.Kelsey
Chief, Support
R.Wright
Chief, Education
Vacant
Parks Information
J.Walter
Display
R.Wells
Fish & Wildlife Information
G.Ferguson
Photography
M. Naga
Media Services
J.Booth



R. L. Cameron
Director

Information & Education Branch

A major factor in the success of resource management programs is the understanding and support of a well-informed public. With this in mind, the Department of Recreation and Conservation in 1974 laid down plans for a Branch of Information and Education. The major responsibilities of this Branch were for the development of both broad educational and more specific information programs to foster public appreciation of living and recreational resources, and of their management by the Department of Recreation and Conservation. The new Branch became operative in early 1975 and has to date just completed its first year of operation.

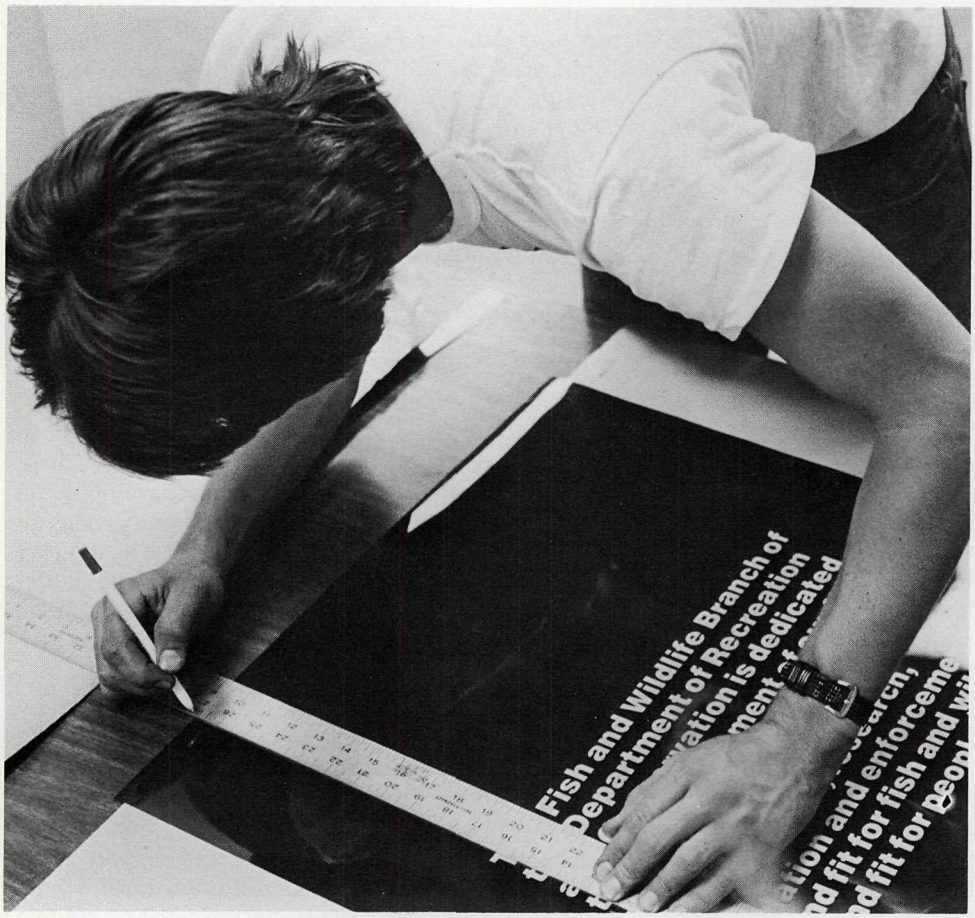
This Department is unique among Government agencies in its requirements for Information and Education programs. Unlike other resource departments which are primarily associated with a large industry in the private sector, we relate directly to the interests of a wide variety of public client groups. Furthermore, we are largely involved with two areas that have attracted enormous attention in recent years—outdoor recreation and environmental protection. Both of these have important public education implications; the latter in terms of developing an understanding of management policies and processes and the former in terms of developing recreational skills, safety, and access. In some cases we have a statutory responsibility for public education; in all cases, we deal with enormous public demand. As a result, both regular public contact and the development of public understanding and even skills are integral requirements of our management programs.

