PROVINCE OF BRITISH COLUMBIA

DEPARTMENT OF ATTORNEY-GENERAL

Provincial Game Commission

REPORT

For the Year Ended December 31st

1949

VICTORIA, B.C.
Printed by DON MCDIARMID, *Printer to the King's Most Excellent Majesty*
1951

To His Honour CLARENCE WALLACE, C.B.E.,
Lieutenant-Governor of the Province of British Columbia.

MAY IT PLEASE YOUR HONOUR:

The undersigned has the honour to submit the Report of the Provincial Game Commission for the year ended December 31st, 1949.

G. S. WISMER,
Attorney-General.

Attorney-General's Department,
Victoria, B.C., December, 1950.

OFFICE OF THE GAME COMMISSION,
VANCOUVER, B.C., July 1st, 1950.

Honourable G. S. Wismer, K.C.,
Attorney-General, Victoria, B.C.

SIR,—We have the honour to submit herewith our Report for the year ended December 31st, 1949.

We have the honour to be,
Sir,
Your obedient servants,

FRANK R. BUTLER,
JAMES G. CUNNINGHAM,
Game Commissioners.

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Report of the Provincial Game Commission, 1949

The year 1949, in so far as revenue is concerned, has been the most successful one in the history of the Department. The total revenue, including $18,148.50 in fines, reached the figure of $736,689.14, or an increase in revenue of $35,366.50 over the previous year.

The number of non-resident firearms licences issued showed a reduction over 1948, and this, of course, resulted in a reduction in trophy fees collected. However, there was a decided increase in the number of non-resident anglers' licences, which resulted in the total revenue from the non-resident source being about equal to that of the previous year. In 1949, trophy fees were collected in the amount of $84,410, compared to $106,555 in 1948.

From our contacts with the organized sportsmen of the Province, they will no doubt feel pleased on hearing of the reduction in the number of non-resident hunters who visited the Province during the year, because these organized sportsmen have from time to time expressed some anxiety as to the possibility of our big-game resources being overtaxed. The drop in the number of non-resident hunters also enables us to make the statement that guides can now satisfactorily cope with our non-resident hunters.

Undoubtedly due to the unsatisfactory fur market, our records indicate that trappers were not very active, and apparently due to low fur prices, trapping was curtailed to a great extent because the amount of fur royalties collected was some $10,375.82 less than in the previous year.

It would appear that this higher revenue has been due to the increased numbers of resident firearms and anglers' licences issued, along with such innovations as pheasant and moose-elk tags, which, by the way, were introduced after repeated requests had been received from the organized sportsmen of the Province. The total number of resident firearms and anglers' licences issued was 138,193, which, added to the number of similar licences issued to non-residents, brings the grand total of 162,183, as compared to the over-all total in 1948 of 135,602.

Our scientific management programme has rapidly advanced under the very capable guidance of Drs. W. A. Clemens and Ian McTaggart Cowan, of the Department of Zoology, University of British Columbia, Vancouver. However, with increased demands upon the wild-life resources of the Province, increased scientific investigations are a necessity, and in our plans we feel that we are satisfactorily coping with these scientific problems, but in this regard increased appropriations for scientific studies are required. In our last Annual Report, we mentioned various scientific investigations as being under way, and it is pleasing now to be in a position to advise that these investigations are proceeding on schedule, and the results obtained so far have been most satisfactory and encouraging.

We have continued our moose and wild-fowl surveys and, in connection with the latter, some very important bird-banding work. We have also continued a scientific study of the Coast or Columbian deer on Vancouver Island, as well as surveys in regard to pheasants on the Lower Mainland and Okanagan regions; investigations in regard to pheasants on the Lower Mainland and Okanagan regions; investigations in regard to mountain-sheep in the Ashnola, Okanagan, and Lillooet Districts; further surveys on lakes throughout the Interior; a survey in respect to steelhead trout on the Lower Mainland; investigations in regard to the need, if any, of fertilizing lakes; a further survey on the coarse-fish problem and other game-fish culture surveys on Vancouver Island have been constantly pressed, and have been greatly assisted through additional appointments of permanent biologists to assist our fisheries biologist, Dr. P. A. Larkin, and

our game biologist, James Hatter. We have, during the past few years, been constantly acquiring scientists of outstanding ability. Reports on some of our scientific surveys are contained in this report, but we cannot at this time submit complete reports of all surveys in progress or that have been undertaken and satisfactorily concluded, but periodical reports will be prepared and distributed from time to time.

The continued operation of the checking-station at Cache Creek has afforded us and, in particular, our biologists a splendid opportunity to keep a close check on the game resources of the vast Cariboo and Chilcotin Districts. This station, under the capable supervision of Game Warden W. H. Cameron, has become an annual necessity, and has been the means of providing for the collection of a large amount of valuable scientific data.

It might be mentioned that similar stations are being considered for the Kootenay District, and it is possible also that a checking-station may be put into operation somewhere on the Hope–Princeton Highway; that is, of course, if finances at our disposal will permit. Briefly, our records indicate that 1,153 moose, 876 deer, 96 black bear, 21 grizzly bear, 45 mountain-goats, 10 mountain-sheep, 5,780 ducks, 321 geese, and 8,141 grouse were recorded at our Cache Creek checking-station. Numerous violations of the " Game Act " and regulations thereunder presented a problem to the checking officers at this station.

A comparative statement appearing later in this Report will give a more complete picture of the number of big-game trophies taken by non-residents. Probably more complete statistical information could have been supplied if our own resident licensed hunters had submitted the voluntary returns requested of them. This is to be regretted, but our game biologists are working on some plan whereby we can have a suitable sample return, which, apparently, is all that is required.

As in past years, a Province-wide Game Convention was held at Harrison Hot Springs, and, needless to say, the information obtained from the proceedings of this convention has more than proven invaluable for game-management purposes. We are satisfied that the elected delegates of the organized sportsmen of the Province who were present at this convention will agree that only conventions of this kind will furnish everyone interested in game conservation an opportunity to express their views and secure information dealing with every phase of our wild-life resources. The convention was very well attended by these elected delegates, who were drawn from every section of the Province. Guides, trappers, farmers, and other representatives in the Province, as well as representatives and guests from the Province of Alberta and the State of Washington, were in attendance. Many very interesting and valuable scientific papers were presented, the particulars of which will be found in the publication " Convention Report Proceedings," which has been printed and is available to anyone desiring same.

As in past years, we have taken every opportunity to be present at meetings of game associations and farmers' and other organizations in various parts of the Province. We have again been afforded the opportunity of meeting with the Advisory Board of Farmers' Institutes and discussing with them matters pertaining to wild-life and its relation to agriculture.

Due to the greatly increased problems confronting wild-life management that have been, and still are, confronting us, we have not been in a position to prepare any additional wild-life films, but we have followed our usual policy of showing the films we have on hand at schools, game associations, and to many other organizations in the Province.

REGISTRATION OF GUIDES

We are still confronted with the problem of straightening out the situation prevailing in the Province in so far as big-game guides are concerned. To say the least, this is a very perplexing problem, and we are satisfied that it will be some time before we are

in a position to make the statement that these guides have increased their efficiency to such an extent that there will be no cause for complaint from any hunter employing a guide licensed under our " Game Act."

REGISTRATION OF TRAP-LINES

We predicted in our 1948 Report that the Department of Indian Affairs would be appointing a liaison officer to look into and supervise Indian registered trap-lines in the Province, and it is with considerable pleasure that we are now in a position to advise that this liaison officer has been appointed in the person of Robin Kendall, who, since his appointment, has been working very closely and in full co-operation with your Game Commission.

During the past twenty-four years the system of trap-line registrations, in so far as white trappers are concerned, has gradually been producing excellent results, but it is with regret that we cannot say that the situation is the same in so far as Indian trappers are concerned, due, undoubtedly, to the lack of proper supervision. However, with the appointment of Mr. Kendall we are satisfied that this situation will soon be different, and we look for a steady improvement.

The beaver-tagging regulations which have been in effect for the past few years are producing results, because beaver are now appearing in areas, especially in the southern portions of the Province, where prior to these regulations being brought into being they had been practically exterminated. This very pleasing state of affairs has been brought about, no doubt, through the inability or the increased difficulty of poachers disposing of their illegal fur.

BOUNTIES

Some 6,847 coyotes, 1,080 wolves, and 524 cougars were presented for bounty, indicating an increase of 2,936 coyotes and a decrease of 76 wolves and 201 cougars for bounty claims.

Needless to say, the control of predators is not only a perplexing problem but a contentious one as well, and we are satisfied from the investigations that we have made that the problem of predators will not be settled through the payment of bounties alone. The employment of scientific personnel and trained predatory-animal hunters is a must if the demands of the public in general are to be coped with and the welfare of our game populations is to be protected. There has been some criticism as to the cost per animal killed by predatory-animal hunters as compared to the number and cost of animals taken under the bounty system, but it is felt that such criticism has been made without due regard to the problem because we have had occasions where the taking of one predator responsible for excessive damage has run the cost to the Department into hundreds of dollars, and we are satisfied that a bounty—no matter how high—would not have resulted in the capture of this particular predator. This is only cited as an example, but there are many similar instances that have been presented from time to time. Chief Predatory-animal Hunter James Dewar, on reporting that an Indian boy had been killed by a cougar in the Alberni District, was instructed to proceed to the place by aeroplane, and our hunters were fortunate in being at the scene and in disposing of the cougar responsible in the matter of a very few hours.

As mentioned in our last Report, a biologist, W. W. Mair, has been appointed to take charge of our predator-control operations. Mr. Mair will be making a complete survey of the whole Province relative to the predator situation, and no doubt in the very near future we will be in a position to advise more fully concerning our predator-control programme.

UPLAND GAME BIRDS

In 1949, 18,525 pheasants were purchased from resident licensed game-bird farmers and liberated in many suitable areas in the Province. A summary of these liberations is contained in the statistical section of this Report.

We are not satisfied with the pheasant situation in the Province, and in view of this fact, our scientists are continuing to investigate this problem. The Okanagan region was once an outstanding example of what could be done through the introduction of pheasants, but we regret to have to advise that in latter years the pheasant population has been gradually decreasing. At the moment we do not know what is responsible, but probably the use of toxic insecticides in the orchards of the Okanagan region has had some bearing on the situation, but our investigations have not proceeded to the extent that we can make a definite statement that this is the reason for the depletion in pheasants. It might be stated, however, that weather conditions during the past two winters, coupled with flood conditions in the spring, have undoubtedly played some part in this decrease. No doubt the ever-increasing number of hunters, with consequent increased demand for pheasants, and the decreased suitable land for natural-propagation purposes have also been responsible for reduced populations. In 1935, some 8,000 hunting licences were issued throughout the Lower Mainland, where, at that time, large tracts of suitable farm land were to be found. During that year suitable acreage was under grain, which in itself is conducive to supporting a fair pheasant population, but in 1949, the picture presented was entirely the opposite because most of the large farms have been broken up into small plots, and the amount of grain grown has decreased to a fraction of that grown in 1935. Then again, where we had approximately 8,000 hunters in the year 1935 over 20,000 licensed hunters were in the field in 1949. Due to these conditions, it is very difficult and almost impossible to supply or produce sufficient pheasants to meet the demand.

The grouse season, which had been closed for a number of years, was opened for a short period in the Cariboo section of the Province, and from results obtained there and elsewhere we feel that our grouse populations have about reached the peak of their cycle, and it is expected that much longer open seasons with more liberal bag-limits will be prevailing during the next year or two. Vancouver Island continues to be the favourite spot for blue-grouse hunting. The blue grouse on Vancouver Island continue to be fairly plentiful, and this will no doubt be the case until such time as the logged-off areas again commence to produce new forests.

MIGRATORY GAME BIRDS

As mentioned in our last Report, requests for what might be termed a " split open season " on migratory wild fowl were received from the Lower Mainland game associations. This request was granted, but the success obtained by the average hunter as a result of this split season is somewhat doubtful, because while the first half of the season was satisfactory, immediately after the opening of the second half of the season severe frost was encountered, which forced wild fowl to leave the majority of the Lower Mainland and resulted in a limited amount of fair shooting in the tidal areas at the mouth of the Fraser River. A considerable number of sportsmen do not favour a split season, because in the first place, in accepting a split season, some fifteen days' less hunting is allowed than when a continuous open season is permitted. Secondly, during the close of the first half and the commencement of the second half of the split season excellent duck-hunting weather was encountered, and, no doubt, during this period some good shooting was forfeited. However, the season as a whole throughout the Province compared favourably with previous years.

GAME LAWS ENFORCEMENT

A total of 1,115 prosecutions were conducted and $18,184.50 was collected in fines during the year.

As indicated in our last Report, the ever-increasing use of aeroplanes for hunting, fishing, and trapping has been the cause for considerable concern, not only among the organized sportsmen but also to game administrations throughout the whole of Canada. There is no question that this use of aircraft from a game-management point of view is a serious problem, and some action in reference to the control of aircraft should, it is recommended, be brought into effect without any delay.

GAME-FISH CULTURE

Probably one of the branches of the Department showing the greatest expansion is our game-fish cultural branch, due, no doubt, to the ever-increasing number of anglers, which has resulted in a greater demand for more suitable hatchery facilities. In 1948, there were 51,374 resident and 13,793 non-resident anglers' licences issued, while in 1949, there were 67,371 resident and 21,444 non-resident anglers' licences issued, or an over-all increase of 23,547 licences.

In view of the above, it was found necessary this year to construct a large modern trout-hatchery at Smiths Falls on the east shore-line of Cultus Lake, in the Chilliwack district, and no doubt our next problem will be that of providing a similar hatchery at some point in the Cariboo or Central Interior section of the Province, and we propose to make provision for same in our estimates for the coming fiscal year.

ACKNOWLEDGMENTS

To all game associations, farmers' organizations, and Provincial and Dominion Government departments we wish to extend our sincere thanks for the very hearty co-operation extended to all officers of the Game Department during the year 1949.

"A" DIVISION (VANCOUVER ISLAND, THE GULF ISLANDS, AND THE MAINLAND COAST FROM TOBA INLET NORTH TO CAPE CAUTION, INCLUDING THE ISLANDS ADJACENT TO THE EAST COAST OF VANCOUVER ISLAND NORTH OF CAMPBELL RIVER).

By G. C. Stevenson, Officer Commanding

I have the honour to submit my annual report covering game and fish conditions in "A" Division for the year ended December 31st, 1949.

Big Game

Bear (Black).—This animal is still very plentiful and is definitely on the increase. Some very fine specimens have been observed in the Mount Washington area, a few miles north-west of Courtenay. As a game animal, the black bear is not hunted to any great extent.

Bear (Grizzly).—Reports indicate that the headwaters of Toba, Knight, and Loughborough Inlets produce some very fine specimens, but hunting conditions in the areas mentioned are difficult.

Deer (Coast or Columbian).—These animals will have to be closely watched for the next few years, as three consecutive winters of intense severity have taken their toll of the younger animals. Apart from any climatic hazards, the chief diminishing factor, in my opinion, is the pressure of hunting, which increases every year. Game clubs and associations apparently do not fully realize the latter problem; though their membership is limited to an active few, the purchasers of hunting licences have increased by a very

substantial margin during the past few years. This, together with the inroads of logging operations into the heretofore remote areas, is having its effect on the deer population. Bag-limits and open seasons will have to be reduced in ratio to the increasing volume of hunting pressure.

Elk (Wapiti).—The number of these animals appears to remain static, in spite of the fact that a closed season has been in force for a considerable number of years. There are several well-known herds, such as those at Shaw Creek, Nanaimo Lakes, Oyster River, Tahsis, and the area south of Englewood.

There are many suggestions put forward as to the reason these animals are not increasing, and depredation by wolves is the explanation most commonly advanced. Predation may have a considerable bearing, but there are several other factors that must be considered in appraising the condition. A scientific survey will have to be undertaken in order to solve this problem.

Fur-bearing Animals

Fur conditions in this Division are good, and a substantial increase in the beaver population is noticeable—the latter being definitely due to the permit and tagging systems now in effect.

Marten, mink, and otter are plentiful. Muskrats show a decline in many areas, but these animals are not indigenous to Vancouver Island.

Racoon and skunk are very plentiful, in spite of fairly drastic hunting and trapping seasons recently put into effect on these animals.

Upland Game Birds

Blue Grouse.—These birds are to be found in good numbers throughout this Division. A considerable number of these birds are taken every year by the ever-increasing volume of hunters, but, so far, no appreciable reduction in the number of birds is noticeable.

Ruffed (Willow) Grouse.—There is a marked improvement in the number of these birds, and the long closed period would seem to have borne good results.

Pheasants.—These birds cannot be considered plentiful in this Division, but there are many areas where very fair hunting may be obtained. Sportsmen themselves are to blame for farmers not granting permission to hunt over their lands due to recent exhibitions of lack of courtesy and bad manners on the part of some sportsmen.

Migratory Game Birds

There are indications that ducks and geese are holding their own in spite of an increase in hunters. Provided natural feeding-grounds are allowed to remain unaltered and flight-resting stations established, there is no reason to fear any grave depletion of migratory birds.

Predation Control

A total of 193 cougars and 2 wolves was destroyed in this Division during the past year. Of this number, thirty-two were destroyed by Government hunters. Many of the cougar accounted for by our men necessitated long journeys and considerable time, as the calls were received from widely separated districts.

A very large number of noxious birds, cats, and predatory dogs were accounted for by Game Wardens while on patrol. The question of dogs running deer is a serious one in this Division, and requires much time and effort on the part of Game Wardens.

Game Protection

There were 186 prosecutions for infractions of the " Game Act " and contravention of Game and Fishery Regulations during the year. Of these, 185 were convictions; total fines being $3,974.50.

Game Propagation

There were 952 pheasants and 95 quail liberated in this Division during the year. Releases were made as follows:—

Pheasants: Alberni, 96; Courtenay, 496; Nanaimo, 160; and Victoria, 200.

Quail: Denman Island, 6, and Victoria and Saanich, 89.

It is proposed to liberate a further number of quail on Denman Island next year.

Game Reserves

There are several small reserves on the Island, the principal ones being Shaw Creek, Elk Lake, Elk Falls, Bald Mountain, Strathcona Park, Forbidden Plateau, and China Creek.

Fur Trade

Practically no raw-fur trading is carried on in this Division. Trappers generally dispose of their catches at Vancouver or elsewhere.

Registration of Trap-lines

The registration of trap-lines, together with the permit and tagging system for the taking of beaver, is showing outstanding results. The close check being maintained over fur-buyers is very gratifying, as few, if any, pelts are not checked at their destination.

Registration of Guides

Guide-registration is a problem that has not as yet reached major proportions in this Division. In the northern part of the Island the problem is being watched closely, as the Campbell River district draws many hunters and fishermen, and there may develop an overcrowding of guides. So far, the registration system is working very well, even though guides are somewhat tardy in submitting their returns.

Special Patrols

No special patrols were carried out this year, but Departmental predator hunters brought back very useful information on game which they were able to secure in remote areas of the Division.

Hunting Accidents

On September 17th, 1949, Robert Berkey, of Ladysmith, was shot by Leslie Wargo, of Ladysmith, while carelessly shooting at grouse. Charge from shotgun struck Robert Berkey, necessitating removal of one eye.

On September 19th, 1949, William Loucks, of Nanaimo, shot William Johnstone, of Nanaimo, mistaking him for a deer. Serious abdominal wound. William Johnstone charged under section 284 of the Criminal Code of Canada. Fined $100 and costs.

On October 28th, 1949, H. J. Bush, of Genoa Bay, Vancouver Island, accidentally discharged shotgun, blowing away left side of chest. Fatal.

On November 6th, 1949, John Balloni, of Nanaimo, was accidentally shot by Clarence Cameron, of Nanaimo. Gun, leaning against a fence, fell and discharged on ground, hitting John Balloni. Minor injuries.

Game-fish Culture

A total of 249,800 Kamloops trout fingerlings were released in lakes and streams throughout this Division. Conditions at the Puntledge Park Trout Hatchery were made difficult during the winter by the exceptionally heavy snowfall that required constant attention and caused considerable mortality among the fish.

Biological surveys have been commenced on the more important lakes in this Division, and preliminary steps have been taken at Shawnigan Lake to appraise its value

as to restocking, etc. Fishing in lakes and streams throughout this Division has been good during the year, but certain waters that are easily accessible to the public, and are fished intensively, show signs of depletion. The question of restocking lakes and streams is one that requires considerable study, as the planting of trout fingerlings in some waters does not meet with the success anticipated, owing to a number of causes that require biological study. Fish and game clubs would do well to look into this question before they submit requests to the Department to place more and more fingerlings in certain lakes and streams.

Summary and General Remarks

In reviewing conditions and operations over the past year, one outstanding feature noticed on Vancouver Island is the ever-increasing hunting and fishing intensity. Being in close proximity to the two largest centres of population in the Province, it is inevitable that more and more hunters and fishermen should seek their sport on this Island. This is having a marked influence on the game and fish resources, and apart from any biological or climatic hazards encountered, the mathematical equation of ratio of hunting and fishing licences to quantity of available game and fish will have to be reviewed from the standpoint of reducing bag-limits and duration of open seasons in proportion to the increase of licences sold.

The popularity of the aeroplane as a means of transportation by sportsmen will need attention, and the posting of a substantial bond by all hunters and fishermen entering the Province to hunt or fish by aeroplane is advocated—the bond to be refunded after clearance by Departmental officials.

Close co-operation was maintained with the Provincial Police in this Division, and I wish to thank all members of that force for their kindness and assistance at all times.

My thanks is also extended to all personnel of this Division, who have carried out their duties to the Commission in a very able manner.

"B" DIVISION (KOOTENAY AND BOUNDARY DISTRICTS)

By C. F. Kearns, Officer Commanding

I beg to submit herewith my annual report for the year ended December 31st, 1949.

Big Game

Moose.—The moose stand is only fair in the East Kootenay. They are slowly but gradually extending their range, as has been noted in previous reports. There are a few moose around the lower end of Kootenay Lake and from Creston to Yahk, also one moose was reported near Princeton. These animals are heavily hunted by local residents. Probably a later opening of the season would be advisable, because when moose are adjacent to the sloughs along the travelled highways there is little sport in shooting them under such conditions. We have had also too many reports of cows and calves being shot and left to rot during the earlier part of the season by impetuous hunters. In view of the above, any time in October would seem to be a more suitable opening for the moose season in the East Kootenay.

Wapiti (Elk).—The elk are in fair numbers in the East Kootenay and the present open season is satisfactory. Small introduced bands in Penticton and Princeton districts appear to show a slight increase, or at least to be holding their own.

Caribou.—Are thinly distributed in the Selkirk Range adjacent to the Arrow and Kootenay Lakes. A short open season does not result in a very large take of these animals.

Mountain-goat.—Well represented throughout the district, and plentiful in the East and West Kootenays. It would appear that there is some decline, for no apparent reason, in the Golden, Invermere, and Cranbrook areas.

Mountain-sheep (Bighorn).—Continue to recover a good portion of their previous numbers. A short open season on these animals would now be in order.

Deer (Mule).—Well distributed and reasonably plentiful throughout the Division, but there are not as many deer as there were four or five years ago. The winter of 1946–47 was hard on deer; the winter of 1948–49 was worse; and the present winter has every promise of being a severe one. Due to the prevailing good weather during the open season, deer were not concentrated on the lower levels and the hunting was not as good as in previous years. Nevertheless there was a very good stand of mule-deer—in some cases probably quite as much as the winter range can accommodate.

White-tailed Deer.—Are plentiful in the East and West Kootenays, but fewer in numbers in the Boundary and Similkameen districts.

Grizzly Bear.—These animals are found throughout the Division, but might be classed as generally scarce. They are desirable as trophies, and it is felt that a fuller measure of protection should be given them. The prohibition of spring hunting is a matter for consideration.

Black and Brown Bear.—Well distributed and very plentiful. Due to the shortage of wild berries in the Kootenays, an unusual amount of orchard raiding by bears took place during the summer. This is a situation that seems to occur about every ten years or so. The huckleberry crop fails, and bears go into hibernation in a poor physical condition with a resultant noticeable scarcity of them the following year.

Fur-bearing Animals

The prevailing low price of fur offers little encouragement for trappers at the present time. Nevertheless the majority of them are retaining their lines and hoping for better prices soon.

Upland Game Birds

Blue Grouse.—Well distributed and plentiful in the West Kootenay, and more so than in other sections of the Division. They are scarcer in the Boundary-Similkameen than in previous years.

Ruffed (Willow) Grouse.—The stand of these birds is very encouraging, and they are definitely on the upswing to their former population peak.

Franklin's Grouse.—Well distributed and presumably on the same cyclical upgrade as the willow grouse.

Sharp-tailed Grouse.—The open season in the Columbia district resulted in a fair take of these birds with plenty left for restocking. There are now probably enough in the Cranbrook district for a short open season.

Ptarmigan.—Well distributed from timber-line to the high peaks, but very little hunted.

Pheasants.—The situation was quite encouraging in the Creston area, but there were very few birds in the Grand Forks district. Fair numbers were observed in the Okanagan and there would appear to be some doubt as to whether the closure of the season was necessary in the Oliver district.

European Partridge.—These birds are present, but not numerous, at Creston, Grand Forks, and the Penticton-Oliver districts.

Quail.—Limited to the Penticton-Oliver district, where they are in fair numbers.

Migratory Game Birds

Geese (Canada).—These water-fowl are nesting in good numbers in the flood lands on either side of the Columbia River from Invermere to near Golden, the sloughs near Creston, and on the Duncan River north of Kootenay Lake, and also at the north end of the Upper Arrow Lakes. In the latter place there is a large concentration of Canada geese, and they are very difficult to hunt because of the open nature of the country. Goose-hunting in the above areas during the season is quite good.

Ducks.—Conditions are normal regarding locally reared ducks, particularly in the section between Invermere and Golden and the sloughs on the Duncan River north of Kootenay Lake, which are the heaviest nesting places. Creston is still good, although the available locality has been restricted due to reclamation of many sloughs. Ducks, of course, nest in sundry suitable spots all over the Division, but not in any particular concentration.

Approximately 1,000 ducks were fed on the West Arm of Kootenay Lake during the winter. These birds apparently have never migrated, and they lose the urge to do so as they have been fed more or less continuously at Nelson for twenty years. It is only in an abnormal winter that icing conditions on the West Arm of Kootenay Lake make food a necessity. Several hundred water-fowl lurk in the vicinity of the Nelson ferry, and it is common practice for citizens to feed them while crossing on the ferry. From 40 to 100 geese wintered in the vicinity of Castlegar, where they were fed during the period that the Columbia River and Lower Arrow Lake were frozen.

Coots.—Plentiful, and of no consequence as a game bird.

Wilson's Snipe.—Are transitory in migrations and not hunted to any extent.

The spring nesting season for water-fowl was favourable, but some sharp weather in mid-October induced many of the local birds to fly south while the northern flight did not pause locally. Local duck-hunters were generally disappointed in their shooting although plenty of birds were present before the season opened.

Predatory Animals and Noxious Birds

During the year the following vermin were destroyed by the personnel of the Division: Coyotes, 229; cougars, 45; noxious hawks, 52; eagles, 21; owls, 32; ravens, 29; crows, 257; dogs (wild), 78; cats (wild), 87; magpies, 63; bobcats, 2; skunks, 2; bears, 20; pack-rats, 20; rattlesnakes, 2.

Game Protection

One hundred and sixty-nine informations were laid under the " Game Act " and the Special Fisheries Regulations for British Columbia, resulting in 165 convictions and 4 dismissals.

Game Propagation

Three hundred and ninety-nine pheasants were released to supplement existing stocks in the Oliver-Keremeos area, also at Grand Forks, Creston, and Nakusp.

Game Reserves

The Elk River Game Reserve, comprising portions of the watersheds of the White, Bull, and Elk Rivers, is the most important reserve in this Division, as it affords protection to deer, moose, elk, sheep, and goats during the open season.

Deer sanctuaries on the Kettle River in the Boundary District and along the Wigwam River in the East Kootenay are natural concentration points for mule deer and give them respite during the open season, particularly when the snowfall is early.

Three Brothers Game Reserve, near Princeton, is beneficial during the early part of the open season.

Game-bird sanctuaries at Vaseaux Lake, Penticton district, and on Kootenay Lake, near Nelson, continue to meet with general approval.

Revelstoke, Glacier, Kootenay, and Yoho National Parks all lie within this Division, and no hunting is permitted therein.

Fur Trade

The prevailing low price of furs will probably result in a reduced revenue from this source, as there is small inducement for trappers while the prices are down so drastically.

Registration of Trap-lines

Although the trapping business is in the doldrums at present, trappers are maintaining their lines in the hope that when fur prices rise that they will have built up an appreciable stock and can be in a position to take advantage of the rising market. It does not seem reasonable that the price of prime wild-caught pelts can long remain at the present rock-bottom level.

Registration of Guides

Our system of registered guides, which is the result of both experiment and expediency during the past few years, seems to be working out fairly well. There is still a lack of properly qualified men in this field, but it is doubtful if the situation will be remedied due to the short season a hunting-guide can operate. To be in possession of a first-class outfit means that a guide must maintain a sizeable amount of equipment as well as sufficient horses to look after his hunters. A few of the first-class guides have very good outfits, but they are suffering in competition with second-class guides who take hunters out on cheaper and shorter trips.

This situation is due to the fact that roads run into much of the good hunting country, and it is expected that in the next year or two, due to the programme of the Forest Service in opening up new areas and also the building of truck-roads by mining and logging companies, actually very little of the East Kootenay can be classed as inaccessible, that is, requiring exclusive use of horses to reach.

This situation does not work to the advantage of the man with a first-class outfit, although some guides are lengthening their season by catering to fishing parties and outdoor vacationists who wish good photographic opportunities, in which the East Kootenay abounds.

Special Patrols

Although no actual patrols can be classed as special, many horse patrols have been made by the Wardens to the areas above timber-line, and lasting from a few days to a week or more.

In addition, most of the Game Wardens hunted cougars as the opportunity offered during the winter, and they made trips of several days' duration on snow-shoes as a matter of course.

Hunting Accidents

1. On September 15th, 1949, Avery Blanchard, of Renata, while assisting Charles Morey to look for a bear in his orchard at night, fired at what he thought was a reflex from the eyes of a bear, killed Jacob Fehr, and wounded Jacob Friesen, both of Renata. These men were also hunting in the adjoining orchard, unknown to both Blanchard and Morey, presumably for the same bear that had been damaging the trees of Charles Morey. Subsequent action by the police resulted in a charge of manslaughter being laid against A. Blanchard. A jury trial at Nelson later resulted in a dismissal.

Jacob Friesen was seriously wounded in the upper left arm, and it is doubtful if he will regain the full use of his arm.

The hunting licence issued to Charles Morey was cancelled, and both he and A. Blanchard were advised that they would not be able to obtain firearms licences in British Columbia until such time as the Game Commission see fit to consider their application.

2. A. R. Unwin, of Kimberley, was injured when closing a new shotgun, as the shell exploded before the gun was fully closed, causing painful, but not serious, injury to his right hand. Presumably this was due to a malfunction of the weapon, which was returned to the manufacturer for a check.

Summary and General Remarks

As I have previously mentioned in annual reports, we are coasting along very well so long as the climatic conditions remain benign. We had a period of very good years,

mild winters and fair spring nesting seasons which produced the best hunting both for upland game birds and deer animals that this part of the Province has ever enjoyed. But the tide has been turning, and it is to be sincerely hoped that the present winter will mark the full ebb. Three of the last four winters have been most adverse, even calamitous for deer. Everything has been against them: deep snow which did not crust, thus making it hard for them to reach their food supply; a fair number of predators; and the incompatible business of deer seeking a winter range that no longer exists in much of the West Kootenay, where the lower levels are cultivated. In a mild winter the deer can range high up behind the homesteads, but when the snows are deep, they come lower, where they suffer from vehicular traffic, trains, and domestic dogs, as well as their natural enemies—the cougar and coyote.

What is applicable to the deer, both mule and white-tailed, also pertains in a somewhat less degree to the larger animals—moose and elk. They, too, have their difficulties during the bad winters. We have been plagued by the complaints of angered farmers who have seen their haystacks melting away before the hungry attacks of both deer and elk. This is a very difficult matter to adjust and requires both patience and forbearance on the part of all interested parties—the sportsman, the landowner, and the Game Department.

The public have been notified, via the press, that the cutting down of suitable trees, such as cedar, or in extreme cases, fir, will tide the deer over a tough period, and is better than providing them with hay. Many interested people have taken the trouble to follow these suggestions as well as put out hay on their own. Even the farmers who suffer most from the deer are still as generous as they can be in this regard.

In addition to all the hard winters, the resident hunting population is definitely on the increase, and the presence of a good many non-resident hunters is felt in the relatively small and accessible hunting areas of the East Kootenay.

Realizing that the situation is getting serious, the game regulations were curtailed last year, namely, the deer season was shortened two weeks, and hunters were given their choice of an elk or a moose, but not both animals. These regulations were very good, but they should be carried further. It is felt that if the moose season were to open a month later, hunting would be more of a sport and the animals would have a fair break. When frost coats the sloughs or small lakes with a skim of ice, the moose go higher and farther afield, and can be found on the same range as the deer or elk.

For some unaccountable reason, the goat population in the East Kootenay seems to be declining, and we should recognize that situation by cutting the present bag of two goats down to one.

The one bright spot in the over-all situation is that the bighorn sheep have definitely increased during the years of the closed season since the epidemic of 1941. An open season with a bag-limit of one animal might safely be allowed.

The number of cougars destroyed in the Division by game personnel during the past years has definitely reduced their numbers, a comparatively smaller number of cougar tracks being noted than normally. Even so, nineteen cougars have been taken up to the present time (January 31st, 1950).

Coyotes are now worse predators than cougar and the cautious experiments we have made to date in using poison indicate that this method has much merit. Two isolated key points were selected in the late spring, which resulted in some fifty carcasses being recovered, and presumably a similar amount which were not located.

Strychnine was used and this is not an instantaneous killer. Investigation in the same areas during the present winter disclosed an almost total lack of coyote tracks, indicating at least a local success against these animals.

We are experimenting with cyanide, which kills instantaneously, but the effort also will be local and experimental. The knowledge gained herein should enable us to conduct

a more extensive poisoning campaign against predators in the immediate future, under the direction and supervision of experienced game personnel. Poison is an agency that needs careful and complete control, and we mean to employ it with the utmost discretion.

The usual cordial co-operation was received during the year from the organized sportsmen and various Provincial Government departments, chiefly the Provincial Police, the Public Works Department, and the Forest Service.

Report of C. H. Robinson, Fishery Supervisor, Covering Game-fish Conditions in "B" Game Division

Herewith I beg to submit report covering a review of the sport fisheries of "B" Game Division for the year ended 1949.

Normal weather conditions assisted natural reproduction and ova collections. Most hatcheries received the full quota of eggs as listed, except Gerrard Hatchery, where the collections were less than anticipated due to water conditions, and for the same reason there was a shortage of cut-throat trout eggs for the Cranbrook Hatchery.

In view of the proposed chlorination of the Cranbrook City water-supply, it became necessary to vacate the Cranbrook District Rod and Gun Club hatchery building and use a temporary-constructed building adjacent to and below the city reservoir until August 15th. Subsequently the Game Department constructed a new, modern trout hatchery on the temporary-building site above the point of chlorination. The change-over will undoubtedly add to the efficiency of seasonal fish-cultural operations. Excellent co-operation was received from the Corporation of the City of Cranbrook by granting the Department the privilege of taking water from the reservoir and in approving a lease of twenty-five years for the hatchery site. Also the Consolidated Mining & Smelting Company, of Kimberley, kindly donated materials for the pipe-line leading from the reservoir to the hatchery.

The much appreciated preliminary biological surveys were carried out on Kootenay Lake, Lardeau River, and Trout Lake, financially assisted by the Consolidated Mining & Smelting Company, of Trail. Also a preliminary survey was conducted on the Arrow Lakes. The proposed drawing-off of water from Trout Lake was deferred, due to an extra two feet of water being stored in Kootenay Lake for hydro-electric purposes on Kootenay River.

The increasing angling pressure by non-residents in the accessible waters of the Boundary District remains a serious problem in spite of shorter fishing seasons and sacrifices made by the resident anglers. The planting of trout fingerlings in place of eyed eggs and fry would help the situation, which is desired by the organized sportsmen of Grand Forks, Greenwood, Midway, and Beaverdell. A similar problem exists in the eastern part of the Division, in the Fernie region, from the increasing influx of Alberta anglers due to improved highways and the construction of a power-line down the Elk Valley from Alberta. Shorter fishing seasons and the closure of the upper reaches of the Elk River and other waters would, therefore, appear necessary.

To conserve and protect the small trout under the legal size of eight inches in small streams accessible to auto travel, it appears desirable to have a much shorter fishing season in order to prevent the appalling waste of smaller trout, the future stock, from being roughly handled and flicked off the hooks by some unscrupulous anglers.

Similkameen and South Okanagan Waters

Princeton District Waters.—Reports indicated that trout-fishing improved slightly and the prospects of better fishing were in sight with the planting of Kamloops trout fingerlings in Otter (Tulameen) and Taylor (Summit) Lakes, also the organized sportsmen hope it will be possible to plant good-sized fingerlings in Wolfe and Lorne Lakes, etc., where the coarse fish (squawfish) predominate.

The success of coarse-fish removal from Borgeson and Dry Lakes and the replacement with rainbow trout, including also experimental plants of fry and fingerlings in McCaffrey (Blue), Laird, Mackenzie, and Allison Lakes is awaited with interest.

Several lakes yielded the average catches of Kamloops trout, namely, Missezuela, Murphy (Bear), Lost (Kump), Placer, Tepee, Osprey, and Lightning Lakes, also a few good trout were taken from Wolfe Lake, not stocked for several years due to the coarse-fish menace. Harvey Hall Lake, a shallow mud-bottom body of water, accessible by secondary highway, produced some excellent specimens of Kamloops trout weighing ten pounds and less. Penask Lake fry were planted in this lake in July, 1947. The lake was barren of fish-life prior to the planting.

Clearwater Lake.—With improved spawning facilities in the outlet creek prepared by the organized sportsmen of the Nickel Plate Mine, natural reproduction has been sufficient the past four years to maintain a well-balanced supply of trout, increasing in weight from 1½ to 4 pounds. Cathedral Lakes were not fished to any extent and in some lakes the natural reproduction is in excess of the available food supplies, resulting in poor-condition fish.

Similkameen River.—Flowing parallel to the highway, it yielded fair catches of rainbow trout, but the discoloration of the water-flow from gold dredging and surface water cutting into bentonite deposits during the spring freshets reduced angling and catches of trout.

Oliver-Osoyoos District Waters

Twin and Horn Lakes.—These lakes continued to produce fair catches of Eastern brook trout and with the planting of No. 1 fingerlings from the Summerland Hatchery, improved angling is expected. The speckled trout are consuming goodly numbers of small carp. This may check the populations of this prolific coarse fish, providing the public has free access to the lakes.

Madden Lake.—The Eastern brook-trout fishing improved slightly; the millions of shiners that frequent the lake are now providing some food for the speckled trout introduced on that account.

Bear Lake.—This lake continued to produce good-conditioned Kamloops, varying to 6 pounds in weight. To date, there is no information available on the Kamloops trout introduced in Wolfe Lake in 1947.

Taylor Lake.—This lake produced limited numbers of trout, which are somewhat sluggish due to the abundant food supplies.

Osoyoos Lake.—Spring and fall fishing improved for Kamloops trout. The reciprocal arrangement of restocking between the Oroville organized sportsmen and the Game Commission might be credited to the improvement. In addition to the recorded plantings effected by the Game Department, the Washington State Game Department liberated 20,000 four- to six-inch rainbow trout fingerlings in the year 1948 and a similar allotment in the year 1949 from the allotments of fry supplied from the Summerland Hatchery.

Vaseaux Lake.—This lake supplied limited numbers of large-mouthed black bass. The organized sportsmen are desirous of introducing the small-mouthed black bass species into the lake, which is considered far superior to the large-mouthed black bass.

Penticton District Waters

Skaha (Dog) Lake.—Gratifying reports indicate the best Kamloops trout fishing for the past twenty-five years. This phenomenal improvement was a pleasant surprise to the individual and organized sportsmen after an alleged reported depletion of Kamloops trout. No doubt, with the continued planting of trout fingerlings in place of fry, plus maintaining the supplies of kokanee and possibly more protection to the parent spawning trout, the desired results will be achieved.

Okanagan Lake (South End).—The spring and fall fishing for Kamloops trout has improved. The continued seasonal liberations of Kamloops trout fingerlings from the Summerland Hatchery and Kelowna Rearing-ponds should contribute to further improvement.

Dark (Fish) Lake.—Produced excellent catches of Eastern brook trout. The planting of No. 1 fingerlings should provide further improvement. The several alpine lakes, namely, Little and Big Eneas, Deer, Island, Munro, Garney, Glen, Peachland, MacDonald, and Brenda Lakes, continued to yield average catches of Kamloops trout from partial artificial replenishment with fry and fingerlings.

Chute, Elinor, Cedar, Ratnip, Divide, and Norman Lakes, etc., in the Naramata region, supplied average catches of Kamloops trout mostly due to restocking with fry.

Boundary District Waters.—The Kettle River and West Fork supplied fair fly-fishing for rainbow trout the first part of the season from June 1st, but with the influx of non-resident anglers, it is nearly impossible to cope with this situation, although probably planting fingerlings in place of fry and eyed eggs would assist in alleviating the problem with a further reduced period for angling.

Conkle (Fish), Arlington, Bull, Collier, Copper, Clarke, Williamson, and Cranberry Lakes, etc., supplied the average catches of Kamloops trout, and with the exception of fry planted in Conkle and Arlington Lakes, natural spawning has maintained the supplies of trout.

Jewell Lake.—This lake was fairly well patronized by resident and particularly by the non-resident anglers with fair catches of Kamloops trout taken on fly and troll. The largest trout caught was about 8 pounds. Due to the presence of shiners, the organized sportsmen are most anxious to have the lake restocked with fingerlings, as well as Willgress (Loon) Lake, where trout fishing has seriously deteriorated since the presence of the large shiner.

Granby River (North Fork).—Small trout are quite plentiful in the upper reaches of the river, making it advisable to cancel the closure of certain tributary streams. The lower part of the river yielded fair catches of rainbow trout on the fly. Reports indicate that there has been some outward migration of Kamloops trout which were introduced in 1947 in Zenia Lake by plane, thereby improving fishing in the river.

Lake Christina.—Supplied fair trolling for Kamloops trout. The largest trout taken weighed 15 pounds. The kokanee play a very important part for summer fishing. The planting of fingerlings in place of fry and eyed eggs is warranted and desired by the organized sportsmen.

Small-mouthed Black Bass.—During the summer, the bass supplied fair fishing, mostly toward the head of Lake Christina. These fish are not so plentiful and consequently young trout will have a better chance of survival.