A recognition of these requirements has resulted in the development of many Information and Education programs to meet specific Branch requirements. In view of these existing programs, the role of the Information and Education Branch was seen to be at two levels. The first of these, as already indicated, was to assume responsibility for broad Departmental programming and to represent Departmental interests at a Government level. The second was to co-ordinate and support existing activities to realize optimum public impact and eliminate duplication in these programs. The extent of the latter role depended entirely on the level of staffing in the Information and Education Branch as the provision of services could only

be undertaken where appropriate staff were available. As staffing levels remained extremely low throughout 1975, the servicing and co-ordinating function saw very little development.

As the remainder of this report will indicate, activities for 1975 primarily involved preparation for this eventual role through the development of working relations with other Government agencies, public groups, educational institutions, and the news media. Much of this preparation took the form of experimental programs, the development of systems for dealing with client groups, and the accumulation and organization of resources and facilities basic to the production of program materials.

This work was carried out against the backdrop of heavy demands for publications, press services, and general public inquiry. However, several special projects were successfully completed in 1975 which demonstrated the potential for competitive Information and Education programs. It is our expectation that anticipated staff additions will take these activities out of the "special project" category and make them instead the expected output of a fully functional Information and Education Branch.



INFORMATION SERVICES

The Information Services Section provides general public information and media relations services to all branches of the Department. These services range from responding to public inquiry to the development and operation of promotional programs for major Departmental projects.

The development of this section began in mid-1975 with the appointment of Barry Kelsey as Section Chief. While most structural changes took the form of simply reorganizing existing staff, several new systems were introduced to expand methods of media contact and anticipate issues of public concern. The result of these changes was the beginning of a move from public information based on response to public inquiry to a more aggressive system where problems are anticipated and preparatory material is distributed in a timely and competitive manner. The completion of this transition is our primary objective for 1976/77.

Operations were located in office space at 512 Fort Street secured during this same period. These offices provided easy access to other parts of the Department and, through a "store-front" entry, to the interested public. Plans are now being developed for the creation of an information centre in this area to deal with direct public inquiry and act as an outlet for Departmental publications and program materials.

Activities

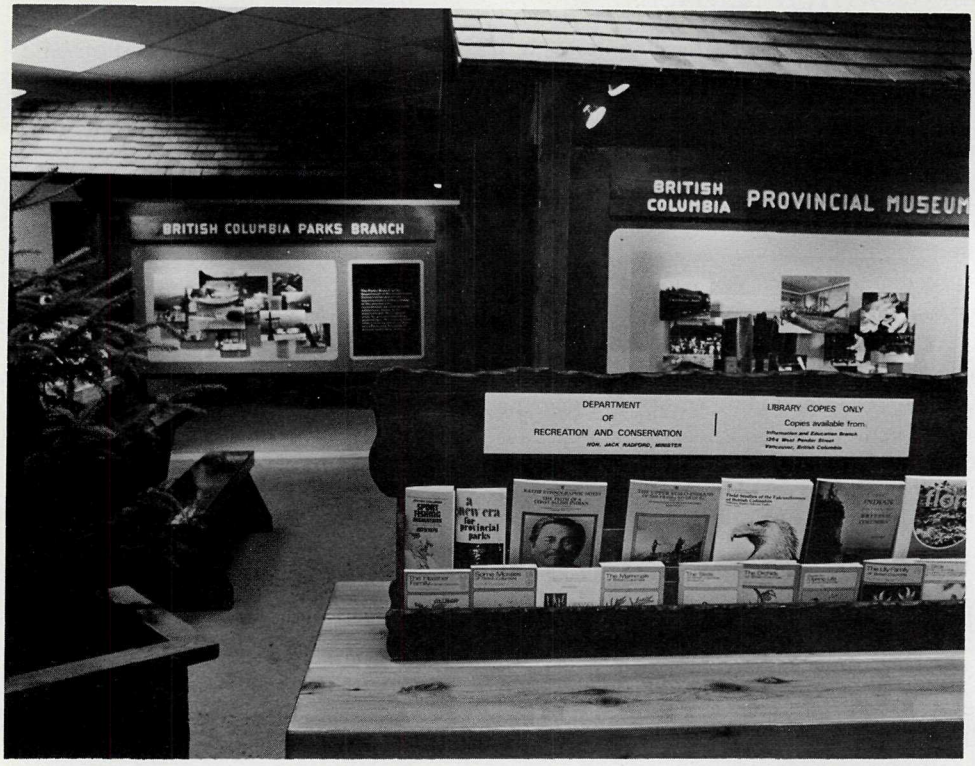
During this reporting period, 180 press releases were made. These releases covered a variety of topics ranging from Departmental announcements to public service messages and were handled through a system of direct mailing operated by the Information Services Section. These direct mailings ensure total coverage of the Province and easy access to announcements for all levels of local media; the 180 press releases indicated, for example, represent over 200,000 such individual mailings. These releases generated over 3,100 newspaper articles and Departmental activities, as monitored by section staff.