West Kootenay Waters

In comparison to the wet season of 1948, reports indicated a slight improvement in fishing generally. This applies particularly to the West Arm of Kootenay Lake, extending from Corra Linn dam to Procter. Big Sheep Creek, Beaver Creek, and Boundary Lake supplied good catches of Eastern brook trout. Rosebud Lake was fair and Erie Lake poor, where the squawfish predominate. The stretch of Columbia River flowing between Castlegar and Waneta provided some fair fly-fishing. Coarse fish remain plentiful from the up-stream migration from Roosevelt Lake.

Lower and Upper Arrow Lakes.—The lower lake is fished steadily by numerous owners of summer homes in the vicinity of Robson and Syringa Creek. From a recreational standpoint, Kamloops trout fishing is very important, and in consequence the liberation of trout fingerlings would assist in solving any problem of depletion. The upper lake did not provide as good fishing for the Kamloops and Dolly Varden trout as the season of 1948.

Whatshan Lakes.—During the first part of the season, fly-fishing was good for Kamloops trout, mostly under 2 pounds. Trolling remained good throughout the season. An approximate creel census was taken by the proprietor of the Whatshan Resort, and accordingly some 24,000 of three species of fish were taken—Kamloops, Dolly Varden, and kokanee. Caribou Lake supplied good fly-fishing for Kamloops trout.

Wilson and Box Lakes.—These lakes continued to supply good fly-fishing and trolling for rainbow trout and kokanee in the first-named lake. The Kamloops trout fry liberated in Kemball Lake in 1947 produced good fly-fishing for rainbows up to 3 pounds. Summit Lake, restocked with Kamloops trout fry each year, supplied fair trolling, but here again the coarse fish (squawfish) is a detriment to trout-fishing.

Slocan Lake, Slocan River, and Kootenay River.—The lake yielded fair catches of Kamloops trout by trolling, also some good fly-fishing at the mouths of inlet creeks. Slocan River, toward the early fall, supplied good fly-fishing where the trout are somewhat migratory in their habits. The Kootenay River and Slocan Pool above the Brilliant hydro dam supplied some good fly-fishing. According to the creel census taken in 1948, 2,100 rainbow trout were caught from the pool, weighing approximately 3,156 pounds. It is hoped, with the increased yearly grant from the West Kootenay Power and Light Company in lieu of a fish-way in the Brilliant hydro dam, that rearing-ponds can be established in order to restock these waters with Kamloops trout fingerlings in place of fry and eyed eggs. No marked trout were reported caught during the season of 1949.

Evans, Cahill, and Beatrice Lakes.—These lakes produced fair fly-fishing and trolling for Kamloops trout. In Hird (Evans) Lake (a few anglers fished the lake by the use of an aeroplane) the rainbow trout were plentiful but in a thin condition. Heavier cropping is desired in order to provide a balance with the existing food conditions. Little Slocan Lakes were not fished very much, but tributary streams to Little Slocan River were heavily fished.

West Arm, Kootenay Lake.—The continued liberation of Kamloops trout fingerlings in lieu of fry has no doubt been the principal factor of improved fly-fishing and trolling for the numerous residents of Nelson and the West Arm. Twenty-five marked fish were reported caught, possibly from the allotment of 4,720 fingerlings liberated in the early spring, from 6 to 11 inches in length and marked by the removal of the adipose and left ventral fins.

Kootenay Lake.—With normal water conditions, the catches of Kamloops and Dolly Varden trout were well up to the average. With increasing angling pressure by the non-resident anglers, it might be necessary to shorten the fishing season and reduce the number and weight limits of trout that can be legally taken in one day or week. Several marked trout were reported caught in the main lake, which supports the theory of up-stream migration.

The Nelson Gyro Club conducted their Tenth Annual Kootenay Rainbow Trout Derby from May 1st to November 16th for resident and non-resident anglers. A total of 424 trout of 5 pounds and over were entered and weighed in. The average weight of fish was nearly 10 pounds. Total weight was 4,197 pounds. The largest fish, winner of the competition, weighed 20 pounds 12 ounces. In comparison to a similar derby in 1948, when 352 trout were recorded, weighing 3,301 pounds, the largest fish weighed 21 pounds 8 ounces. The best fishing of 1949 was during May and October.

Press reports indicate that the Gyro Club will discontinue the Kootenay Lake Rainbow Trout Derby after ten years, during which period some 20 tons of Kamloops trout were caught and weighed in. Moreover, countless numbers of large trout were not entered in these competitions, thereby derby records do not give a true picture of large trout taken from Kootenay Lake. From a conservation standpoint, derbies of long duration should be discouraged or banned.

Trout Lake.—Reports indicated that the Kamloops trout fishing and catches were below the average; Dolly Varden remained plentiful; also there was a nice showing of immature trout. Observations carried out August 18th on Trout Creek, the principal spawning-stream, revealed that very advanced fry remained in the creek, and it is quite possible spawning in the upper reaches of the Lardeau River near Gerrard contributes toward restocking of the lake, which is confirmed by the presence of small fingerlings at the foot of the lake over a period of years.

The lakes situated in Kokanee Glacier Park supplied fairly good cut-throat trout fishing, mostly from natural reproduction. The other quite numerous alpine lakes supplied good catches of small trout; also Clure or Murphy Lakes, north of Kaslo, supplied excellent fly-fishing for Kamloops trout up to 6 pounds.

Goat River.—The Kamloops (steelhead) trout fishing below the canyon, was below the average in some respects (this might be attributed to the heavy scouring freshets), although an attempt is being made to improve the spring runs of trout from eyed-ova plantings. The cut-throat trout fishing above the canyon and towards the upper reaches was well up to the average. Meadow Creek, a tributary, produced good catches of Eastern brook trout under very favourable conditions for that species of trout.

Tam O'Shanter (Plaid) and Baker Lakes, Crawford Bay region, and Arkansas, Devil's Hole, Bayonne, and Panther Lakes were not fished sufficiently to balance with the food supplies. Good fishing is also available in St. Almo Lake, resulting from up-stream migration from Devil's Hole Lake.

East Kootenay Waters

Reports disclosed that trout-fishing improved in few lakes in the Cranbrook district.

Moyie River (Below Lakes).—Running parallel to the highway, it supplied good fly-fishing for cut-throat, Kamloops, and hybrid trout for the numerous resident and non-resident fishermen. Moyie Lakes produced fair catches of Kamloops and cut-throat trout, but not in proportion to the numbers of trout planted. The lake lacks good spawning-grounds and restocking is necessary.

Smith Lake.—This productive lake supplied some excellent trolling and fly-fishing for Kamloops trout up to 14 pounds. No doubt maintaining the natural normal levels of the lake under licence and improvement by the organized sportsmen have contributed to the improvement of angling.

Monroe Lake.—This lake is becoming important for summer homes and recreational purposes. The cut-throat trout fishing remained fairly consistent. Horseshoe, Mirror, Peckhams, Garbut's, Rock (Stevens), Quartz and New Lakes also continued to supply average catches of Kamloops trout from plantings of fry and small fingerlings.

Premier Lake.—Was well patronized by the Kimberley anglers, who have taken a great interest toward road improvements and camping facilities at the lake. The Kamloops trout and kokanee fishing remained fairly good, being taken by fly and troll. St. Mary Lake and River and tributaries were also fished steadily by resident anglers for native cut-throat trout, which continued to supply fair fishing, with an occasional Kamloops trout taken in the river.

Skookumchuck River.—The stretch of river extending from the Kootenay River to the falls supplied fair cut-throat trout fishing, which at certain periods are migratory to Kootenay River. Restricted access over the new logging road leading to the upper reaches of the river is the subject of some controversy between the operator and the anglers, and it may be necessary to close the portion of stream affected for all fishing.

Bull River and Tributaries.—These streams supplied usual fair angling for native cut-throat trout. The repair and extension of the old logging road leading to Camp 6, will, when completed, encourage more stream fishing and a heavier drain on the trout populations.

Fernie District Waters

Manistee, McBain's (Rosen), Loon, and Surveyors Lakes supplied average catches of Kamloops trout varying to 12 pounds. Tie Lake also yielded some nice catches of Kamloops trout up to 7 pounds. This was welcome information after doubtful results from fry plantings.

Silver Springs Lakes.—Since the presence of shiners, trout-fishing in the first and second lakes has seriously deteriorated; the planting of fingerlings in place of fry is necessary. North Star Lake failed to produce any Kamloops trout so planting of fry or fingerlings will be discontinued.

Edwards Lake.—This is one of the best lakes in the district and supplied the usual catches of Kamloops trout by fly and troll. Logging operations in the Gold Creek area have resulted in more fishing in Cherry Lake, also in Seven and Nine Mile Lakes, and provisions will be made to stock the latter lakes.

Elk River and Tributaries.—After the high water, average catches of cut-throat trout were taken by the numerous resident and increasing non-resident anglers from Alberta. With the improved highway from Lethbridge and extension of the forestry road up the Elk Valley and the power-line right-of-way under construction by the Calgary Power Company, the future of the cut-throat fishing in the upper reaches of the river is a serious matter to contend with and it may be necessary to afford additional protection to the trout in the way of closures.

Grave (Emerald) Lake.—There was an excellent showing of spawning kokanee, which were planted as a forage fish. Kamloops trout fishing was fair for trolling and some fly-fishing. Barnes Lake, near Corbin, is overpopulated with cut-throat trout; more fishing is desirable to counterbalance the food supplies.

Windermere District Waters

These waters supplied the average trout-fishing.

Columbia Lake.—Increased interest was shown due to more boats being available. Fair catches of Kamloops trout were taken. One party took seven nice trout in two days up to seven pounds in weight. In the course of fishing, over 150 squawfish, weighing from 1 to 7 pounds, were taken on the troll in two days.

Lake Windermere.—This lake yielded average catches of Kamloops trout throughout the season. The fishing is a major attraction to the quite numerous vacationists, and with the possible reduction of coarse fish, the trout supplies should steadily improve, and these remarks also apply to Columbia Lake.

Paddy Ryan Lakes.—The four small lakes did not produce the desired catches of cut-throat trout due to the presence of the large population of shiners. Cartwright and Lillian Lakes provided some good Kamloops trout fishing by fly and troll from yearly plantings of fry.

Dunbar, Twin, Bott, Lead, Queen, Halls, and Jeffrey Lakes supplied fair fly-fishing for cut-throat trout. Due to the extreme fluctuation of water-levels in Baptiste Lake, drawn off for irrigation, it may be necessary to discontinue cut-throat trout fry plantings. Deer and Blue Lakes produced the average catches of Kamloops trout. Both lakes are accessible by secondary roads.

Magog and Cerulean Lakes.—Situated in Mount Assiniboine Provincial Park, these lakes supplied excellent fly-fishing for cut-throat trout. In course of scientific experiments on delayed fertilization of cut-throat trout eggs, Og, Elizabeth, and Gog Lakes were each stocked with 15,000 cut-throat trout green eggs. These lakes contained no fish before planting. Similar allotments of green eggs were planted in Sunburst and Wedgewood Lakes on July 3rd, 1950.

Columbia District Waters

Glacier water conditions restrict trout-fishing.

Blackwater Lakes.—These general utility lakes adjacent to the Trans-Canada Highway supplied the usual good fishing for rather small rainbow trout.

Bush Lakes.—These lakes do not produce many Kamloops trout over 2 pounds. The catches have improved from yearly restocking with eyed eggs, but not in proportion to the number of eggs planted. However, due possibly to water and feed conditions, a good percentage of trout move out of the lakes into the Columbia River and work their way up-stream to Lake Windermere. At certain times, good specimens of trout are taken from the river toward the early fall.

Cedar and Wiseman Lakes.—From yearly restocking the lakes produced fair catches of Kamloops trout, also some cut-throat from the latter lake, and in Wiseman and Cedar Creeks.

Summary of Hatchery Operations

Summerland Trout Hatchery.—This hatchery is operated for waters of Okanagan and Similkameen Districts, etc. The newly constructed hatchery fulfilled all expectations, with an abundant and excellent water-supply of approximately 50° F. throughout the year.

The recorded number of Kamloops trout fingerlings (172,957) carried over from the year 1948 and retained in the hatchery troughs were subsequently liberated in six lakes, between March 12th and May 13th. Total distributions were 171,721, varying from 120 to 35 per pound weight count.

To relieve the congestion at Beaver Lake Hatchery, 872,000 Kamloops trout green eggs were shipped to Summerland, plus 100,000 eyed eggs; total, 972,000. Resultant advance fry, 307,000, 1¼ inches in length, were liberated in twenty-six lakes and streams, and 238,042 fingerlings, at 517 to 1 pound and less were liberated in eight lakes, with the transfer of 206,000 fingerlings, at 517 to 1 pound, to the four hatchery rearing-ponds.

Allotment of 165,000 Eastern brook-trout eyed eggs were shipped from Nelson Hatchery February 4th, 1949. Resultant fingerlings liberated in seven lakes and streams totalled 115,655, varying from 398 to 526 to 1 pound.

Scientific Experimental Plantings.—Five lakes on the One Mile Creek system. Princeton, 50,000 advanced fry and 6,249 Kamloops trout fingerlings, 2¼ inches in length.

Nelson Trout Hatchery.—Hatchery operations are for waters of East and West Kootenay and Boundary Districts. Kamloops trout eggs received from Beaver Lake Hatchery, 465,000. Penask Lake Hatchery, 1,000,000 eyed eggs; planted in twenty-two lakes and streams, 785,000; resultant fry, 404,170, in twenty-one lakes and streams. Received from Gerrard Hatchery, 70,000 eyed eggs; resultant advanced fry liberated in the hatchery rearing-ponds, 67,300. Beaver Lake advanced fry, 67,110, in ponds.

Eastern Brook Trout.—Collection, 500,000 eggs; disposal, 165,000 eyed eggs to Summerland Hatchery. Resultant fry liberated in ten lakes and streams, 292,240; as carried over from year 1948.

Collection of Eastern brook-trout eggs, October–November, 1949, Boundary Lake, Nelway, 560,000 under incubation in hatchery.

Kokanee eyed eggs received from Gerrard Hatchery, 1,960,000. Disposal: Planted in twenty lakes and streams; 20,000 eyed eggs for scientific experimental feeding; and pending 50,000 fry for two lakes (Echo and Sugar Lakes) for early spring liberations.

Kaslo Trout Hatchery.—Approximately 72,200 Kamloops trout fingerlings (Gerrard stock) carried over in troughs from 1948, from 3 to 4 inches in length. Liberated in Kootenay Lake, March 31st, April 6th, 1949. Subsequently hatchery taken over for scientific purposes until September, then closed down.

Gerrard Trout Hatchery.—Operations from April 1st to first week in November; approximate collection of eggs, 225,000. Disposal: 100,000 for incubation in hatchery; resultant No. 1 fingerlings, 97,765, liberated in nursery waters of upper reaches Lardeau River, September 8th; 70,000 eyed eggs shipped to Nelson Hatchery for rearing-ponds; approximately 15,000 eggs used for scientific purposes.

The light run of parent trout and rising water-flow curtailed ova collections, which to some extent were offset by natural reproduction in the river below Canyon Creek due to clear-water conditions which occasionally happens.

Cranbrook Trout Hatchery.—Operated seasonally. Cut-throat trout eggs collected at Fish Lakes, 494,000. Test collections at Dunbar Lake, 10,000; Holgrave Lake, 4,500 eggs; total, 508,000. Disposal: 323,000 eyed eggs planted in seven lakes, 134,570 fry planted in eleven lakes and streams, and 20,000 fry for Fernie rearing-ponds.

Hybrid Trout.—Eggs collected at Monroe Lake, 49,000; resultant eyed eggs and fry planted in five lakes and streams, 43,070.

Kamloops Trout Eyed Eggs.—Received from Beaver Lake Trout Hatchery, 320,000; Penask Lake Hatchery, 350,000. Disposal: 267,505 eyed eggs planted in six lakes, 384,570 fry planted in thirty lakes and streams; no fingerlings were raised. Hatchery closed down August 15th to permit the construction of the new hatchery on site of temporary hatchery.

The collection of cut-throat trout eggs at Fish Lake was the lowest on record since the inception and test collection of the year 1923, 1,000,000 eggs being collected in 1948, as compared to 1,637,000 eggs collected in 1947. To supply the increasing demand for cut-throat eggs, trial collections were undertaken at Dunbar and Holgrave Lakes, Windermere district, for proposed operations in 1950.

Summary of Trout Rearing-pond Operations

Summerland Hatchery Rearing-ponds.—A battery of four ponds was completed and commenced operations. During October and November, 206,000 Kamloops trout fingerlings, 517 to the pound, were liberated, approximately 51,500 to each pond. Four subsequent liberations of large fingerlings were made early in the spring of 1950. Indications were that the fish were thriving throughout the winter under ideal water temperatures of 49 and 50 degrees F.

Nelson Hatchery Rearing-ponds.—The allotment of 51,360 Kamloops trout fingerlings (Gerrard stock) carried over from year 1948 and retained in No. 1 circular pond were liberated April 13th to 15th in the West Arm of Kootenay Lake: Sunshine Bay, 800; Crescent Bay, 800; Balfour, 800; Procter, 800; Harrop, 1,530; total, 4,720; from 6 to 11 inches in length and marked with the removal of adipose and left ventral fins. Allotment of eyed Kamloops trout eggs received from Gerrard Hatchery June 12th, 1948, 150,000; resultant fingerlings liberated May 9th to 18th, 1949, as follows:—

From No. 2 pond—		
Kootenay Lake, Shutty Bench	8,400	
Kootenay Lake, Kaslo Bay	8,190	
		16,590
(Weight count, 210 to 1 lb.)		
Transferred to No. 1 pond		2,000
From No. 4 pond—		
Kootenay Lake, Queens Bay	10,180	
West Arm of Kootenay Lake, Harrop	10,080	
West Arm of Kootenay Lake, Sunshine Bay	3,080	
		23,340
Transferred to No. 1 pond		1,000
Champion Lakes, Fruitvale		2,500
(Weight count when fish released (83 lb.), 280 to 1 lb.)		

From No. 5 pond—		
Kootenay Lake, Kaslo	4,200	
Kootenay Lake, Mirror Bay	8,400	
Kootenay Lake, Queens Bay	10,640	
Kootenay Lake, Balfour	8,400	
		31,640
(Weight count when fish released (113 lb.), 280 to 1 lb.)		
Transferred to No. 1 pond		2,000

Total fingerlings, 5,000, for No. 1 circular pond, for liberation early in spring of 1950.

As the battery of five new concrete ponds was not entirely completed, it was necessary to forego any attempt to raise fingerlings therein.

Kaslo Hatchery Rearing-ponds.—These ponds were not operated, except for scientific experiments with minnows and shiners.

Princeton Rearing-ponds.—These ponds were not operated by the organized sportsmen of Princeton.

New Denver Rearing-pond.—The continued pollution of Carpenter Creek, resulting from the operations of the Zincton Mines, Limited, prevented operations by the local organized sportsmen of New Denver.

Fernie Rearing-ponds.—The Trites ponds were operated fairly successfully, except the improvements to the No. 3 lower pond which were not completed, nor could the pond be drained to liberate the resultant cut-throat trout fingerlings raised from 15,000 fry. The semi-natural pond on Brewery Creek raised a fair number of small cut-throat trout fingerlings from the 5,000 fry allotted to the pond. The fingerlings were raised for the Elk River, and ponds were operated by the organized sportsmen of Fernie and district.

Trout Foods Used, 1949

Summerland Hatchery.—Raw beef liver, 9,871 pounds; raw pork liver, 1,541 pounds; canned herring, 4,319 pounds; rice polishings, 1,215 pounds; skim-milk, 632 pounds; plankton, 9 ounces; Red-Gil trout food, 5½ ounces. Supplied to Revelstoke: Beef liver, 260 pounds; pork liver, 81 pounds; milk, 8 pounds. Supplied to Kelowna: Beef liver, 134 pounds; pork liver, 45 pounds.

Nelson Hatchery.—Beef liver, 3,740 pounds; powdered milk, 200 pounds; stripped kokanee, 3,000 pounds. Canned herring shipped to Gerrard Hatchery, 427 pounds, and to Cranbrook Hatchery, 50 pounds.

Transfer of Natural Foods from Waterton Lakes to Kootenay Lake.—For experimental purposes on October 12th, nineteen fry cans of fresh-water shrimps (Mysis and Pontoporeia) were released in waters of Crawford Bay, Kootenay Lake.

Miscellaneous Subjects

Salvage and Transfer of Trout.—Fairly normal water conditions throughout the Division prevented any serious losses of trout, except in Big and Little Sheep Creeks where some Eastern brook trout became stranded from the lack of water and perished, which was unavoidable.

Destruction of Coarse Fish.—With the exception of coarse fish taken by fur farmers under licence, no other operations were conducted in view of a scientific study of the coarse-fish situation and their relationship with sport fish.

Fish-ways.—The four small fish-ways installed by property owners in small dams less than 10 feet in height, situated in the outlet dam of Okanagan Lake, outlet of McBain's (Rosen) Lake, Craig log dam on Alexander Creek, and outlet of Paddy Ryan Lakes, remained in fair condition and working-order.

Obstructions

Lardeau River.—A recently formed obstruction was removed from the river just below Mile 31 to ensure free passage to spawning Kamloops trout from Kootenay Lake to their spawning-beds in the vicinity of Gerrard, and their safe return from the lake. The work was completed with the kind co-operation of the Provincial Department of Public Works. The complete water-flow of the river now flows on the north side of the river and the Handy log jam is now high and dry.

Duncan River.—The Department of Public Works of Canada opened up a 40-foot channel through a major obstruction on the Duncan River approximately 1 mile above Meadow Creek. This will permit navigation and free passage to spawning Kamloops trout to the Lardeau River. It is understood that additional attention will be given to the obstruction during next spring and summer. In the meantime, no obstructions exist on the Duncan and Lardeau Rivers that would impede the passage of spawning fish.

Hydro-electric Developments

Whatshan Lakes.—From investigations conducted, satisfactory arrangements have been arrived at in order to protect sport-fishing interests.

Kootenay River—Partial investigation has been carried out from Newgate to Fairmont in view of proposed dam at Libby, Mont., also possible Canadian dams at Plumbob, Bull River, Torrent, and Fairmont.

Pollutions from Mining Industries, etc.

The continued high prices of base metals, etc., encouraged the operators to step up production, resulting in the increased pollution of certain lakes and streams frequented by fish. The usual attention has been given to this perennial problem, and in most instances we have received co-operation from the managements to prevent serious pollutions, considering the location of the concentrators and very limited suitable ground for impoundment. If the provisions of the " Fisheries Act " were strictly enforced, it is very doubtful if these important major industries could efficiently operate.

Similkameen River.—The steady and extensive operations of the Granby Consolidated Mining, Smelting, and Power Company, Limited, of Copper Mountain, required continued precautionary measures to prevent the escape of concentrator refuse into the river, also the impoundment of ash from the steam-power plant. Similarly, the Kelowna Exploration Company, of Hedley, has continued to take effective measures by impoundment of concentrator refuse, with very satisfactory results at considerable expense in both instances.

Placer Operation.—The Atkinson Dredging Company, of Princeton, operated intermittently on the Similkameen River for gold and platinum. As there was considerable discoloration of the water-flow extending some 50 miles down-stream, aggravated in the spring by freshets scouring bentonite deposits, angling was generally affected, but with no apparent harmful effects on the trout population.

A suction dredge operated on the Similkameen River adjacent to Princeton by T. M. Grety, of Medford, Ore., during the latter part of November, was of short duration, due to a wind-storm, when the dredge became loose and drifted down-stream and was partially destroyed. The suction of fine gravel to a depth of 15 feet from the creek bed did not seriously affect fish life but retarded angling somewhat.

Okanagan River.—The control of waste fuel-oils has been satisfactorily attended to by the Canadian Pacific Railway Company, Penticton, by filtering in concrete sumps installed adjacent to the river.

Columbia River.—A certain amount of refuse continued to enter the river from the major operations of the Trail smelter and fertilizer plants operated by the Consolidated Mining and Smelting Company, Limited, of Trail. Every possible precaution is taken

by the company to prevent the escape of refuse which is considered harmful to fish life after becoming diffused with the water volume of the river.

Sheep Creek and Salmon River.—With the treatment of some 150 tons of gold-bearing ores daily, the pollution of the streams continues unabated by the Sheep Creek Gold Mines Limited, Salmo. With limited and very precipitous ground for impoundment, practically no steps have been taken by the company to prevent pollutions.

Salmon River.—The Canadian Exploration Company, Emerald Tungsten Project, permitted the discharge of concentrator refuse into ponds, the banks of which collapsed, thus allowing quantities of refuse to enter the river, and so far not rectified. This condition has been drawn to the attention of the management on two occasions.

Pend d'Oreille River.—The Reeves MacDonald Mines, Limited, Salmo, commenced concentrator operations on June 24th in treatment of some 500 tons of silver, lead, and zinc ores daily, and it is expected that the operations will shortly be stepped up to treat 12,000 tons of ore per day. A year before operations commenced, the matter of pollution of the river was taken up with the management, but with the exceedingly precipitous nature of the ground to control the refuse, it is very doubtful if much can be accomplished to avoid pollution, although the management has signified its intentions to do so, but so far the pollution continues.

Kootenay River.—The impoundment of concentrator refuse from gold, silver, lead, and zinc ores has been fairly satisfactory in areas prepared adjacent to the river at Taghum. The matter of increasing the capacity of impounding grounds has been referred to the management to avoid future possible pollution.

Sitkum Creek, West Arm, Kootenay Lake.—Due to the costs of production and price of gold, the Alpine Gold Mines, Limited, did not resume concentrator operations, resulting in the creek remaining free of refuse.

Kootenay Lake.—The Kootenay-Florence mines, Ainsworth, continued concentrator operations by the treatment of about 100 tons of silver, lead, and zinc ores daily. As there is no available ground for impoundment, the tailings are discharged on the shore of the lake, which results in a slight pollution of the lake in close vicinity of discharge.

Kaslo Creek, Kootenay Lake.—After intermittent pollution of the creek during the year, the Kootenay Belle Gold Mines, Limited, operating the Whitewater mine and concentrator, has completed arrangements to impound the tailings at a suitable location, and so far Kaslo Creek has been free of refuse. Further, I might say that this company has in the past been most sincere in their efforts to avoid pollution, which to some extent might affect fish-cultural operations at Kaslo.

Seaton and Carpenter Creeks, Slocan Lake.—The Zincton mines, operated by the Sheep Creek Gold Mines, Limited, continued operations, with the treatment of approximately 350 tons of lead and zinc ores daily. The placing of a dam on Seaton Creek some distance below the concentrator caused a percentage of tailings to settle, but with very little attention given to the impoundment, the pollution to a large extent continues.

Slocan Lake.—The Western Exploration Company, Limited, Silverton, operated intermittently, with the treatment of some 100 tons of silver, lead, and zinc ores daily from the Standard, Mammoth, and Enterprise mines locally. Due to the location of the mill, the tailings are discharged into the lake, which does not seriously affect fish life in a rather confined area.

St. Mary River.—A certain amount of discoloured water and refuse enters the river from the extensive concentrator operations of the Consolidated Mining and Smelting Company, Kimberley, in treatment of some 6,000 tons of silver, lead, and zinc ores daily. The practical impoundment of refuse has proven satisfactory, and with the exception of extreme low water, fish life in the river remained unaffected.

Toby Creek, Columbia River.—The resumed operation of the Paradise mine on Toby Creek resulted in the construction of a concentrator by the Sheep Creek Gold

Mines, Limited, located at Jackpine. Several months before the mill was constructed, the matter of controlling the resultant tailings from the mill was referred to the management, and with ample space for refuse, the operations so far have been satisfactory from a fishery, water-fowl, and fur-bearing animal standpoint.

Kicking Horse and Columbia River.—The necessary attention given to the waste fuel-oil sumps at Field and Beavermouth by the Canadian Pacific Railway Company has presented serious pollution.

Michel and Coal Creeks, Elk River.—The discharge and impoundment of coal-dust sludge from the washing plants at Michel and Coal Creek has been effectively attended to by the Crow's Nest Pass Coal Company, Limited, Fernie. The discarding of old mine timbers and debris in Michel Creek also was rectified after being drawn to the attention of the management at Michel.

Lumber Industries.—The disposal of sawmill refuse and slash has been satisfactorily attended to by the numerous stationary and portable sawmill operators from a sport-fishery standpoint.

Diseases.—From personal contact and reports from the public and Game Wardens, there was no apparent occurrence of losses from disease or other causes during the year.

Sport Fisheries.—With the increasing fishing pressure and auto travel, and in order to reasonably maintain the supplies of trout in large accessible lakes and streams, it is imperative and essential that provisions be carried out forthwith to raise and liberate more trout fingerlings.

The excellent assistance and co-operation rendered by the organized and individual sportsmen, the Consolidated Mining and Smelting Company, the Canadian Pacific Railway Company, and other Governmental departments is gratefully acknowledged.

"C" DIVISION (KAMLOOPS, YALE, OKANAGAN, CARIBOO, CHILCOTIN, AND SQUAMISH DISTRICTS)

By R. M. Robertson, Officer Commanding

I have the honour to submit herewith my annual report on game conditions in "C" Game Division during the year ended December 31st, 1949.

Big Game

Moose.—The following statistics indicate the extent of big game, principally the moose kill, passing through the Cache Creek checking-station, which largely covers the Cariboo and Chilcotin areas from Quesnel in the north to Clinton in the south, as far west as Kleena Kleene, and east to the North Thompson watershed, an area of roughly 45,000 square miles:—

Non-resident moose kill	641	
Visiting resident moose kill	512	
		1,153
Potential Cariboo resident kill		1,240
Total		2,393

The resident Cariboo kill includes holders of special firearms licences, general firearms licences, guides, Indian families, etc., and allowing for a substantial reduction in the non-success ratio, the above figures would not be at all excessive. The pronounced and widely believed idea that the depletion of our big-game resources is largely due to the presence of non-resident hunters is, to some extent, erroneous. There is, however, a very uneven distribution of non-resident hunters, and most of these are concentrated in this 45,000-square-mile area in a quest for big game, mainly moose.

It is not because there are too many non-resident hunters, but the fact that they are mainly concentrated in a relatively small portion of the Cariboo region which probably

cannot afford too heavy a concentration of outside resident and non-resident hunters. For instance, during 1949 approximately 80 per cent of the moose taken from the Cariboo were killed west of the Fraser River and 20 per cent were taken east of this river. By far the largest concentration of non-resident hunters killed moose east of the Fraser River during the years following World War II.

Moose have been observed in different parts of the Okanagan during the past season, and appear to be increasing to a great extent, especially on the west and east sides of Okanagan Lake.

According to reports from trappers around Lower Bowron River and Indian Lakes, moose appear numerous enough except for a noticeable shortage of calves.

Visiting resident hunters had some success around Quesnel, as the country has not been as heavily hunted as in other game detachments. Overbrowsing of the food supply has been noted, which will eventually result in further movement and possible reduction of the moose population. In the Quesnel Detachment deep snow formed a heavy crust during the early spring, which enabled predators to hunt moose with ease.

No moose were found dead from tick-infestation around Quesnel during the spring of 1949, and few reports were received. According to the Warden stationed at Quesnel, on March 26th a cougar had killed a large bull moose. This animal, which was in very poor condition and covered with ticks, was easy prey to a lone cougar. Very little of the moose was eaten. It is evident that predators play a useful part in the elimination of unfit animals. Moose are reported scarce around the Williams Lake area. Around Kamloops the season was a poor one, due no doubt to unsuitable climatic conditions. Moose, however, are increasing east of the Thompson River as far as the Revelstoke area. Trappers report these animals as wintering well in the Goldstream District and in the Jordan River region. Moose have been seen as far south as Princeton, Penask Lake, and Woodward Valley, and are increasing and extending their range in a southerly as well as an easterly direction. Pemberton, on the Pacific Great Eastern Railway, is another area where moose are reported. As the food supplies diminish, they are forced to extend their range. Wolves invariably accompany moose as they move to new areas.

The following are statistical records of big game passing through the Cache Creek checking-station for the seasons 1946 to 1949:—

Big Game	1946	1947	1948	1949
Bear	50	114	78	117
Caribou	4	10	3	2
Deer	1,058	1,272	1,013	876
Wapiti (Elk)	3	2	1	----
Mountain-goat	16	43	38	45
Mountain-sheep	12	21	7	10
Moose	1,234	1,364	1,173	1,153

Mountain-sheep.—It is estimated that from 150 to 400 mountain-sheep exist in the Taseko Mountain Range. Several days were spent by the writer, accompanied by Game Warden R. H. Haynes, in this region during last summer. The patrol was made to an elevation of 8,000 feet, but few signs of sheep were seen. A further patrol arranged at that time for a winter count was delayed owing to the illness of Game Warden Haynes. A count of mountain-sheep taken during one day's patrol over Moon's Range, Gang Ranch Range, and other areas in proximity, revealed the following numbers: Rams, 6; ewes, 30; lambs, 23; yearlings, 16. A census taken of the sheep during two days at Squilax showed the following: Rams, 13; ewes, 25; lambs, 2. This count was made by Game Wardens H. J. Lorance and J. P. C. Atwood. Twenty-one sheep, mainly from the Cariboo, were taken as trophies in 1947, and ten during 1949. At least three sheep were found dead at Shorts Creek, north end of the Okanagan Valley, after the severest winter on record. These sheep were examined by Dr. F. A. Humphreys, Bacteriologist,

Dominion Department of Hygiene at Kamloops, but owing to discoloration and other deteriorating factors, a thorough analysis was impossible. There were, however, clear indications that these sheep suffered from malnutrition, as there was very little flesh on them. This is not at all surprising considering the low extremes of temperature and possible limited food supplies. It is also reported that eight cougars were taken from the Squilax area during the winter of 1949–50.

It would indeed be a mistake to declare an open season on mountain-sheep in such limited areas as Shorts Creek and Squilax. Their natural habitat is too limited to expect any large increase in numbers. The fencing off of their wintering grounds by agricultural interests has been partly responsible for the stationary population, as little or no increase is reported from year to year.

Caribou.—There is an urgent necessity for a survey of caribou over the entire Division. Not nearly enough is known of the habits of this species, and their numbers are an enigma at present. Where moose and wolves moved in on one area formerly frequented by caribou, those left of the former numbers of caribou appear to have sought refuge in a comparatively safe area a few miles to the west. This information came to light as a result of a lone patrol made by a former lodge-owner in the Kamloops-Cariboo area. At least fifteen caribou were counted, and there is a possibility that there may be greater numbers. Caribou are reported by guides to be on the increase in the Itcha Mountains.

Grizzlies.—Five grizzlies were taken in the Quesnel Detachment during the year, although they are not by any means abundant. In the Revelstoke district very few hunters were unsuccessful in getting a trophy. This district retains its reputation as an attractive field for hunters seeking a trophy under this heading. These animals are numerous around Bowron Lake and also in the Lillooet district, especially so around the head of Texas, Whitecap, and Bear Creeks. In the Taseko Mountain area, numerous grizzlies were seen last summer. Seventeen grizzlies passed through the Cache Creek checking-station in 1947 and twenty-one during 1949.

Mountain-goat. — The Revelstoke Detachment reports that these animals range around Albert Canyon and also in the La Forme Creek area. Sixteen goats were taken out of the Cariboo in 1946 and forty-five in 1949.

Deer.—Deer appear to be decreasing in the Lillooet district. The past season gave no indication of heavy kills. The comparatively mild fall kept the bucks on very high ground. The deer situation throughout the Division is normal, and the recent mild weather served to protect them against unusually heavy slaughter.

Wapiti (Elk).—Wapiti are on the increase around Kelowna. They seem to have spread farther afield north of Adams Lake. None passed through the Cache Creek checking-station during the open season.

Fur-bearing Animals

Low prices for fur have had a good effect on fur-bearers. The quantity of fur trapped was indeed limited. Nearly all Wardens report a success of beaver-tagging regulations, which are popular with trappers. All Wardens have a record of the previous numbers of beavers taken, and they use these figures as a yardstick in determining the numbers of tags to issue.

Nevertheless, Wardens, as far as time permits, and it is indeed limited considering their manifold duties, should have some idea of the extent of the beaver population on most of the more important trap-lines. Only long acquaintance with these conditions can enable a Game Warden to judge how well trappers are looking after their fur, especially beavers. It is manifestly impossible for a Warden in charge of a Detachment to cover even remotely by means of inspection the numerous trap-lines within his Detachment boundaries.

Many Detachments cover an area of from 4,000 to 7,000 square miles. This work entails long, strenuous patrols, and it would seem that men especially engaged for this

work should be considered. Natural resources of this kind are well worth insuring by means of detailed, periodic check-ups. To do this as it should be done would entail the services of men especially detailed for this work. A survey of trap-lines involving a study of beavers was carried out during the summer months by university students. It is hoped that something in the line of a better fur-management programme will evolve from these studies.

Upland Game Birds

European Partridge.—These birds are on the increase in the Merritt and Vernon areas. Very few were taken around Kamloops. At Wells, it is reported that willow and Franklin grouse supplied good hunting, and were more numerous than in previous years. Willow, Franklin, and blue grouse have increased in numbers in the following districts: Merritt, Williams Lake, Vernon, Quesnel, Lillooet, Kamloops, Revelstoke, Kelowna, and Salmon Arm. This is the first occasion in many years that we have received independent reports of an increase in grouse everywhere. One possible exception to this is reported from the Chilcotin country, where the cyclic increase does not apply in the same degree. It has been stated that the upward trend of cyclic increase in grouse comes at a later period. This statement is interesting, but unfortunately comparative records may not be available from the same source of information for future reference owing to the possible transfer of the Warden.

In the Kelowna area an increase in California quail is reported.

Migratory Game Birds and Non-game Birds

Ducks have increased in the Merritt, Williams Lake, Vernon, Quesnel, Kamloops, Kelowna, and Salmon Arm areas. The long season and favourable conditions gave better satisfaction to the hunters generally. In most parts of the Interior, with the possible exception of the Northern Cariboo, the year was a dry one, with rivers and creeks at their lowest ebb during the late summer. Due to open weather, ducks were late during the fall migration. Fifteen hundred mallards wintered around Shuswap near Chase on the Thompson River. The principal attraction was roughly 30 acres of standing corn which had not been harvested. The winter of 1949–50 was one of the severest on record. Ducks rising from open water had balls of ice form on their feet during blizzards, and a few were found dead with their feet in this condition.

The only winter record of whistler swans in the Southern Interior is on the Thompson River east of Kamloops. From fifty to seventy-five winter here every year, but this year the number was increased to approximately 150, with a substantial showing of cygnets. At times, the severe weather made it impossible to keep track of their movements. Small numbers, frantically searching for open water, which was rapidly freezing over, were seen on Shuswap Lake during heavy blizzards. I am afraid that many of these swans died from the results of adverse weather conditions. A check-up as to their whereabouts and condition will be made during the spring of 1950.

Predatory Animals and Noxious Birds

The following predators were killed by twelve Game Wardens and three predatory-animal hunters:—

Bears	31	Eagles	47
Cougars	31	Hawks	268
Coyotes	516	Owls	107
Wolves	18	Magpies	744
Crows	1,401	Bobcats	11

The number of complaints of damage to stock was not as heavy this year as in previous years. What appears to be the peak of a cyclic increase in field-mice took place in 1949. The increase was so remarkable, and the reports of damage to fruit-

trees so numerous, that a resolution was passed by the Associated Fruit Growers of the Okanagan asking the Government to discourage the shooting of hawks, owls, crows, and magpies, etc., some of which prey on field-mice.

It is true that a predator campaign has been in steady progress for years, and has been encouraged through Governmental channels at the request of game protective associations. It is difficult to say whether such an apparent cyclic increase would be controlled to normal proportions through the limitation of predator control. We have met many farmers in the past who have been quite outspoken against indiscriminate slaughter of hawks, owls, crows, and magpies, etc., and I feel that their requests and comments should not be passed over since it concerns their own property and its protection.

Predator control requires more scientific consideration, and I am glad to learn that steps toward this end are now being taken, and that a well-balanced plan of action will be shortly formulated.

Wolves this year were not as much in the limelight as formerly, and fewer reports of damage were received. Guide Roy Hargreaves, of Mount Robson, in the north-eastern part of this Division, blames wolf predation for the decrease in big game in certain districts surrounding Mount Robson.

Game Protection

In the matter of prosecutions, the following statistics are for " C " Game Division: Prosecutions, 245, with 5 dismissals.

Complaints have been made in the past that fines for serious violations under the " Game Act " and regulations were far too light, but recently severe fines have been imposed on particularly bad offenders.

While road inspections are necessary, it is felt that the examination of hunting camps should not be overlooked. The concentration of non-resident hunters demands additional enforcement protection.

Game Propagation

The following are the beaver liberations from the Bowron Lake Game Reserve during the year 1949:—

Place Liberated	Number Liberated
Allen Fletcher, Smithers	2
A. J. Harrison, Wistaria	2
J. Gray, Prince George	2
F. C. Hooker, Horsefly	2
Fritz Van Horlick, Squamish	2
Herbert Cullis, Revelstoke	2
William Dunlop, Barriere	4
Total	16

Game Reserves

Bowron Lake, Yalakom Reserve, and numerous closed areas of lesser importance are still in operation. Requests have been made in some districts for sanctuaries. Since these areas are small and in settlements close to farming and other centres, they were not considered suitable.

Fur Trade

A regular check-up of fur-buyers' records at Vancouver has now been put into effect, thus providing better enforcement of the trapping regulations. Only one official book should be kept by each fur-buyer. Travelling fur-buyers use a substitute note-book in some cases, with the official book at Vancouver or elsewhere.

Registration of Trap-lines

This system, now long established, is a success. Liaison between the Department and the trapper, and especially the biologist representing the Department, should be established to encourage better fur-conservation. This final step would be the culmination of a long-needed plan which would cover every operation from trap to marketing the produce.

Registration of Guides

The problem of registered areas in the form of individual hunting-grounds is still a very contentious one. Practically little or no reduction in the number of guides has taken place. To give some idea of the congestion which was evident before we put this system into effect, we have taken 100 square miles as a convenient yardstick. Apart from a slight increase in the area during 1949, twenty-two guides operated within this block. The following figures show the kill of moose taken by these guides from 1946 to 1949, inclusive: 1946, moose, 114; 1947, moose, 112; 1948, moose, 44; 1949, moose, 30. In 1949 thirty hunters were successful, while our records show that fifty-three were unsuccessful in this area. That is, out of a total of eighty-three hunters thirty took moose, or 36.14 per cent hunters were successful, which gives indication of a relative reduction, and need for serious biological consideration. The factors apparently responsible are as follows:—

(1) Food shortage.
(2) Overcrowding of guides and hunters; uneven distribution.
(3) Severe winters and tick-infestation.
(4) Possible enforced movement of big game through predator and hunter pressure.

This example confirms to some extent the fact that 80 per cent of the moose kill took place west of the Fraser River during the open season, according to the Cache Creek records. The greater moose population drew hunters to the western portion of the Cariboo.

A determined effort should be put forth to prevent too many guides from operating in limited areas, especially where big game exist. Moose cannot last forever as a yearly crop where too many guides operate and feed becomes scarce. Mountain-sheep in these limited areas will be a convenient target once the scarcity of moose becomes apparent.