As a means of providing more detailed background information for complex or long-term developments, 29 news kits and background briefing papers were prepared in this same period. These kits were distributed on a more restricted basis, generally, to media or public specialists who were identified as having special interest in a particular project.

In order to involve other media in coverage of Departmental activities, audio-visual materials were produced to accompany a number of information announcements. These materials included photo kits, film clips, and radio tapes; the result was an estimated 160 radio and 34 television items on Departmental concerns. In addition, a series of public service announcements was initiated to cover broader issues on a more repetitive basis.

During 1975, 16 news conference and (or) opening ceremonies were organized and conducted by the Information Services section. In addition, the Chief of Information Services was in charge of promotion and media relations throughout the Province for the Provincial Museum Train project.

An estimated 151,000 items of public inquiry were serviced by Departmental information staff in the 1975/76 period. This function, which is often not well recognized, is a direct result of the enormous public interest in Department activities and responsibilities. The volume of inquiry is far beyond that of any other area of Government, and since many inquiries demand a complex and researched response, proper attention can only be given with a substantial investment of time by information staff.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WILDLIFE REVIEW
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ANNUAL REPORT 1975
British Columbia Department of Recreation and Conservation
BRITISH COLUMBIA Recreational Atlas
Fraser Valley Special License Hunting Area
BRITISH COLUMBIA HUNTING REGULATIONS SYNOPSIS
wilderness leadership program

During this same period a further five issues of the quarterly Departmental magazine *Wildlife Review* were produced. This publication, produced continuously since 1954, has over 22,000 paid subscribers and a total circulation of 36,000. Revenue from the magazine is approximately $35,000 annually.

In recognition of the need for public opinion feedback to Departmental managers, the Information Services Section monitors press information on topics of Departmental interest and abstracts these to form a summary entitled *New Briefs*. All articles indicated in this summary are available to interested staff from the Information Services office.

SUPPORT SERVICES

The Support Services Section provides technical, design, graphic, and audio-visual services to both the Information and Education Branch and the Department as a whole. It is responsible for the, and production of, Departmental publications, photographic, film, and video tape production and the creation and programming of regulatory and interpretative signs, displays, and exhibits.

Operations of the Support Services Section were based in offices at 1264 West Pender Street in Vancouver. This location provided easy and direct access to both suppliers of required services and materials, to the media, and educational and commercial organizations who were the recipients of much of the output of this group.

Activities

The accumulation of background photographic and film material on the activities of the Department and the areas and resources for which it is responsible occupied a great deal of time and energy in 1975. This material is basic to the production of films, audio-visual material, and publications of all types. The result was an extensive film, photo, and video tape file which serves both the Department and the public, through a photo, film, and video lending library.