Special Patrols

A special patrol to the Batnuni Lake country to attend to several complaints and to interview Indians was made by Game Warden W. J. Hillen, accompanied by Constable G. Hacking. The work was carried out without much difficulty or hardship.

A special patrol was made by Inspector Robertson, accompanied by Game Warden R. H. Haynes, to the Taseko Mountain area on a general survey of game conditions, especially mountain-sheep. Grizzlies were seen, but moose and deer were scarce. Little indication of large numbers of sheep were observed. Mountain-sheep in this part of the country do not winter in the Churn Creek basin as do the Big Creek sheep. Most of the Taseko mountain-sheep winter on the wind-swept slopes at higher elevations, and in the Yohetta Valley. Our patrol took us to the 8,000-foot level and into areas where sheep were previously reported. Little sign of these animals was seen. A winter count was planned, but had to be given up due to severe winter conditions and the illness of the Warden chosen for the task. An attempt will be made next winter to secure some idea of the numbers alleged to exist in that district. One guide, familiar with the areas, says there are around 400 sheep in the vicinity of Taseko Lake and Yohetta Valley.

Hunting Accidents

There were no hunting accidents in " C " Division in 1949, the first time this has occurred since 1931.

Summary

Only limited success attended the efforts of hunters in the field in search of big game, due to unfavourable conditions and lack of snow. In fact, taken as a whole, in the more settled districts hunters were far from satisfied with results obtained. It was, in one sense, just as well it turned out that way as some cold-storage plants had little room for game.

Ducks and grouse were better established, and hunters enjoyed shooting of a nature more resembling that of past years. The winter of 1949–50 will long be remembered as one of the worst on record. Blizzards with below-zero temperatures were common in January and, combined with snow and snowslides, almost stopped the movement of big game.

One fortunate feature, in many places, was the lack of a crust on the snow, which gave big game a chance to move with greater freedom when necessary. Mountain-sheep came down to lower elevations and few died from malnutrition. Even bobcats were seen in greater numbers along lake-shores and on highways, which seemed to indicate a lack of food. Snowy owls were observed in normal numbers, but large numbers were reported as far south as Illinois in the States, which gave vent to the belief that lemmings and other similar food-supplies were on the decline in their natural habitat to the north.

The whistler swans remaining along the Thompson River and large numbers of mallards farther east had tough going during January, and small numbers of these swans were seen flying low in the teeth of winter blizzards in a frantic search for food and open water. Little could be done for the swans, as they seldom remained for any length of time in one place.

The guide situation is giving us considerable concern, as we have too many operating in some areas. The non-success ratio this year seems to have increased, especially east of the Fraser River, in the non-resident quest for big game, principally moose.

West of the Fraser one travels over comparatively virgin country, a great deal of which cannot be reached except by aeroplane or pack-horse. The hunting there should continue much longer, provided the food-supply for moose lasts.

It is true that moose east of the Fraser River were continually on the move, especially in areas similar to the one quoted in this report. West of the Fraser River, moose had greater freedom of movement without the same heavy hunting pressure in the more inaccessible portions. We have taken precautions in the Chilcotin district to prevent overcrowding of guides.

In conclusion, our thanks are extended to the Forestry Department, under Colonel Parlow at Kamloops, for assistance in maintaining contact with our men in the field through short-wave radio. The Water Rights Branch has been instrumental in helping in a variety of ways, and thanks are extended to A. G. Hatton for this assistance. To the Provincial Police, under Inspector Mansell, we are indebted for assistance rendered in the course of our duties.

Game associations have also been instrumental in helping officers in this Division, all of which has been greatly appreciated.

"D" DIVISION (ATLIN, SKEENA, OMINECA, PRINCE RUPERT, FORT GEORGE, PEACE RIVER, AND YUKON BOUNDARY DISTRICTS)

By W. A. H. Gill, Officer Commanding

Big-game Animals

Moose.—Approximately the same number of non-resident hunters visited this Division as in 1948. A number of moose killed were found to be infected with tapeworms and in many cases they were very thin. Ticks are also a noted menace in this Division.

The 1949 winter has been very suitable to moose, the snow being deep and powdery, making travel very easy for them and very difficult for predators. All moose seen during the winter have been in fine condition and a great many more calves have been noticed than in past years.

On one direct air flight along the Nechako River from Vanderhoof to Ootsa Lake 102 moose were counted. On three different flights in the Tweedsmuir Park circle area over 100 moose were counted each day and all were in very good condition.

From reports received, it appears that the moose population is decreasing steadily north of the 56th parallel, and south of it they are holding their own, if not slightly increasing. I have examined the marrow in several leg bones of moose killed this winter and have found the marrow a nice clear colour with no pinkish tint, which indicates that moose are not suffering from malnutrition.

Deer.—These animals are not plentiful anywhere in this Division, although an increase has been noted at Telegraph Creek, Prince Rupert, Pouce Coupe, Burns Lake, and in the Smithers areas.

I believe, in the interests of conservation, the limit should be cut to one buck throughout this whole Division.

Caribou.—These animals are very scarce except in the area north of the 56th parallel, where there are still a considerable number. Large bands are also reported in the Cold Fish Lake area.

Black and Brown Bear.—These animals are still very plentiful and have caused a great deal of damage, according to numerous complaints received from farmers and cattlemen. Predatory-animal Hunter Denison destroyed forty-nine black and brown bears. During one night, G. Striegler, of Vanderhoof, lost five head of cattle, two being three-year-olds and two yearlings. In three days, twelve bears were snared at carcasses of these animals.

Owing to the poor berry crop this year, the bears were very thin when going to den, and it is believed a great number will not survive this very severe winter. In view of this, I feel that each hunter should be limited to three bears per season.

Grizzly Bear.—Sportsmen obtained a lot more of these game animals than in previous years. This, I believe, was due to natural feed conditions, as a large number of grizzly were taken at moose kills along the rivers. In past years, the grizzly did not seem to bother with the offal left at a moose kill. This year, every kill was cleaned up in a very short time and grizzly tracks were present in practically every instance.

Mountain-sheep.—Mountain-sheep are still fairly plentiful north of the 56th parallel. In the Sheep Creek Pass area, near McBride, they are very scarce, and I feel that the season should be closed south of the 56th parallel to allow these animals to increase or otherwise they will be reduced in numbers to the point of extinction.

Mountain-goat.—These animals are still plentiful through the Division wherever the terrain is suitable. I believe a record billy-goat head was taken in the Smithers area by a non-resident hunter, E. W. Haase, of Ney, Ohio, guided by Allen Fletcher, of Smithers. The base circumference of each horn was 6½ inches. The left horn measured 11⅞ inches and the right horn 12 inches in length.

Fur-bearing Animals

Marten.—There is no noticeable change in the numbers of marten, except in the Lower Post, Atlin, and Telegraph Creek areas, where it is reported they decreased greatly in 1948 and have not recovered to any extent. Over the rest of the Division they are holding their own. Due to low prices in the fur market, very few trappers have gone after these animals and it is felt this will give them an opportunity to build up.

Beaver.—Beaver are increasing throughout the whole Division and there is no doubt the population is far greater than it has been in the past fifty years. This is, I believe, due to trappers realizing the value of not overtrapping these animals. The beaver-tagging regulations are also assisting the trappers to build up their beaver areas, as it is much harder for poachers to dispose of beaver pelts illegally taken.

The Department of Indian Affairs should be encouraged to set aside more beaver preserves in areas wherein there are large numbers of Indian trappers, as these are the only areas now where the beaver are not plentiful.

It is hoped that live-beaver traps will be supplied this Division, as several complaints are received each year of beaver causing dangerous flooding conditions to railway tracks and highways. By the use of such traps, beaver could be removed to more suitable areas instead of having to destroy them, as in the past years.

A sick beaver was found at Beaverly Creek near Prince George and was shipped to Dr. Ian McTaggart Cowan, who found it had been suffering from bacteria of the genus shigella, the first time such a disease was known to attack a beaver. The rest of the colony seems to be healthy.

Fox.—If any of these fur-bearers are taken, it is only accidental, as the value of the pelt is so low the trappers do not bother skinning them. They are plentiful throughout the Division.

Mink.—These fur-bearers are on the increase throughout the Division. Only a few trappers have been active this fall and each of these obtained a larger catch of mink than in the past several years.

Fisher.—There was a definite increase in the fisher population in 1948, but during 1949 no noticeable increase has taken place. However, due to the over-all low price of pelts, it is felt these animals will increase, as they are not being heavily trapped.

All other fur-bearers are reported to be quite plentiful and no doubt are increasing by the lack of interest of trappers due to the prevailing over-all low prices.

Upland Game Birds

Pheasants.—Forty-eight of these birds were again released in the Vanderhoof area and, from personal observation, they are doing very well. Farmers in the area are showing a great interest and are doing everything possible to protect them.

Three broods were counted from birds released in 1948 and were found to be excellent broods, there being twelve, thirteen, and fifteen young. I would recommend that at least 100 birds be liberated in this area in 1950.

The pheasants released in the Fort St. John and Pouce Coupe districts are reported as holding their own, and it is the wish of the local rod and gun clubs that another allotment be released in these areas during 1950.

Grouse (Willow).—These birds are very plentiful in all areas except Prince Rupert and Lower Post. A great many birds were taken during the open season. However, this did not appear to make any noticeable difference in their numbers. I believe we should raise the daily bag-limit to six and allow a six-week season, as there is no doubt these birds are on the increase and I feel they should be taken by sportsmen rather than by disease.

Grouse (Blue).—These birds are very scarce. Practically no blue grouse were taken in this Division this year.

Grouse, Franklin (Fool Hens).—These birds, plentiful in previous years, appear to have been replaced by willow grouse. They have decreased very rapidly.

Prairie Chicken (Sharp-tailed).—These birds are also increasing, but due to their habits are all concentrated in small areas.

Migratory Game Birds.—Both ducks and geese are found in larger numbers in this Division. They are feeding in grain-fields a great deal more than in past years and, consequently, they remain in these areas longer, and the sportsmen secured more than in past years.

Destruction of Vermin

Timber Wolves.—There are still far too many wolves in certain sections. A very heavy toll of moose was taken by wolves in the spring when the deep snow had a hard crust. This enabled the wolves to travel with ease, whereas the moose had a very hard time making progress. However, this fall and winter, conditions have been reversed. It has been practically impossible for wolves to travel due to very deep, dry, powdery snow. This type of snow does not appear to hinder the moose whatsoever. Predatory-animal Hunters Denison and Harrison have produced very good results and have cut down the wolf population to where they are no longer a major menace in areas that can be reached by our present mode of travel.

It is hoped that by the use of aircraft we will be in a position to reach the heavy concentration of wolves in the remote areas, where they are reported as destroying large numbers of caribou and sheep.

Coyotes.—They are plentiful throughout the southern part of the Division, but I do not believe they are a particular menace to any of our game. A considerable number are being presented for bounty, and it is felt that a decrease in their numbers will be seen next year due to the very deep, powdery snow and the year-round bounty.

Magpies and Ravens.—These birds are greatly on the increase in this Division. Magpies were first reported seen at Lower Post in 1947 and very few were found in Pouce Coupe and Fort St. John areas four years ago. Now they are quite plentiful.

Eagles.—These birds are destroying a considerable number of swans in the areas where the trumpeter swans congregate during the winter.

Game Protection

At least three more Wardens are required in this Division, as the areas now covered are far too great to make even a pretence of patrolling.

Due to the fact that an increasing number of non-resident sportsmen are travelling by aircraft, we must have more Game Wardens and faster means of transportation if we hope to carry out game protection properly in this vast area.

A game patrol-boat should be stationed in the vicinity of Bella Bella for the purpose of checking fishermen poaching in the many hundreds of miles of Coastal inlets and islands.

Game Propagation

Beaver.—Reports have been received stating that all the live beaver trapped by the Department and supplied to trappers have established homes and are doing well. No report on beaver released on Queen Charlotte Islands.

Pheasants.—Pheasants released at Vanderhoof appear to have become acclimatized and are doing well.

Pheasants released at Fort St. John and Pouce Coupe areas are still surviving, but do not appear to be making any noticeable increase.

Game Reserves

There are only three game reserves in this Division and they are all very small.

I believe we should declare an area, one mile deep, on each side of the Haines Cut-off Road as a closed area for game, and also the same on the new road just opened from the

Yukon border to Atlin. The Nechako Migratory Game Bird Sanctuary at Vanderhoof has proven a great asset to these birds. Many thousands of geese rest on this sanctuary during the spring. Several hundred remain there during the hunting season, leaving each morning and evening for a few hours to feed on the near-by grain-fields.

Fur Trade

Due to the over-all low prices of pelts, a further decline in bag has taken place, except in the case of beaver. These fur-bearers were taken in fairly large numbers, but they are now very plentiful and a far larger catch could be taken without any appreciable loss. A few more mink were taken than in 1948. Squirrels were taken in the usual number.

Registration of Trap-lines

Owing to the vague details on reference maps, it is felt that considerable trouble will arise when aerial-survey maps are put into service. However, by getting adjoining trappers together, I do not believe too much difficulty will be encountered.

There are very few trap-line border disputes, this being due to the trappers respecting their known boundaries.

There are a great many trap-lines in the Hay River area (Fort Nelson Detachment) that have never been registered. Arrangements have been made for Game Warden McCabe and Special Game Warden Villeneuve (interpreter) to meet trappers of the area at Hay Lakes for the purpose of registering trap-lines. Aircraft is being used for this purpose.

Registration of Guides

This is working out satisfactorily. Very few complaints have been received of guides operating outside their boundaries and all established guides appear to be satisfied with the area allotted.

The Fort St. James and McGregor River area are slightly overcrowded but not too seriously.

Guides are being encouraged to form a strong association.

Special Patrols

1. Two special patrols were made by Game Wardens Stewart and McCabe, of Lower Post and Fort Nelson, into Haines Cut-off for the purpose of studying game conditions in this remote area. Some 2,196 miles were covered in these patrols in ten days.

2. A special patrol was made to Fort Liard, N.W.T., by Game Warden McCabe, of Fort Nelson, by aircraft, to check fur-buyers' books for British Columbia fur and to interview Royal Canadian Mounted Police for the purpose of having them seal British Columbia beaver pelts and collect British Columbia royalties.

3. A special patrol was made by Game Wardens Stevenson and Haines, of Burns Lake and Alexis Creek, from Alexis Creek to Bella Coola to gather data on game conditions in the area.

4. A special patrol was also made by Game Warden Stevenson around the circle in Tweedsmuir Park, which lies within the Burns Lake Game Detachment, so that information could be supplied to visitors contemplating such a trip.

Hunting Accidents

I am very sorry to report that ten persons were wounded as result of nine hunting accidents in this Division, of which none were fatal. They are as follows:—

Harry Capotblanc, an Indian, age 16 years, was accidently shot in the leg and thigh by a .22-calibre rifle on May 17th, 1949. Same was only a flesh wound and he has completely recovered.

Leonard Kercher, of Arras, was carelessly shot by Maurice Edinger when he mistook Kercher for a moose. Kercher was wounded in the stomach, but has fully recovered now.

Kenneth Fossum of Prince Rupert, age 13 years, was accidently shot with a .22-calibre rifle while target shooting. Bullet entered ankle of leg coming out instep of foot. Completely recovered.

Howard Lavigne, of Prince Rupert, was accidently shot while pulling shotgun from rowboat. Flesh wound in palm of left hand. Completely recovered.

Thomas H. Wilford, of Prince Rupert, was accidently injured in right eye when the recoil of his rifle caused the telescope sight to break his eye-glasses. Right eye removed, permanent injury.

James Flewin, of Port Edward, was accidentally injured when right index finger was placed in barrel of shotgun to ascertain whether or not there was any dirt in the barrel. Index finger on right hand amputated above second joint.

William Nikolaychuk, of Perow, was accidentally shot in the right thigh when a 30.30 Winchester carbine, carried by Lester Laverne, accidentally discharged. Completely recovered.

James Henry and Thomas Graham, of Fort St. James, were wounded by a 12-gauge shotgun fired by Harold Illebrun when he mistook their dog for a grouse. The shot was fired from about 60 feet, causing numerous lacerations of the face and body, which necessitated them being hospitalized for some time. They have recovered from the wounds with no ill-effects.

George Shires, Prince George, was accidentally wounded when he picked up his shotgun by the muzzle from a boat. The shotgun suddenly discharged, the shot striking his left arm and left side. He was rushed to the Prince George Hospital, where his arm was later amputated above the elbow, after an unsuccessful attempt to save it.

Game-fish Culture

Kamloops trout eggs totalling 455,000 were supplied to rod and gun clubs in this Division as follows: Terrace Rod and Gun Club, 50,000; Bulkley Valley Rod and Gun Club, 60,000; Prince George Rod and Gun Club, 150,000; North Peace Rod and Gun Club, 20,000; Prince Rupert Rod and Gun Club, 100,000; and Ocean Falls Rod and Gun Club, 75,000.

Very good results were obtained by all clubs except the Prince Rupert Rod and Gun Club, which had a total loss of the 100,000 eggs, as shown in Game Warden K. R. Walmsley's report of July 11th, 1949.

Fifty thousand kokanee eggs were planted in Cluculz Creek in the Vanderhoof area on November 8th with very good results.

Two coarse-fish traps were operated by Game Wardens and rod and gun club members of Prince George in West Lake outlet and inlet. Over 8 tons of squawfish and suckers were destroyed.

Summary and General Remarks on Game and Fish

From personal observations at the end of 1949, the moose population in the southern portion of this Division is very satisfactory. The moose calf crop appears to be much larger than it has been for several years past and the moose appear to be in a much healthier condition. In the northern portion, the moose population is not satisfactory and I believe this has been brought about by disease and predators.

Mule-deer are very scarce throughout the whole Division and I would recommend that only one buck be allowed each hunter.

Now that there is a closed season on caribou south of the Canadian National Railway tracks, Jasper to Prince Rupert line, these animals appear to be holding their own. It is felt, however, that wolves are causing heavy loss in the calf crop.

Two predatory-animal hunters are employed in this Division, one permanent employee at Prince George and one part-time (winter) employee at Burns Lake. Both of these hunters have carried out very satisfactory work.

Owing to the number of non-resident hunters who now travel to and from the hunting-grounds by aircraft, and the vast area (approximately two-thirds of the Province) which is covered by this Division, a Departmental aircraft for use in checking hunters, controlling predatory animals, and patrolling the Alberta, Alaska, and Yukon borders for smuggling of pelts of fur-bearing animals and game is very urgently required.

In closing, I wish to thank all Wardens, British Columbia Police officers, and clerks for their very fine co-operation.

"E" DIVISION (MAINLAND COAST NORTH TO TOBA INLET AND LOWER MAINLAND AS FAR INLAND AS NORTH BEND)

By R. E. Allan, Officer Commanding

I beg to submit herewith my annual report covering game conditions in "E" Division for the year ended December 31st, 1949.

Big Game

Deer (Coast or Columbian).—Increased hunting pressure in this Division during the past year does not appear to have greatly affected the stand of deer. A sportsman, hunting diligently, could obtain a deer in almost any district. Wardens, with the exception of those covering North Vancouver and Burnaby-Delta, report good hunting during the past open season. Game Warden H. P. Hughes, of Cloverdale, states in his report that deer are increasing in the Surrey and Langley areas, and he recommends an open season on both sexes in that district. As this area is becoming increasingly cultivated and more crops are being damaged by deer, it might be advisable to follow this suggestion.

Mountain-goat.—Heavy hunting of these animals in the past several years in the easily accessible areas has resulted in their now frequenting the Divisional mountainous reaches. However, anyone willing to do arduous climbing can take one of these trophies. Favoured hunting spots continue to be in the Pitt Lake, Mission, Chilliwack, and up-Coast districts. In the Harrison and Chehalis Lakes areas they are reported to be increasing in number.

Bear (Black and Grizzly).—Black bear continue to be quite common throughout the Division, and although they have been subjected to a continuous open season, they are still a source of considerable nuisance in the settled districts. This Division is not considered a good one in which to hunt grizzly bear. However, a few are taken each year from the isolated mountain areas.

Wapiti (Elk).—Patrols made to the McNab Creek area of Howe Sound indicate that the elk planted at that place have spread over and into the Potlatch Creek Valley. An attempt to obtain an accurate count of the number of animals in the herd was unsuccessful, due to the presence of heavy timber and brush. A further effort will be made this year to obtain the desired information.

Fur-bearing Animals

Muskrats.—These animals continue to be plentiful throughout the Fraser Valley. The easing of restrictions on the taking of them in the dyked areas has alleviated the damage they create without any noticeable decrease in their numbers.

Red Fox.—Although a fur-bearer under the "Game Act," this animal is looked upon as a pest and predator in the area south of the Fraser River between Ladner and Hope. Constant hunting by Game Wardens and organized parties has had no apparent effect in limiting their number. Litter found outside their dens indicates they take a considerable toll of domestic and game birds.

From reports received from Wardens and trappers, mink, marten, beaver, squirrel, and otter appear to be holding their own and are not in any great danger of being overtrapped.

Racoon.—These animals are increasing throughout the whole Division and will, no doubt, continue to do so until such time as their pelts become of higher commercial value. The fur crop for the Division as a whole will probably be down as compared with previous years, due to an unusually severe winter and the resultant difficulty of trapping in heavy icing conditions.

Upland Game Birds

Grouse (Blue).—On the Lower Mainland, blue grouse are scarce. In the more recently logged-off areas of the Coast Mainland and adjacent islands they are still fairly plentiful, and good bags of these birds were obtained.