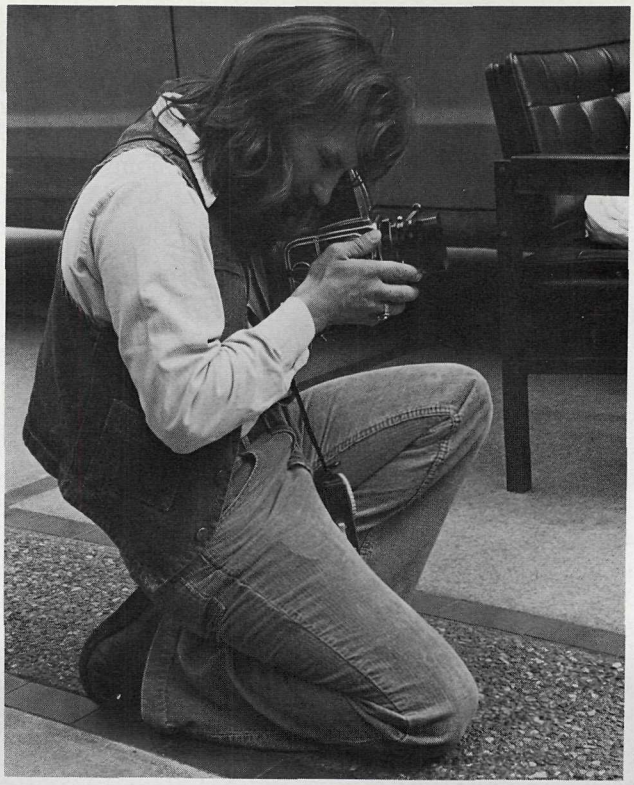
Film clips were produced to accompany press announcements, and a short promotional film on the Provincial Museum Train project was completed based largely on film material used originally for news announcements. This film will be used to introduce the Museum Train to communities that the train will be visiting on future tours.

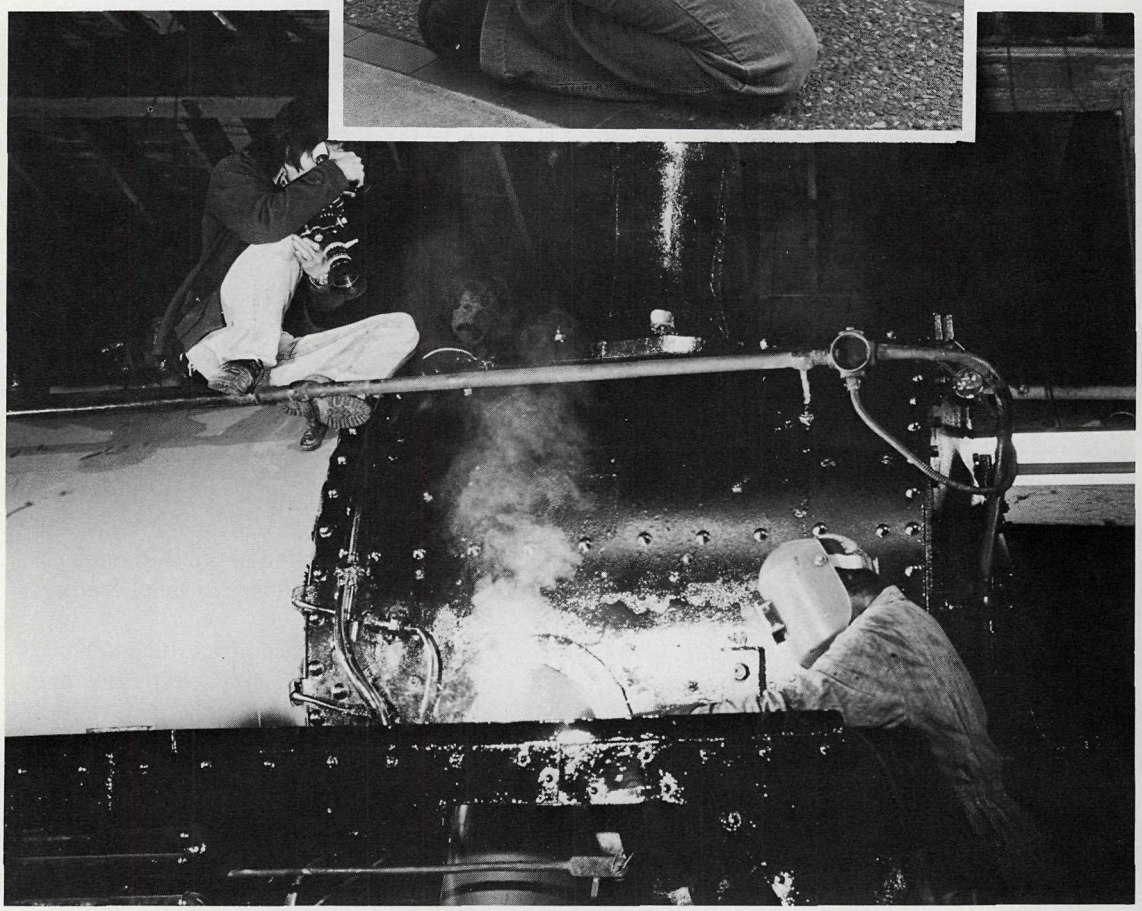
During 1975, 19 publications were designed, written, and produced. These ranged from brochures on parks and wildlife species to major publications and educational program texts. Publications now in circulation include:

The B.C. Recreational Atlas covers the entire Province in 150 pages at a scale of 1:600,000. Produced in co-operation with the Surveys and Mapping Branch, the atlas is the definitive guide to wildlife management units, as well as indicating many general recreational features of the Province.

Hunting, Fishing, and Trapping Regulations were produced to completely redesigned formats. These changes required extensive design and organizational alterations, but will pave the way for the inclusion of new management developments for many years to come.

Fish and Wildlife—The Recreational Resource is a 96-page book on the recreational enjoyment of fish and wildlife resources. It is a basic text for the CORE program and to date has been either sold or distributed through the CORE program to a level of some 80,000 editions.





A new distribution system for publications was established with a British Columbia publishing house. Under this arrangement, broad distribution is achieved through bookstores and other commercial outlets, and revenues generated are expected to reach $42,800 in 1976.

Television programming was based on the production of program series on Departmental management activities. These programs were aired on major network TV and video tapes produced for reuse through other outlets such as cable, educational, and in-service training.

Over 600 management unit signs were constructed and erected on highways throughout the Province. These signs indicate boundaries for resource regions and wildlife management units. In addition, approximately 80 project or interpretative signs and 30 regulatory signs were designed, constructed, and placed. These signs are all produced in accord with a sign format system.

Displays for 20 fish, wildlife, and natural history interpretation shelters were completed and installed at sites throughout the Province. In addition, 21 portable displays were used by regional staff at more than 30 local events. Finally, seven major exhibits were built and programmed for events ranging from the Pacific Science Congress to the B.C. Outdoor show.