Grouse (Willow or Ruffed).—Though not plentiful, coveys of these birds are to be found almost everywhere throughout the Division. Game Wardens R. S. King and H. D. Mulligan, of Burnaby and North Vancouver respectively, both report these birds to be on the increase in their districts. Good reports have also been received from the Surrey district.

European Partridge.—Coveys have been observed on Matsqui Prairie, East Chilliwack, Surrey, and Ladner. They have disappeared entirely in the other areas of the Fraser Valley where they were liberated. The covey of California quail at Ladner showed no increase over the year.

Pheasants.—Heavy hunting pressure and ever-decreasing suitable habitat is preventing pheasants from becoming plentiful in the Fraser Valley—the only area in this Division in which these birds are to be found. As previously reported, a step-up in the liberation of farm-raised birds, together with closer co-operation between farmers and sportsmen, appears to be necessary in order to supply the demand for this species of game bird. Of these two, the latter seems to me to be the most important, for without co-operation we cannot expect to improve the existing habitat so very necessary if heavier plantings of farm birds are to be made.

Migratory Game Birds

Ducks.—During the first half of the 1949 split season on ducks, hunting throughout the whole of the Division was the best enjoyed for a good many years. Mallards, pintail, teal, and widgeon were plentiful, together with a fair number of scaup and sea ducks. Early in December, severe freezing weather caused most ducks in the inland areas to move to the open waters of the sea-coast, with the result that exceptionally good shooting was to be had in such areas as the Fraser River delta during the second half of the season. At Pitt Meadows, Mission, Chilliwack, and other up-valley areas, ducks were either scarce or non-existent during that period.

Geese.—Canada geese were observed in their usual numbers and fair bags were taken. Several flocks of Hutchison's geese were observed in the Ladner area. Snow geese (lesser) again were plentiful along the foreshore of the delta, but were difficult to obtain, as they would remain well out at sea until after dark. Many night patrols were made to their feeding-grounds on shore in order to prevent them from being taken by moonlight. Although black brant were fairly plentiful at Boundary Bay, weather conditions were such that very few birds were taken.

Small shore-birds have increased considerably during the last few years, particularly yellowlegs and killdeer plover. Wilson's or jack-snipe continue to be fairly plentiful.

Band-tailed pigeons, except in a few scattered areas within the Division, are not very plentiful. A continued short open season is indicated.

A few swans were observed in several districts of the Division during their fall migration.

Vermin

Cougars, red foxes, and the common house-cat are the most troublesome predators in this Division, and Wardens, with the co-operation of many interested local sportsmen, hunt them continuously.

Crows, wild dogs, hawks, owls, and the occasional wolf and coyote are being kept well under control in most districts. A female coyote brought to the Coast from the Interior of the Province and liberated on Lulu Island by a spiteful game-law violator has not yet been destroyed. A hunter on the island discovered her den last spring and destroyed twelve pups before reporting same. Traps were set, but as expected, she did not return to the den.

Red foxes are reported to be present in the Sturgeon Slough area. No doubt they came across the frozen Fraser River from Langley or Surrey.

Game Protection

With the exception of the up-Coast area, where the services of a Game Warden are greatly needed, the Division has been under constant supervision. An increase in prosecutions is noted for the year in review. As you are aware, the opening of the Hope–Princeton Highway has made a large game and fisheries area between Hope and Manning Park easily available to the public. The patrolling of this area by Game Warden A. J. Butler, of Chilliwack, in addition to his former district, has become too great a task. I would respectfully recommend that he either be supplied with an assistant or a new Game Detachment be established at Hope.

Game Propagation

A total of 15,438 pheasants were liberated in this Division during the year. With the exception of a few surplus breeders released in the early Spring, they were all 12 to 16 weeks of age. These birds were distributed throughout the Division as follows:—

Agassiz	600	Matsqui	754
Burnaby	29	Mission (Hatzic)	2,106
Chilliwack	1,558	Pitt Meadows	2,783
Delta	2,532	Sumas Prairie	1,992
Lulu Island	630	Surrey	2,454

Game Reserves

The several game reserves within this Division are beneficial as breeding and resting areas for both big game and game birds.

Fur Trade

The fur market was at a particularly low point during the season 1948–49. The trade reported an over-all decrease of 29 per cent as compared with the previous year. Predictions for the season 1950–51 are a little brighter. The following is a list of fur-bearers together with their respective percentage decrease:—

	Per Cent		Per Cent
Beaver	35	Weasel	28
Mink	20	Muskrat	44
Otter	22	Squirrel	61
Marten	42		

Registration of Trap-lines

This system continues to operate smoothly. Complaints of either trespassing or overtrapping are rarely reported.

Registration of Guides

There are very few registered guides operating in this Division, and as previously reported, they all operate in the district patrolled from Chilliwack. No complaints or disputes have been received in regard to their operations.

Special Patrols

Corporal Game Warden L. R. Lane and Game Warden R. S. King made a special patrol by launch and plane to the Goat Island Game Reserve on Powell Lake, with good results; namely, Rex *vs.* Amondus Anderson, " Game Act."

Following numerous complaints to the Game Commission concerning the lodge of Canadian Rainbows Unlimited in the Interior of the Province, Game Warden Frank Urquhart and Corporal Game Warden L. R. Lane, proceeding incognito, visited at the lodge for a week. This patrol resulted in several prosecutions under both Dominion and Provincial regulations and a total of $1,300 in fines was collected.

Game Warden A. J. Butler, of Chilliwack, made a special patrol into Chilliwack Lake by aeroplane and, as a result obtained several convictions under the " Game Act."

Hunting Accidents

I regret to report that the number of hunting accidents has increased over the year. It was hoped, in view of the many showings of Departmental educational films, that accidents would be fewer or none at all.

Robert J. Singer, of 995 Roosevelt Crescent, North Vancouver, using a .22-calibre rifle, shot at a duck on the water. The bullet ricocheted, injuring David C. Hobbs, of North Vancouver, in the right leg. Recovered with no ill effects.

Ronald Kolb, of New Westminster, received shotgun-pellet wounds in the left leg when one John D. Scott, 1828 Edinburgh Street, New Westminster, fired across a travelled road at a pheasant. Not serious.

Clarence Roy Gassman, age 16 years, was accidentally shot and killed by a juvenile companion carrying a .30-30 calibre rifle. This accident occurred in the Langley district when several youths were walking in single file down a steep trail.

Robert Dowding, 2805 Eighth Avenue West, Vancouver, received six shotgun pellets in the face from the discharge of a shotgun in the hands of one George Tarlier, 3511 Fourteenth Avenue West, in the same city. The injured man and Tarlier were members of a party hunting pheasants in the Ladner area, and while working a field together, Dowding was too far ahead of the others when a bird was flushed. Not serious.

Joseph T. Meraw, 460 Sixty-seventh Avenue East, Vancouver, lost his right arm following the accidental discharge of his shotgun, which he had leaning against his car.

Roy Woods, age 16 years, and residing at 2127 Marine Drive, West Vancouver, received a very serious chest wound from a .22-calibre rifle in the hands of a juvenile companion. The boys had been plinking at trees, etc., and the injury was caused by a ricocheting bullet. Recovered.

Trueman H. Oliver, of Ladner, received a shotgun-pellet wound in the left hand. Person responsible is one Gordon Houston, of 2228 Fourth Avenue East, Vancouver. It is not known whether Houston fired too low at a duck or if a pellet had deflected.

Game Fish Culture

The distribution of Kamloops trout fingerlings from the Cultus Lake and Smiths Falls Hatcheries were as follows:—

Coquitlam district	12,000
Surrey and Langley districts	36,000
Chilliwack district	93,000
Howe Sound (Petgill Lake) district	1,000
Total	142,000

Fingerlings liberated in Silver and Kakawa Lakes in the Chilliwack district were marked by the removal of both ventrals fins on Silver Lake fish and adipose and dorsal fins for those in Kakawa Lake.

A new and modern hatchery has been completed on the site of the old Dominion Fisheries Hatchery at Smiths Falls.

The Cultus Lake Hatchery, also a former Dominion unit, is being abandoned, except for use as a general storehouse and its refrigeration facilities. The new hatchery is in charge of Fishery Officer Frank Pells, who is assisted by Hatchery Officer C. O. Mellor.

As with hunting, fishing pressures are extremely heavy in the non-tidal waters of this Division. However, due, no doubt, to the Department's restocking programme, there is no indication of the many lakes or streams being depleted. The steelhead runs in several streams have held up particularly well, and the feeling of many sports-fishermen is that a large number of these fish originated from our local hatcheries.

Summary

With approximately 50 per cent of the licensed hunters and fishermen of the Province residing within this Division, it is becoming increasingly difficult to supply them with local returns on their licences. The hunting of pheasants in the Mission, Matsqui, Chilliwack, Langley, and Surrey districts was fairly good. In the Ladner and Pitt Meadows districts, it was very disappointing. Big-game animals appear to be holding their own and in many areas show indications of an increase.

In my request to the Wardens in this Division for the submission of their annual game report, I asked that some mention be made of observations in the relationship between farmers and sportsmen. Game Warden Percy Cliffe, of Mission, in his report, summed up the situation very briefly by stating: " The only trouble is that there are not enough *sportsmen.*" From my own observations, I can only conclude that he is quite correct. More sportsmen, in the true sense of the word, would mean that fewer hen pheasants and does would be taken. Fishermen would more often use barbless hooks and whip a stream for æsthetic pleasure rather than greed for as many fish as the law will allow; permission would be asked of the landowner to hunt or fish off his land; fewer fences would be knocked down and fence wires cut. I have seen several instances of the latter. There are numerous other points that could be mentioned, which, when added together, total good game conservation and continued pleasure in both hunting and fishing.

In conclusion, I again wish to extend by sincere thanks to the many individuals in ours and other Governmental departments, game associations, and sportsmen who so generously assisted me throughout the year.

REPORT OF THE DIVISION OF BIOLOGY, 1949

By Dr. Ian McTaggart Cowan and Staff

Throughout the year the Division functioned under the general direction of Dr. W. A. Clemens and Dr. Ian McTaggart Cowan, in collaboration with the Commissioners. Biologists James Hatter, M.A., and Peter Larkin, Ph.D., devoted almost full time to the field and laboratory studies of the Division. During the summer months sixteen assistant biologists were employed upon field studies, and many of them devoted much time and energy during the remainder of the year in the analysis of data and preparation of reports. It is a pleasure to acknowledge this and much other honorary assistance given with energy and enthusiasm by the graduate and undergraduate students in wildlife management at the University of British Columbia. Without their help, little could have been accomplished. It is a pleasure also to acknowledge assistance rendered by Dr. Irvin Moynihan, of the Dominion Health of Animals Laboratory, Vancouver, and by many of the officers of the Enforcement Branch of the Game Department.

The work of the Division falls naturally into three main phases: research, management studies and practices, and " trouble shooting." With our small staff there is a very real danger of the last category occupying too large a place in the Division's activities to the detriment of substantial progress in improved wildlife conservation and management.

Game Research and Management

1. *The Biology and Management of the Ringneck Pheasant in Coastal British Columbia*

E. Taylor continued his pheasant studies throughout the year, but concentrated on the period from May to November, comprising the period of reproduction and that of harvest. This year's investigations fell into two main phases. One concerned with the factors affecting increase in the wild populations, and the other concerned with developing techniques for improving the survival of farm-reared birds after liberation. The study was carried on again in the 65-square-mile area of Delta Municipality.

Cock densities were determined and found to excel those of the previous year by almost two cocks per square mile. The hen population, however, was lower than in 1948. The breeding population was determined to be 3,035 birds, as opposed to 3,070 birds in 1948.

The breeding season made a good start, and until mid-July the broods averaged larger than in the previous year. Then they began to suffer losses to some influence we were unable to determine, with the consequence that the average brood size in late August was 1½ chicks lower than in the previous August.

The slightly smaller breeding stock, coupled with smaller size of broods, reduced the autumn population from an estimated 11,093 in 1948 to 8,669 in 1949.

As in the previous year, mowing was the most serious cause of loss to nesting hens. This one source accounted for the deaths of 11.3 per cent of the nesting hens, while destroying 38 per cent of the nests. Under existing circumstances, about half the autumn population of hens is lost before the onset of the next breeding season.

Careful analysis of the factors apparently restricting the pheasant population leads to the conclusion that the best immediate opportunities for increasing the wild stock lie in reduction of mowing loss and reduction of the loss of hens during the hunting season and subsequent winter.

Experiments with liberated, farm-reared pheasants this year was designed to test the effectiveness of the night gentle-release method against the conventional release method, and to study the survival of birds liberated at different ages.

Twenty-four hundred and ninety-two marked birds were liberated on the study area, about half of them cocks.

The night gentle-release birds were found to suffer less than half the discoverable post-release mortality than did the control group released by conventional methods.

Similarly, the gentle-release technique was found to give a 50 per cent better return of birds brought to bag. This technique has been recommended for use in all liberations in 1950.

Birds were liberated at ages of from 9–10 weeks to 18–19 weeks. Two lots of birds liberated at ages of 16 to 18 weeks gave the highest returns, almost three times as high as those of the younger birds. The results will be subjected to a further testing in in 1950. A study of the results obtained with pheasants raised on different farms gives a strong indication that there are important differences in the survival of birds arising out of rearing conditions. This too is to be given further study.

2. *A Preliminary Study of the Effects of Orchard Spraying upon Pheasants*

A. Benson undertook this study during the period from May to November. The experimental work was conducted in the Kelowna district, where we enjoyed and appre-

ciated the co-operation and assistance of many orchardists and sportsmen, most especially F. Pridham, who supplied facilities for our field station, and A. Blackie, who assisted in many ways.

Experimental birds were exposed in orchards to the normal spraying routine. Where possible, pens of birds were subjected to the spray on their food only, and to spray by inhalation only, in order to investigate the relative toxicity of some sprays entering the bird through the two different routes.

Control birds were not sprayed and were maintained in pens adjacent to the orchards.

The results of these experiments are outlined on the accompanying table.

It is planned, in 1950, to give more detailed study to the minimum toxic concentrations under field conditions and to add some of the more recently developed chemical sprays to the group.

As a general conclusion to be drawn from our studies to date it can be said that only MonoDN of the sprays tested is not toxic to pheasants in the concentrations applied.

Results of Spraying Various Insecticides on Pheasants

Insecticide and Concentrations Used	How Applied	Death Due to Spraying	Age at Spraying
		Per Cent	
9 lb./A. Parathion and 18 lb./A. DDT	As a fog on food and birds	100	5 days
75 lb./A. Parathion and 15 lb./A. DDT	As a fog on food and birds	100	15 days
18 lb./A. DDT	As a fog on food and birds	78	15 days
18 lb./A. DDT	As a fog on food only	100	4 days
15 lb./A. DDT	As a fog on food and birds	50	14 weeks
10 lb./A. DDT	As a mist on birds only	100	25 days
MonoDN (DDT sprayed three days previously, approximately 15–20 lb./A.)	As a fog on food only	100	4 days
MonoDN	As a fog on food and birds	-----	15 weeks
16 lb./A. Parathion	As a fog on food only	50	4 days
12 lb./A. Parathion	As a mist on birds only	50	25 days
75 lb./A. Parathion	As a fog on food and birds	-----	15 weeks
10 pt./A. Hexafoss	As a fog on food and birds	30	10 weeks
5 lb./A. Lindane	As a fog on food and birds	60	10 weeks
Control No. 1	Not sprayed	-----	-----
Control No. 2	Not sprayed	-----	-----
Control No. 3	Not sprayed	-----	-----
Control No. 4	Not sprayed	-----	-----

3. *Water-fowl Breeding-grounds and Migration*

The study of water-fowl breeding-grounds in British Columbia and the winter distribution of the populations nesting in the Province was begun in 1948. In that year an exploratory party operated in the Chilcotin district from Riske Creek through to Anahim Lake. In that year also, banding operations were conducted in July and August in the Cariboo district and to a very minor degree in the vicinity of Kamloops.

In 1949 exploratory work was undertaken in the region west of Quesnel during May and June in combination with some beaver studies. Banding was again undertaken on all the important water-fowl lakes in the Cariboo between Williams Lake and Clinton. In addition, operations were also undertaken on several lakes in the vicinity of Riske Creek, on the Horsefly Road, and on lakes lying south-east and south-west of Kamloops.

During the year, 2,289 water-fowl were banded on the nesting-grounds. In this sample, Barrow's goldeneye made up 43.5 per cent; bufflehead, 13.1 per cent; lesser scaup, 11.9 per cent; baldpate, 7.7 per cent; blue-winged teal, 6.9 per cent; redhead, 5.3 per cent; canvasback, 1.8 per cent; mallard, 1.3 per cent; pintail, 1.1 per cent; ruddy, 3 per cent; and other species, 1 per cent. Twenty-six Canada geese were banded.

The first results of the 1948 banding came in during the winter of 1948–49. In all, 174 of the birds banded were reported shot. Of this group, 65 per cent were shot in the Province by resident sportsmen and the remainder were shot in the United States or

in Mexico. The longest flight recorded was made by a lesser scaup banded on August 7th, 1948, at Westwick Lake, and shot at Parral, in the State of Chihuahua, Mexico, on November 21st, 1948. During the banding operations in 1949, thirteen birds banded the previous year were taken. In every instance the recaptured bird was taken on the same lake as originally.

These water-fowl studies have already yielded a most useful body of data on the size and distribution of the nesting population of water-fowl in the most important nesting-grounds in the Province. With subsequent years, the data will also provide a reliable means of appraising the fluctuations in water-fowl populations and the factors that influence nesting success.

Also arising from these studies is information upon the degree to which the various species of ducks nesting in the Province remain in, or leave, the Pacific fly-way during the winter season. Already it is apparent that the canvasbacks raised in Central British Columbia move south-eastward into the Central fly-way to winter in Texas, whereas the majority of the other species remain in the Pacific fly-way.

4. *Beaver Trap-line Survey*

A survey of thirteen Interior trap-lines was carried out in May and June to determine some of the problems relative to the management of beaver in the Cariboo District. Trap-lines inspected were of the more accessible type, found in the Horsefly, Lac la Hache, and Quesnel areas. Members of the survey party consisted of J. Hatter, W. H. Cottle, and C. F. McLeod.

Although the survey was of a preliminary type and not sufficiently intensive or comprehensive to form a basis for a general beaver-management policy, certain observations are noteworthy at this time. These, together with several pertinent recommendations, are presented briefly as follows:—

(*a*) The trap-lines sampled reveal that, for the most part, the beaver population of the Cariboo District has been overharvested. Only one of the thirteen trap-lines reconnoitred was stocked to capacity with beaver.

(*b*) A major problem confronting the registered trapper in settled areas has been the alienation of Crown land for ranching purposes. In many instances this is a poor marginal or submarginal agricultural land and its use as such is questionable from the standpoint of proper land usage. Drainage of beaver-inhabited swamps has resulted and the land turned to the production of sedges (*Carex*) for cattle food. Conservation of beaver on adjoining trap-lines frequently results in redamming of the original stream and reflooding of the " wild-hay " meadows.

(*c*) Due to alienation of Crown land and the growth of homesteads, trap-lines which were formerly more extensive have been reduced in size and not infrequently divided by private property. This presents the problem of ownership of beaver inhabiting streams which pass through private lands and animals which have dispersed from an adjacent trap-line on to private property. It is felt that few, if any, permits should be issued to owners of private property to trap beaver unless the animals are actually established on such property. Removal of transient beaver along streams by owners of the adjoining land should not be permitted. Similarly, permits should not be issued to private owners to remove nuisance beaver. Removal of such animals should be authorized by the local Game Warden and the task delegated to the local registered trapper or other individual selected at the discretion of the Game Warden.

(*d*) Beaver trap-lines should not be so subdivided as to constitute units of land which are too small to provide a livelihood for the trapper. In some instances there is little encouragement for the trapper to conserve

his beaver because the limited amount of suitable habitat on the trap-line will not permit a sizeable population of these animals. Trap-lines should be large enough to constitute management units. It is felt that larger trap-lines would provide more incentive to the part-time trapper to practise sustained yield.

(*e*) It is felt that more attention should be given to trap-line boundaries and that the height of land should be used in preference to lakes and streams and artificial boundaries. It is obviously not good management policy to allow two trappers to harvest muskrats and beaver on opposing banks of the same watercourse.

(*f*) Reports of poaching were frequently brought to the attention of the survey party and, in some instances at least, such complaints were justified.

(*g*) It is felt that better water-rights protection should be afforded the trapper of aquatic fur. The use of water for fur production should receive wider recognition and, where possible, water for irrigation purposes should be put not only to this use but also to encourage the production of beaver and muskrats.

(*h*) The present regulations governing the harvesting and tagging of beaver pelts is a good conservation measure. However, an important consideration is the problem of determining how many beaver a certain trapper should harvest. At present, the potentialities of the habitat are not always considered and beaver tags may be issued according to the estimated number of beaver present, without recognizing the fact that the particular area in question may be understocked. In this connection the services of a fur-management biologist are recommended.

5. *Beaver Transplantation to Queen Charlotte Islands*

During the period from June 22nd to July 12th, beaver live-trapping operations were carried out by L. G. Sugden and Game Warden R. S. Hayes. Trapping was done on the Little Oyster River in the Campbell River area of Vancouver Island. By the use of Bailey live-traps, eleven beaver were taken. This number consisted of one mature female, two mature males, one two-year-old male, two yearling females, three yearling males, and two kits.

During the operation, the beaver were held in wire-mesh pens built partially in the water. On the morning of liberation, they were sexed, sacked, weighed, and flown to Sandspit via Vancouver. The animals were transported from Sandspit to Mayer Lake, Graham Island, and released at the south end of the lake.

Reports from Ranger H. B. Hammer indicate that at least some of the beaver attempted establishment and commenced to construct a dam in September. However, this structure was not completed. Further inquiries into the success of the liberation will be made and reported upon.

6. *Examination of Moose Winter Ranges*

The writer examined several wintering areas in 1949 not previously covered in the extensive surveys of the preceding two summers.

Miocene.—The region embraced by the trap-line of J. Wiggins, of Miocene, was reconnoitred on horseback and observations made on the condition of the moose range. For the most part, the winter food of moose has been exhausted in this area. Virtually all the palatable species of forage are now completely polled and a large proportion are dead from overuse. The carrying capacity for moose has been reduced to a small fraction of the original condition in the twenties when moose began to increase in the area. No recent burns were encountered and most of the forest at higher elevations is approaching

the climatic climax. It is pertinent to recall that large numbers of moose have recently died in this region from a malnutrition-winter tick complex.

Horsefly Lake.—Conversation with residents of Horsefly indicates that an estimated three-quarters of the moose food in the Woodjam Range has been exhausted. It is reported that ten years ago it was possible to select a trophy from thirty bull moose, but now it is necessary to hunt for days to even find an animal in this particular area. It is believed that the local decline is primarily attributable to an overpopulation of moose and the process of conifer succession following the early fires.

Timothy Lake.—A similar condition to that described for the Miocene area was found to exist in the vicinity of Timothy Lake. Formerly portions of this area were burned annually and moose food was abundant. For the last fifteen years, however, fires have been few and the carrying capacity of the area reduced to a low level.

Deadman's Creek.—Overuse of the upland forage species was encountered along the upper reaches of Deadman's Creek during a brief reconnaissance of that area. This area is in need of some new burns to provide winter food for moose which winter close to the Douglas fir-grass land ecotone.

White River.—In late October, five days were spent riding through much of the valley of the White River, tributary to the Kootenay River. Reports on the history of moose in this region indicate that the population was formerly much higher. Observation revealed that the food once available to moose in this valley has been depleted by overuse and regeneration of dense conifer stands on the old burns. The valley supports a sizeable population of elk, which has probably competed with moose for such browse species as willow, aspen, and serviceberry. Owing to a different food preferences, the valley now appears more suitable to elk. White-tailed deer are also plentiful in the area. Rather than interspecific intolerance being responsible for the ascendency of elk and deer over moose, it would appear that differences in food requirements and preferences are responsible.

7. *Deer Winter Ranges*

Kootenay Lake. — A large population of mule and white-tailed deer occupies the lowest slopes immediately adjacent to and on both sides of the West Arm of Kootenay Lake. Small portions of this winter range are overutilized, but food shortage is not believed to be an important factor, generally, in the welfare of the local deer population. However, due to a lack of winter investigation in the region, the above conclusion is only tentative. Samples of bone marrow from several deer killed in mid-winter by dogs, coyotes, and trains revealed the animals to be in fairly good condition. Marrow from two white-tailed fawns, however, indicated critical malnutrition.

There is a suggestion in this area that the severe winters of the past two years have affected the deer population other than in a density dependent manner. Deer losses have been occasioned largely by harassment from domestic dogs and coyotes, and by death from being struck by automobiles and locomotives. Few winter kills can be attributed solely to starvation. However, it must be realized that winter range is very restricted and that continued increase of the deer population offers a threat to the present carrying capacity of the area. Probably serious overpopulation has been prevented by a period decimation of the herd during critical winters. Hunting does not appear to be a constant limiting factor of importance, because during the open season most of the deer population is at higher levels in rugged terrain above the lake. Here it is relatively inaccessible. A sizeable number of deer are killed only during unusual years when early snows force the population on to low accessible areas. Such years, however, are the exception rather than the rule.

Considering these circumstances, it is felt that the open season on deer in the Kootenay Lake area should be so adjusted as to allow for a larger annual harvest. It may be conservatively estimated that the winter losses from 1948 to 1950 were ten or more times as great as the hunter harvest for these years.

During the mid-winter, deer become a nuisance to local inhabitants by browsing fruit-trees. Although not all complaints of damage are fully justified, it does not seem practical to undertake costly measures to increase the local deer population, particularly when there is so much excellent hunting elsewhere in the Kootenay District.

At the request of the Game Commissioners, the loss of deer along the Canadian Pacific Railway from Nelson to the south end of Kootenay Lake was investigated. Due to the local topography of the area, it is apparent that little, or nothing, can be done to attract deer from the right-of-way. Snow depth increases rapidly up-slope from the lake-shore, so much in fact that only a few hundred feet distant from the lake the range is untenable during mid-winter. Limitations of the environment in this area are considerable and losses due to physical factors will never be completely removed. The following management possibilities are recommended for the Kootenay Lake area:—

(*a*) A more liberal season for the harvesting of buck deer, with an unstated closing date to be set on two days' notice according to weather conditions and extent of the harvest.

(*b*) A local permit system for removing a given number of does.

(*c*) Continued control of domestic dogs that are permitted to run deer.

(*d*) It is believed that if the Canadian Pacific Railway right-of-way were cleared of snow (level with the rails) fewer deer would be hit as they attempt to avoid oncoming locomotives. A type of snow-plough that scatters the snow farther from the grade might prove helpful in this regard.

Rosebery.—A mule-deer wintering area on the New Denver–Nakusp Road near Rosebery was examined and found to be heavily utilized. Fifty-one deer were counted along 4 miles of road by Game Warden Rutherglen in the winter of 1947–48. Further investigation in this selected study area will be undertaken to determine whether or not deer populations will shift into adjacent unbrowsed areas. Here, as along Kootenay Lake, the winter range is restricted to a narrow zone at the base of the steep slopes. Feeding behaviour in winter is an important and basic problem from a management standpoint, since the ability of deer to survive and increase will depend, in part, upon the use of unbrowsed areas once the previous winter yards are depleted of their food resources.

Pend d'Oreille.—Reports of deer dying along the Pend d'Oreille River led to a brief investigation in that area. One rancher interviewed stated that he had found numerous dead white-tails during the previous winter. The location of ten carcasses was named by this gentleman, but at the time of the investigation most of the remains had been scattered by coyotes and black bears. The only post-mortem conditions described were suppurative lesions in the abdominal and thoracic cavities.

A brief reconnaissance of the area revealed no critically browsed winter yards, although the period of investigation was too short to arrive at sound conclusions regarding the availability of deer food in as large a section as the Pend d'Oreille area. Trees and shrubs found utilized were mainly serviceberry, syringa, wild cherry, and Douglas fir.

8. *General Observations of Big-game Habitat*

Flathead Valley.—Three days in July were spent, in company with Inspector Kearns, in a survey of a section of the Flathead Valley. Moose are reported to have decreased in this area, whereas elk have maintained a more stable population. Due to the grazing habits of elk, this animal is undoubtedly more suited to the Flathead Valley than moose. It is the concensus of opinion that elk have driven out the moose, although the more probable explanation is that environmental pressures against elk have been less, and consequently this species has exceeded in density the population of moose. Very few moose are taken by hunters.

The densest stands of lodgepole pine ever observed by the writer (J. Hatter) occur in the Flathead Valley and extend uniformly over the greater section of the valley bottom. In places the younger stands are impenetrable. Upland salix is extremely scarce and showed signs of chronic overuse. Obviously, the carrying capacity for moose has been low since the 1920's, when extensive fires burned throughout the mature stands of lodgepole pine and spruce. A peak in the moose population, reported to be in the early 1930's, may be attributed to better food that existed for a short period after the fires and before the pine canopy closed over the resultant increase in the deciduous trees and shrubs.

Along the Flathead River, where the forest is open and park-like, elk sign was found. Heavy use of Rocky Mountain juniper was manifest here.

In conclusion, it may be stated that the Flathead Valley, as it presently exists, is of little value as big-game habitat in comparison with other regions in the Province.

Elko Deer Sanctuary.—Almost everywhere in the Elko Deer Sanctuary there is evidence of overbrowsed range. Elk were formerly absent from the sanctuary, but now a winter population is firmly established there. An elk high-line is present on most of the deciduous trees that increased in density after the fire. Obviously, competition between deer and elk exists within the sanctuary. More detailed studies are planned for this area.

Preliminary Survey of the Ashnola River Sheep Range.—A preliminary survey of bighorn sheep winter range was carried out in the Ashnola River area in early November. At this time few sheep were on the winter range. In all, only twenty-four animals were counted, including seven adult rams, three adult ewes, three lambs, one yearling ram, and ten sheep (not classified as to age and sex).

Areas most available to the sheep for winter range have been grazed by domestic stock, and abundant evidence of local overuse of the range was manifest even at this time of the year.

Further studies of the Ashnola sheep range are required before management practices can be recommended. These will be undertaken as soon as possible.

Sayward Forest Deer Study.—Concern over the status of the Coast deer in the Sayward Forest, near Campbell River on Vancouver Island, led to the inception of a special study there. It was found that the population of deer had suffered severely from winter losses resulting from the unusually severe weather of the previous winter. The sex ratio was also below optimum, probably as a result of the heavy hunting pressure arising from local conditions of cover and accessibility.

As a result of the preliminary studies made, it was deemed desirable to close the season on deer temporarily and to introduce certain other management practices designed to facilitate recovery of the population and to protect it in the future from too intensive hunting. It was recommended also that intensive mountain-lion control be applied.

This study is being continued.

9. *Checking-stations*

Vancouver Island.—Checking-stations for deer and blue grouse hunters were operated in the Cowichan Valley and in the Campbell River area during September 17th and 18th. Graduate students from the university gathered the necessary data on hunter successes and sex and age ratios of blue grouse killed.

In the Cowichan area, 300 hunters were checked, with a total of 937 grouse and 27 deer. At Campbell River, 828 hunters were checked on the opening day and 656 on the day following, with a total of 3,939 blue grouse and 39 deer. An estimated 1,000 hunters frequented the Campbell River area on the opening week-end. An accurate count of hunters was not obtained, due to duplications on the second day.

Cache Creek.—Biological information was obtained at Cache Creek by C. Walker, of Ladner. All moose and deer heads were measured and the necessary data recorded. In addition, a sample of the water-fowl and grouse kill in the Cariboo and Chilcotin was obtained.

In general, the moose kill has remained quite constant over the past three years and the age of animals taken has varied only slightly. This would indicate that the large populations of moose in the Cariboo and Chilcotin are not generally being overhunted.

10. *Moose Tagging*

In May and June, eleven calf moose were ear-tagged by R. C. Cleveland at Eagan Lake. The purpose of this work is to determine the extent to which moose move from their place of birth, and to provide means of ageing the animals by the study of antlers and tooth erosion in animals of known age. In 1948, Cleveland tagged three calf moose in the same area. Tagging operations will be continued in 1950 and until such time as sufficient moose are tagged and adequate measurements are obtained from bull moose killed by hunters.

11. *Annual Game Returns*

In 1949, the licensed hunters of British Columbia were again requested to file a return of game killed, and a 1.2 per cent return was obtained. This sample has been found to be biased, and in 1950 a different sampling technique will be used to eliminate the inaccuracies of the previous compilations.

12. *Moose Report Returns*

Again, most first- and second-class game guides in the Province were mailed data sheets on which to record the number of moose seen on each hunting trip and to register certain additional information needed to detect trends in the populations of moose in the Province. Returns obtained from the guides were still unsatisfactory, and as a result a compulsory system of returns is being considered.

13. *Nechako River Dam Project*

A preliminary brief covering some of the possible influences of this project upon the wildlife values of Tweedsmuir Park and adjacent areas was prepared and submitted to the public hearings.

A brief survey of the area will be made next year and, arising from this, it may seem desirable to undertake more detailed studies.

14. *The Libby Dam Project: Summary of Report to Game Commission, September, 1949*

The proposed Libby dam or alternatives will not cause measurable harm to the wildlife of the area provided that adjacent lands are not alienated to agricultural pursuits for the purpose of compensation to displaced ranchers. A slight loss of big-game winter range will occur, but this may be more than compensated for by reduced live-stock grazing when winter hay land along the Kootenay River is flooded, thus rendering it impossible for ranchers to grow winter feed. Serious complications could arise, however, if ranchers are compensated for their loss by establishment on the upper benchlands, with irrigation facilities and cultivation of previously non-arable land. Under these circumstances, live stock *vs.* big game competition could become an important problem.

Water-fowl may benefit materially by the flooding of shallow basins and the creation of adjoining sloughs. This, however, will depend on the extent to which the water-level is permitted to fluctuate.

The loss of upland bird habitat is considered negligible.

At least two part-time trappers are affected, but since the Kootenay River itself forms only a part of their line the loss will not be extensive. Flooding should not impair the fur resource in the area. In fact, considerable improvement should exist after a period of years.

15. *Watching Creek Experimental Burn*

As part of the programme of studies to be undertaken on the experimental burn area prior to actual burning, two weeks were spent in making an appraisal of the general conditions of game food and of populations of game birds and of large and small mammals. This study of the influence of forest burning upon range condition and animal populations is under the general direction of the Dominion Range Experimental Station at Kamloops, with the co-operation of the British Columbia Forest Service, the British Columbia Game Commission, and other interested bodies. Actual burning will be undertaken in 1950.

16. *Correspondence and Public Relations*

In addition to the above field studies, research, and investigations, considerable technical information was supplied to the Game Commission in the form of correspondence from the office of the game biologist at the university. Several game meetings were attended during the course of the year and every opportunity taken to promote understanding on the part of the sporting public of the problems and needs of wildlife management in British Columbia. Briefs were prepared for submission to the Second Provincial Resources Conference in Victoria in February, 1949.

SUMMARY OF INVESTIGATIONS CONDUCTED BY THE FISHERIES RESEARCH GROUP, ATTACHED TO THE BRITISH COLUMBIA GAME DEPARTMENT, IN 1949.

By P. A. Larkin, Fisheries Biologist, British Columbia Game Department

Introduction

The first year of investigation has been part of the five-year survey plan for lakes and streams of the Province. The object of these surveys, which are conducted in different major areas in different years, is to outline the most important biological problems and to provide us with a clear picture of the value of the fisheries resources and the management that will be required to maintain it.

In its first year, the survey was centred in the West Kootenay area, and investigations were conducted on Kootenay Lake, the Lardeau River, Trout Lake, the Arrow Lakes, and some small lakes in this general district. The results of these surveys are summarized below.

Considerable attention has also been given to fundamental research projects which are pertinent to the methods and objects of field survey. For example, new techniques of survey for management practice have been devised, which should allow for more rapid and more efficient enumeration of fish problems in local areas.

A number of special problems have also been investigated, including the study of the steelhead in the Lower Fraser Valley; lake shiners in lakes of the Interior; cottids in the Arrow Lakes; a review of present hatchery methods used in the Provincial trout hatcheries; problems in the nutrition of trout, both under natural conditions and in the hatchery; and new methods of egg collection.

A considerable amount of time has been spent in completing the analysis of the information on Paul Lake, which has been collected over a long period of years (1931–37 and 1946–49). This most important study is now completed.

A number of routine investigations have been made of situations where fish populations have been, or may be, affected. These include preliminary study of the Tweedsmuir Park area, the Okanagan Flood Control Project, pollution of the Coquihalla River, and a number of lesser projects.

The increasing demand on the services of the scientific group has necessitated an increase in the permanent staff and an increase in the moneys to be spent on fisheries investigations. This expansion had been anticipated in the first formulation of a five-year plan, and it is with some satisfaction that we report the appointment of S. B. Smith to the permanent staff and the increase in the scientific budget by approximately 15 per cent.

The staff of the group in the past year included the writer and, as summer assistants, Craig McPhee, O. Anderson, C. C. Lindsey, I. Barrett, S. B. Smith, R. G. Ferguson, F. Paul, A. D. Nemetz, T. Northcote, and J. C. Lyons, and, as winter assistants, S. B. Smith, R. O. McMynn, and R. MacFadden.

Lake Surveys in the West Kootenay Area

Kootenay Lake

Four men were engaged in the survey work on Kootenay Lake. Their investigations can be summarized under two headings:—

(*a*) Limnology of Kootenay Lake.

(*b*) The statistics of the catch on Kootenay Lake.

The work was conducted from the first of May until the first of September and collections from resort owners were continued until the end of the fishing season in December. The information collected by this survey group is very extensive and the analyses of all of the different phases of the work have not yet been completed.

The limnological investigations indicate that the lake is uniformly deep (between 450 and 500 feet). The water is well oxygenated and has a low mean temperature. The quantity of dissolved mineral elements is small by comparison with lakes in other parts of North America and more sedimentary parts of British Columbia. The shape of the lake and its physical and chemical characteristics marked it as a primarily oligotrophic, or unproductive, type.

The water-masses which enter Kootenay Lake show peculiar characteristics, which have prompted plans for further investigation in the coming season. The Kootenay River, which enters from the south, is warmer than the surface water of the lake and for this reason the Kootenay River waters flow on the surface of Kootenay Lake after they enter the lake at the south end. The Lardeau River and the many tributary creeks in the north end of the lake all have temperatures lower than that of the surface of the lake, and for this reason they " dive " to a considerable depth as soon as they enter the lake. The distance over which these under-water currents may maintain their identity is an important factor in the study of the migrations of trout and other species of fish.

The bottom fauna of the lake is sparse, but compares favourably with the Great Lakes and the large lakes of Northern Canada, which are similar in type to the Kootenay. The south end of the lake shows a higher bottom-fauna production than the north end, and this difference is chiefly apparent at depths below 180 feet. The fertilizing effect of the Kootenay River is believed to have an important effect in producing this condition.

The production of plankton is moderate and is also greater at the south end of the lake. The absence of any species of large shrimps from the deep-water bottom-fauna plankton is a notable deficiency in the fauna of Kootenay Lake as compared to lakes east of the Rocky Mountains.

Fish production is, to a large extent, related to the abundance of plankton and bottom organisms. The list of species of fish which occur in Kootenay Lake is extensive

so that estimates of fish production in pounds per acre are complex; however, a yield of approximately 35,000 pounds per year of sport fishes is indicated from the catch returns.

The assistance of approximately thirty resort owners on Kootenay Lake was invaluable in the collection of statistics pertaining to the catch of game fish in the lake. The analysis of catch records indicated that flies, gang trolls, wobblers, and spinners form a group which all yield catches of approximately two fish per hour or better. Plugs, flatfish, and spoons, which are used extensively in the spring and fall, form a second group which yield catches in the vicinity of one fish every four hours. The first group of lures mentioned are used for catching fish of all sizes, but the second group are used almost exclusively for trout-fishing during the spring and fall, so that comparison of the two groups is not entirely justifiable. It is conclusively demonstrated that the group of lures known as gang trolls select fish of smaller size on both Kootenay Lake and on Paul Lake. This phase of the work was separately reported to the Game Department and is available in mimeographed reprint form.

The study of the catch statistics has indicated a period of slow growth in the life history of the Kamloops trout between the ages of 1 and 3 years. This highly important feature of the growth-rate reflects the absence of intermediate food items in sufficient abundance to provide adequate nutrition in the period between plankton-feeding and fish-eating. The introduction of two species of shrimps (*Pontoporeia* and *Mysis*) from Waterton Lakes, Alta., had been attempted as a first step to improve this condition. (*See* " Summary of Investigations of *Pontoporeia* and *Mysis*.")

Lardeau River and Trout Lake

This investigation has dealt with some of the problems suggested in a previous report to the Game Department entitled " Preliminary Report on Proposed West Kootenay Power Project at Trout Lake." Moneys for these studies were partially provided by the West Kootenay Light and Power Company.

It was not possible to construct a counting fence across the Lardeau River to count daily movements of trout. However, observations of arrival of spawning trout to the river below the Gerrard fence indicate a correlation with increasing water-levels and fluctuating temperature as has been recorded previously by Mottley (1933). This would suggest that volume of flow of the Lardeau River may be an important factor in guiding the fish in Kootenay Lake to the mouth of the river. Temperature of the Lardeau River varies sharply over the spawning period and may regulate migration and spawning within certain limits.

The investigation of the structure of Kootenay Lake indicated that the Lardeau River maintains its identity for some time as a distinct water-mass while in the lake. It seems possible that the intensity of the Lardeau River flow determines the distance to which its effect is felt in Kootenay Lake and hence it bears relation to spawning migration.

Further investigations of the lake structure are planned for the coming season. This phase of the study is important to an assessment of the effects of power development on Trout Lake.

It had been previously observed that the portion of the Lardeau River above Canyon Creek (which would be by-passed by power development) was the only part of the river that was suitable for spawning of trout. The explanation for this restriction was the high turbidity of Canyon Creek, which prevented spawning down-stream. Observations in 1949 indicated that extremely low temperature of this and other creeks in the early period of the spawning migration might also be an important factor.

In the past season, it was observed that there was evidence of spawning over almost the entire length of the Lardeau River and that spawning was concentrated toward the north end. The greater dispersion of the run from that reported for previous years may have been a factor in the poor egg collection that was taken.

It has been suggested that in recent years slides causing turbidity in Canyon Creek may have been washed away to the extent that only in exceptional high water would the high turbidity recur.

Stream-salvage operations have been suggested as a valuable fish-cultural practice for the Lardeau in future years, since falling off of water-levels from 7 feet to 4½ feet (Gerrard gauge) during June results in the stranding of many young fry in side pools.

It is concluded that annual variation in local conditions might result in a variety of conditions for spawning. In some years at least the upper portion of the river is not the only spawning-area available.

It is believed that only two streams on Trout Lake are possibly trout-spawning areas—Trout Creek and Lardeau Creek. A limited spawning may take place at the Trout Lake side of the Gerrard fence on the Lardeau River. It was suggested that the effect of lowering Trout Lake 30 feet during winter months might result in the formation of an obstacle to fish migration at the mouth of spawning-creeks, particularly Trout Creek. Soundings at the mouth of Trout Creek indicate a broad silt delta and it would be anticipated that lowering of the lake level would not result in obstruction.