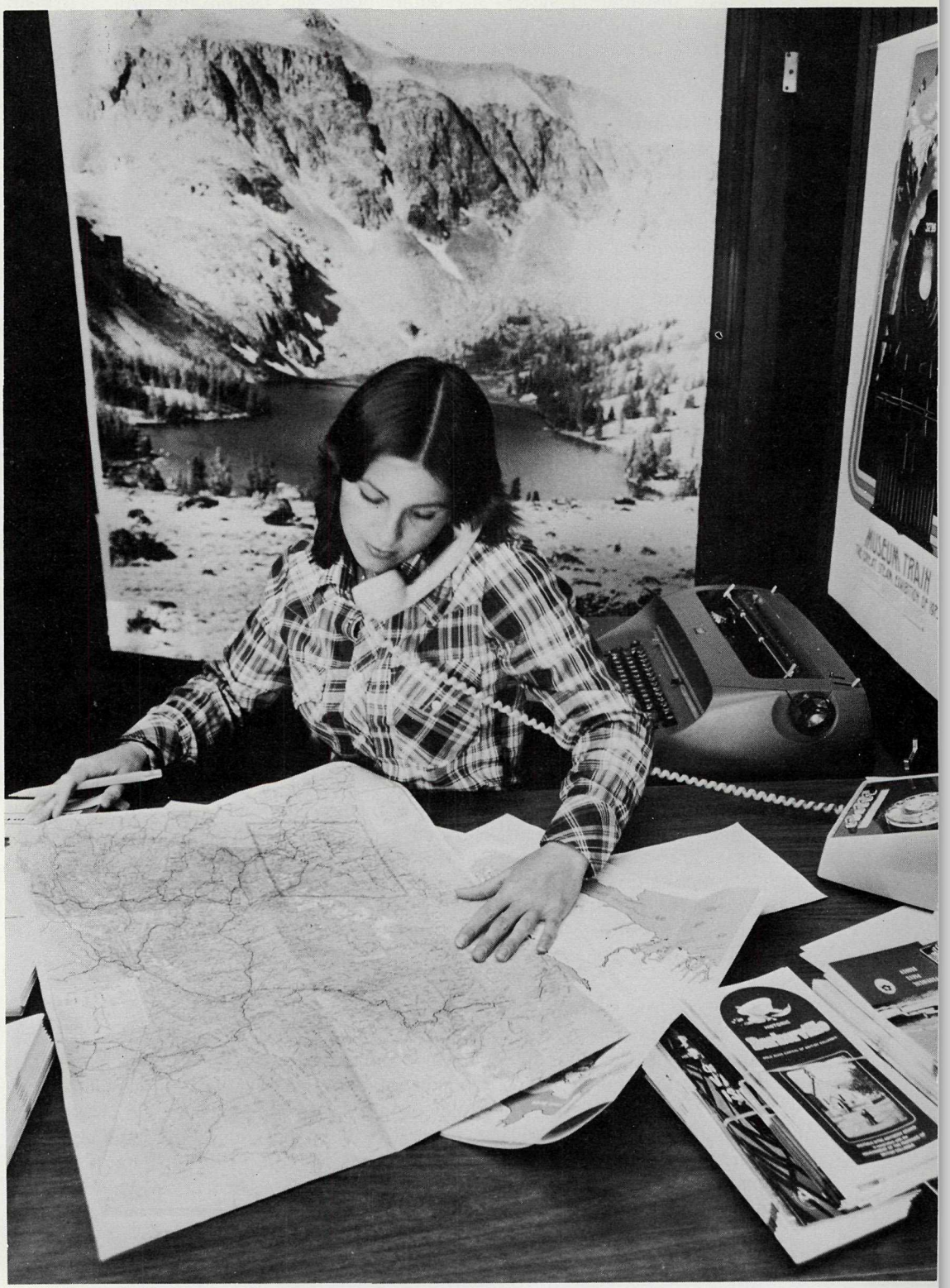
Education Programs

Staff restrictions during the 1975/76 period meant that there were no full-time staff to work specifically on education programming. However, the Information and Education Branch puts a high priority on education programs as it is these programs which meet the long-term needs of management for a public understanding of living and outdoor recreational resources and an appreciation of their management and use. As a result, educational program development has proceeded on a task-force basis with contributing staff drawn from other parts of the Information and Education Branch. In this way, several major education projects were accomplished.

ENCORE, a program of environment studies, was completed in early 1976 and evaluation begun prior to its general release. This program is an outdoor activity program designed to illustrate basic principles in the operation of natural systems. Its major advantages are that it relates activities to general site types, rather than to specific locations, and that it provides a cataloguing of usable field trip sites within various areas of the Province. In this way, meaningful outdoor study sessions can be organized and conducted with very little research or preparation by leaders. In addition, the need for a highly developed field trip site is greatly reduced. The hopeful result will be a greater involvement of teachers and outdoor leaders in outdoor studies, and a better understanding by students of how natural systems work.

The Wilderness Leadership program is a college level program sponsored by this Department and at present operating at Capilano Junior College. The program is designed to provide training in outdoor safety and skills for recreation leaders, and is a reflection of the growing public interest in outdoor and wilderness activities. A set of course manuals for component courses was initiated in 1975, with projected completion for 1976. These manuals will establish program standards and allow the program to be "exported" to other colleges and institutions. Some components of the program are already recognized by various Provincial Government and educational agencies as the standard for competence.

The Wilderness Adventure '75 Program was an extension of the Wilderness Leadership Program to the public. Program graduates, under WIG funding, con-


MUSEUM TRAIN

ducted safety and skills seminars throughout the summer with groups ranging from retarded adults through senior citizens and Provincial park visitors. Graduates were able in this way to involve themselves directly in program development, while providing valuable public safety instruction. At the same time, systems for the conduct of such sessions were established and tested. Finally, some important measures of public demand for this type of training were made. The results of the program, from procedures to evaluation, were compiled in a program manual which will serve as a guide for future programs.

In more general terms, the Information and Education Branch continues to provide support for educational programs throughout the Province through the production and distribution of educational material on our living and outdoor recreation resources. Branch staff also work with educator groups, including the new Association of Outdoor Educators and, through the Interdepartmental Environmental Education Committee, with other Government departments interested in outdoor education. Information and Education staff also continue to provide support materials for the Conservation and Outdoor Recreation Education Program (CORE) which ranges from hunter safety training to general outdoor recreation education in programs throughout the Province.

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