No up-stream movements of young trout from the Lardeau River to Trout Lake were observed in the 1949 survey. Down-stream traps took large numbers of fry. The dispersion of spawning adults over a large length of the river is undoubtedly a factor in limiting extensive up-stream movements to Trout Lake.

Considerable evidence suggests that residence of young trout in the Lardeau River is generally for a very short period after hatching. Down-stream migration begins almost immediately after yolk-sac absorption.

Trout Lake is extremely deep (over 800 feet), extremely unproductive, and has very limited areas of shallow productive waters. Bottom-fauna production and aquatic vegetation in shallow areas are not of great importance in Trout Lake. The effect of lowering the lake seasonally will be the loss of the few shallow areas in the lake, but this would not constitute a serious loss.

Arrow Lakes

The Upper and Lower Arrow Lakes were the scene of a three-man investigation during the summer of 1949. As in the case of Kootenay Lake, data were collected on physical and chemical conditions, bottom fauna, plankton, food and rate of growth of species of fish, and general limnological conditions.

The Arrow Lakes differ from Kootenay Lake in many fundamental respects. The inlet at the north end of the lake is the only significant feature of the drainage, while in Kootenay Lake large rivers enter on both the north and the south ends. The Columbia River is heavily silted during the summer months with fine glacial till.

Distinct and well-defined currents, both surface and subsurface, play an important role in the ecology of the lake, and in many respects it resembles a moderately enlarged river channel. Bottom-fauna production and plankton production are moderate and lower than that of Kootenay Lake. The problem of trout production in the Arrow Lakes is similar to that of Kootenay Lake in that the rate of growth of trout is slow between the ages of 1 and 3 years. There is some indication that fewer fish may be affected by this food situation in the Arrow Lakes than in Kootenay Lake.

Paul Lake Investigations

The findings of the Paul Lake investigations will be published in separate form in the near future. The study includes information on physical and chemical conditions, bottom fauna, plankton, rate of growth and survival of the trout, and extensive data on spawning runs and catch statistics.

With the annual stocking of approximately 200,000 fry, the production of trout has remained fairly close to the level of 10,000 fish, averaging 1 pound, since 1936. Some variation in the average size and growth rate of the fish is indicated in the years between the two series of investigations. Changes in the egg-size and egg-count of females in the spawning run were apparently related to changes in the stocking policy, and these were confirmed by records of large fish in the anglers' catch. However, comparisons of the rate of growth in recent years with those of 1936 and 1937 show no conspicuous differences except in the first year, indicating that for the recent years the smaller proportion of older fish in the spawning run is an important factor in causing decreased egg-size and egg-counts.

Estimates of the population size, based on catch per unit effort data, indicate that the fishery depletes the older year-classes very markedly, and it was estimated that there was a removal of 4,700 out of a population of 5,000 to 6,000 2-year-old and older fish in the summer of 1949. The fishing intensity in 1949 was nearly double that of 1935 and 1936, but the catch was apparently only three-quarters as many fish of approximately the same average weight. These various indices of the trout population indicate that the lake was being intensively fished in 1949 and that the maximum yield of 10,000 fish, which was achieved in the mid-thirties, is currently not being realized. The difficulty of complete creel census in recent years is a factor influencing this argument.

In the comparisons between the sizes of fish at different ages in the four recent years of investigation, the mean lengths and the standard deviations of the mean lengths show an inverse relation. In comparing fish of the same age in different years if a mean was higher than another, then its standard deviation was lower. Further, if the rate of growth from one year to another was fast, then there was a decrease in the standard deviation, while if it was slow there was then an increase in the standard deviation. This would indicate that both the mean and standard deviation may be used as indices of competition.

The lack of correlation between growth-rates and variation in the size of year-classes was marked, and this was attributed to competition among year-classes. The presence of a dominant year-class in the fishery is considered desirable. In 1945, a large natural spawning produced a year-class which dominated the fishery for four years. The growth-rate of all age-classes was affected by the presence of the large year-class.

The increase in numbers of shiners over the recent period of investigation has been phenomenal. There is little doubt that the first introduction of shiners into the lake took place before 1948, probably in 1945, so that the period of investigation coincides with the increase in the shiner population.

The foods of the shiner are chiefly Copepoda, Cladocera, and aquatic insects, the latter two of which have become the staples for the trout since the depletion of the *Gammarus*. A potentially competitive relationship is indicated. Predation by the trout on the shiners may compensate somewhat for the competition, but local observations on other lakes indicate that it takes three or four years for the trout to " obtain the habit " of eating shiners. Stomach contents from Paul Lake trout to date would confirm this observation, since no consumption of shiners has been found as yet. Apparently certain densities of the shiner population are necessary before predation by trout is extensive.

The future management of the Paul Lake fishery will require a re-estimation of the productivity of the lake in terms of trout when the shiner-trout interrelation has been more clearly studied and when some type of equilibrium in respect to competition and predation has been achieved. Limitation of the fishery by closed seasons, smaller bag-limits, etc., might be considered as a means of preventing overfishing of the trout, but it will be necessary to separate the effects of the fishery, the shiner population, and other factors on the production of trout. Some consideration must also be given to quality of fish in the catch.

Pontoporeia and Mysis Investigations

These two species of shrimps do not occur naturally in British Columbia. In the past, many authorities have suggested that their introduction into the Province would be a valuable addition to the faunæ of many of our lakes. These shrimps live in deep and cold water and afford an excellent food for trout which is always readily available.

Collections of *Pontoporeia* and *Mysis* were made on Waterton Lakes, Alta., on July 17th and October 10th. The first collections were made as a trial to ensure that it was a practical project to attempt a large-scale introduction. The transport of the shrimps to Kaslo on Kootenay Lake was successful and, in October, a large transplant was completed. Twenty fry cans of shrimps were released in Crawford Bay on Kootenay Lake in October, and within the next few months the area will be revisited to see if the shrimps are still present and reproducing.

During the winter, investigations on these species have been conducted at the laboratory at the university. Their oxygen and temperature requirements have been briefly outlined and this work will continue. R. R. Wilson is in charge of the work.

Steelhead Investigations

A first report on the investigations of the steelhead in the Lower Fraser River area has been published in the Annual Report of the Game Department for 1948. Reprints of this report are available from the Game Department office in Vancouver. In the past winter season the collection of scale samples and weekly catch records, which list data on catch per unit of effort, stream-levels, etc., has been continued. For this season to date, 138 scale samples have been received, and they were distributed as follows: Vedder River, 69; Coquihalla River, 30; Silver Creek, 6; Wolfson Creek, 9; Alouette River, 2; Seymour Creek, 6; Lois Creek, 1; Kanaka Creek, 2; Campbell River, 13; total, 138.

The examination of the scale samples taken in the Lower Mainland area has suggested a relation between growth-rate and length of time fish spend in fresh water and a possible relation between growth-rate and tendency to summer run. This research problem is being investigated carefully.

Plantings of marked Kamloops trout yearlings have been made in the Coquihalla River, Silver Creek, and Seymour Creek as a part of an investigation of the migratory habits of the Interior trout and the steelhead. If the Kamloops trout plantings produce steelhead, the stocking of steelhead streams where necessary might be economical and simple.

The co-operation of anglers in submitting scale samples is solicited again, as their assistance is invaluable to the survey.

Redside Shiner Investigations

(By C. C. Lindsey)

The redside shiner (*Richardsonius balteatus*) occurs in immense numbers in many lakes also occupied by game fish such as the Kamloops trout. It has been recently introduced into several new localities formerly occupied only by trout, and has multiplied enormously. This situation has been viewed with alarm by some sportsmen on the assumption that shiners will seriously compete with trout for food, or that they will consume young trout. On the other hand, in some lakes shiners have been purposely introduced as food for game fish.

In order to better understand the relationship of shiners to game species, collections and experiments have been made during the last two years. It has been shown that shiners can, and in some cases do, eat trout fry; also, all types of food taken by trout were also eaten by shiners in those lakes studied, so there is good evidence that shiners and young trout may compete with each other. On the other hand, it has been shown that

larger trout frequently eat shiners. This is true of Kamloops trout, mountain Kamloops trout, cut-throat trout, and especially of Eastern brook trout.

The degree to which shiners are injurious or beneficial to game-fish production varies in different lakes. In general, it may be supposed that shiners are harmful to young trout, but that they serve a useful purpose by converting diffuse microscopic organisms into readily available food for large trout. Presence of shiners may, therefore, sometimes tend to produce small numbers of large game fish.

Studies are also being conducted on factors controlling the numbers of fin-rays, scales, etc., in shiners. These characters are extremely variable in the species, and it has been shown that they may be controlled by the temperature during hatching of the eggs. The same is probably true, to a lesser extent, for Kamloops trout. It is hoped that such studies can be of use in distinguishing wild from hatchery-raised game fish in order to help determine the effectiveness of present stocking policies.

New Methods of Egg Collection

(By I. Barrett)

The losses attending the transport of newly fertilized eggs from a collecting station to a hatchery are often of serious concern to hatchery officials. It has been found that losses are very low when eggs and sperms are put together without water in clean jars and taken to the hatchery and there placed in a fertilizing pan and subsequently in baskets. The orthodox method of fertilizing at the place of collection and transporting water-hardened eggs is much less consistently satisfactory. The new method is considered to be a safer and quicker technique. The research material will be published and all hatchery officials will be notified.

Acknowledgments

The fisheries scientific group would like to thank the Game Commissioners, and Drs. Clemens and Cowan, scientific advisers to the Department, who have handled administrative problems and details in the past year, and who have been generous in their assistance in all phases of the work. Inspector C. F. Kearns, of " B " Game Division, extended every assistance of the Divisional personnel and equipment to the Kootenay surveys. Without this help our work would have been considerably less extensive. The assistance of all of the Game Inspectors and Game Wardens has been foremost in all of the investigations.

The co-operation of anglers in the collection of information, and of resort owners in collecting and supplying information and lending boats is gratefully acknowledged.

STATISTICAL STATEMENTS

Comparative Statistics, 1913 to 1949, Inclusive

Calendar Year	Prosecutions					Revenue Derived from Sale of Game Licences and Fees	Revenue Derived from Fur Trade
	Informations Laid	Convictions	Cases Dismissed	Firearms Confiscated	Fines Imposed		
1913	188	181	7	.....	$4,417.50	$109,600.80	.....
1914	294	273	21	.....	5,050.00	92,034.20	.....
1915	279	258	21	.....	4,097.50	72,974.25	.....
1916	127	110	17	.....	2,050.00	66,186.97	.....
1917	111	97	14	.....	1,763.50	65,487.50	.....
1918	194	167	17	5	3,341.00	75,537.00	.....
1919	267	242	25	36	6,024.50	116,135.00	.....
1920	293	266	27	46	6,073.00	132,296.50	$5,291.39
1921	329	312	17	74	6,455.00	114,842.00	24,595.80
1922	359	317	42	44	7,275.00	127,111.50	51,093.89
1923	309	280	29	24	5,676.50	121,639.50	60,594.18
1924	317	283	34	24	4,758.00	125,505.50	56,356.68
1925	296	279	17	43	5,825.00	123,950.50	56,287.78
1926	483	439	44	39	7,454.00	135,843.50	62,535.13
1927	518	469	49	47	10,480.50	139,814.00	71,324.96
1928	439	406	33	29	7,283.50	140,014.75	58,823.07
1929	602	569	33	54	9,008.00	142,028.22	47,329.89
1930	678	636	32	33	9,572.75	147,660.00	45,161.11
1931	676	625	51	40	8,645.00	137,233.31	46,091.08
1932	538	497	41	37	5,493.50	141,269.55	40,363.79
1933	498	474	24	22	3,531.00	135,876.94	44,167.48
1934	477	454	23	4	5,227.82	149,955.11	47,102.81
1935	454	438	16	19	4,399.50	148,689.64	49,831.95
1936	451	436	15	14	3,965.00	157,647.30	52,196.50
1937	585	552	33	20	5,332.50	177,771.33	53,697.48
1938	613	574	39	42	5,729.50	192,024.07	44,963.87
1939	547	526	21	21	4,776.50	193,170.53	49,187.00
1940	440	419	21	18	5,197.00	188,605.20	68,466.33
1941	446	430	16	9	4,977.50	213,267.67	63,125.30
1942	409	392	17	27	5,079.50	205,451.71	68,475.07
1943	356	342	14	18	5,554.50	207,661.72	58,354.03
1944	379	372	7	8	5,570.50	238,902.36	70,363.23
1945	652	632	20	30	8,381.50	352,228.85	104,250.95
1946	819	798	21	39	10,921.00	502,555.25	107,357.72
1947	895	878	17	56	11,837.50	597,529.30	99,344.14
1948	1,142	1,117	25	74	17,537.00	610,383.56	73,392.08
1949	1,115	1,099	16	86	18,148.50	656,997.38	61,543.26
Totals	17,575	16,639	916	1,082	$246,910.07	$7,255,882.47	$1,741,667.95

SUMMARY OF TOTAL REVENUE DERIVED FROM SALE OF VARIOUS LICENCES, COLLECTIONS, ETC., JANUARY 1ST TO DECEMBER 31ST, 1949

Revenue derived from—	Total
Sale of resident firearms licences, and deer, moose-elk, and pheasant tags	$299,325.80
Sale of resident anglers', guides', and prospectors' firearms licences	77,895.00
Sale of non-resident firearms and anglers' licences and outfitters' licences	191,389.50
Sale of non-resident ordinary firearms and anglers' (minors) licences	2,124.00
Sale of fur-traders', taxidermists', and tanners' licences, and royalty on fur	61,543.26
Sale of confiscated and surrendered fur	437.60
Sale of confiscated firearms	166.58
Collection of big-game trophy fees from non-residents	84,410.00
Prosecutions—Fines imposed under the " Game Act "	18,148.50
Miscellaneous revenue	1,248.90
Total	$736,689.14

Statement of Resident Firearms Licences, January 1st to December 31st, 1949

Government Agency	O.F.L.		G.F.L.		Extra G.F.L.		S.F.L.		Extra S.F.L.		Duplicates		Farmers' O.F.L.		Total
	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	
Alberni	1,628	$4,884.00	24	$115.00	1	$12.00	81	$786.00			19	$9.50			$5,806.50
Ashcroft	207	621.00	45	264.00							1	.50			885.50
Atlin	12	36.00	26	156.00			26	251.00	5	$12.50					455.50
Barkerville	106	318.00	73	414.00	2	24.00	17	167.00			1	.50			923.50
Burns Lake	409	1,227.00	399	2,277.00	6	72.00	150	1,422.00	24	60.00	7	3.50	4	$8.00	5,069.50
Clinton	409	1,227.00	308	1,817.00			133	1,286.00			1	.50			4,330.50
Cranbrook	1,092	3,276.00	1,169	6,696.00	3	36.00	47	464.00			22	11.00			10,483.00
Creston	874	2,622.00	166	831.00			28	277.00			15	7.50	3	6.00	3,743.50
Cumberland	2,878	8,634.00	35	159.00			136	1,348.00	49	122.50	31	15.50			10,279.00
Duncan	1,670	5,010.00	24	111.00	2	24.00	21	186.00			13	6.50			5,337.50
Fernie	509	1,527.00	514	3,021.00	4	48.00	67	634.00			7	3.50			5,233.50
Golden	393	1,179.00	390	2,178.00	8	90.00	84	807.00			5	2.50			4,256.50
Grand Forks	373	1,119.00	12	66.00	1	12.00	31	307.00			3	1.50			1,505.50
Greenwood	309	927.00	5	24.00	3	33.00					3	1.50			985.50
Kamloops	1,937	5,810.00	601	3,345.00	13	156.00	144	1,401.00			32	16.00	4	8.00	10,736.00
Kaslo	113	339.00	48	288.00	5	60.00	9	90.00			1	.50			777.50
Kelowna	1,982	5,946.00	276	1,278.00	4	48.00	17	170.00			27	13.50	3	6.00	7,461.50
Lillooet	386	1,158.00	170	960.00	1	12.00	35	344.00			1	.50	1	2.00	2,476.50
Merritt	436	1,308.00	19	111.00	1	12.00	29	284.00	3	7.50	3	1.50			1,724.00
Nanaimo	2,326	6,978.00	79	390.00	3	36.00	35	332.00			20	10.00			7,746.00
Nelson	1,159	3,477.00	169	930.00	3	36.00	106	1,060.00			10	5.00			5,508.00
New Denver	351	1,053.00	56	327.00			3	30.00			1	.50			1,410.50
New Westminster	8,371	25,107.00	1,197	6,678.00	8	96.00	214	2,071.00			55	27.50	184	368.00	34,347.50
Oliver	665	1,995.00	47	267.00	1	12.00					6	3.00	39	78.00	2,355.00
Penticton	1,766	5,298.00	193	1,014.00	11	129.00	13	119.00			10	5.00	19	38.00	6,603.00
Pouce Coupe	1,005	3,015.00	822	4,730.00	26	312.00	299	2,924.00	45	112.50	12	6.00	3	6.00	11,105.50
Powell River	528	1,584.00	26	147.00	1	12.00	28	277.00			2	1.00			2,021.00
Prince George	818	2,454.00	1,214	6,519.00	7	84.00	234	2,263.00	5	12.50	25	12.50	12	24.00	11,369.00
Prince Rupert	1,055	3,165.00	338	1,959.00	8	96.00	220	2,173.00	15	37.50	7	3.50	1	2.00	7,436.00
Princeton	807	2,421.00	24	120.00	8	96.00	27	264.00			5	2.50	1	2.00	2,905.50
Quesnel	476	1,428.00	276	1,566.00	7	84.00	70	680.00	7	17.50	5	2.50	1	2.00	3,780.00
Revelstoke	263	789.00	135	804.00	1	12.00	44	434.00			2	1.00			2,040.00
Rossland	1,306	3,918.00	162	585.00	2	24.00	12	104.00			12	6.00			4,637.00
Salmon Arm	1,023	3,069.00	197	1,017.00			51	504.00			6	3.00	11	22.00	4,615.00
Smithers	299	897.00	241	1,416.00	1	12.00	65	639.00	45	112.50	3	1.50			3,078.00
Stewart	23	69.00	3	18.00			6	60.00							147.00
Telegraph Creek	3	9.00	8	48.00			48	480.00	9	22.50					559.50
Vancouver	8,939	26,817.00	1,222	6,753.00	41	489.00	136	1,306.00			98	49.00	1	2.00	35,416.00
Vernon	2,104	6,312.00	254	1,323.00	2	24.00	43	390.00			15	7.50	3	6.00	8,062.50
Victoria	4,062	12,186.00	129	606.00	6	72.00	35	329.00			41	20.50			13,213.50
Williams Lake	602	1,807.00	268	1,581.00	5	60.00	221	2,147.00			12	6.00	4	8.00	5,609.00
Totals	53,674	$161,016.00	11,364	$62,909.00	195	$2,325.00	2,965	$28,810.00	207	$517.50	539	$269.50	294	$588.00	$256,435.00
Less refunds															1,044.00
															$255,391.00

REVENUE DERIVED FROM THE SALE OF DEER, MOOSE-ELK, AND PHEASANT TAGS, JANUARY 1ST TO DECEMBER 31ST, 1949

Government Agency	Moose-Elk Tags		Deer Tags		Pheasant Tags		Totals
	No.	Amount	No.	Amount	No.	Amount	
Alberni	21	$21.00	2,646	$661.50	747	$74.70	$757.20
Ashcroft	39	39.00	304	76.00	529	52.90	167.90
Atlin	4	4.00	120	30.00	.....	.....	34.00
Barkerville	79	79.00	279	69.75	.....	.....	148.75
Burns Lake	429	429.00	547	136.75	.....	.....	565.75
Clinton	546	546.00	1,554	388.50	150	15.00	949.50
Cranbrook	1,247	1,247.00	4,193	1,048.25	30	3.00	2,298.25
Creston	135	135.00	1,473	368.25	1,497	149.70	652.95
Cumberland	.....	.....	4,025	1,006.25	2,005	200.50	1,206.75
Duncan	18	18.00	2,465	616.25	1,478	147.80	782.05
Fernie	568	568.00	1,907	476.75	.....	.....	1,044.75
Golden	446	446.00	1,405	351.25	.....	.....	797.25
Grand Forks	13	13.00	640	160.00	386	38.60	211.60
Greenwood	5	5.00	679	169.75	2	.20	174.95
Kamloops	710	710.00	3,925	981.25	6,359	635.90	2,327.15
Kaslo	13	13.00	287	71.75	.....	.....	84.75
Kelowna	241	241.00	1,833	458.25	6,953	695.30	1,394.55
Lillooet	146	146.00	877	219.25	499	49.90	415.15
Merritt	19	19.00	360	90.00	939	93.90	202.90
Nanaimo	65	65.00	3,762	940.50	2,259	225.90	1,231.40
Nelson	94	94.00	1,953	488.25	138	13.80	596.05
New Denver	9	9.00	620	155.00	22	2.20	166.20
New Westminster	2,081	2,081.00	10,444	2,611.00	32,830	3,283.00	7,975.00
Oliver	217	217.00	1,253	313.25	134	13.40	543.65
Penticton	154	154.00	1,957	489.25	2,425	242.50	885.75
Pouce Coupe	926	926.00	2,381	595.25	.....	.....	1,521.25
Powell River	9	9.00	803	200.75	.....	.....	209.75
Prince George	1,123	1,123.00	1,812	453.00	.....	.....	1,576.00
Prince Rupert	278	278.00	1,613	403.25	.....	.....	681.25
Princeton	24	24.00	885	221.25	151	15.10	260.35
Quesnel	299	299.00	1,096	274.00	.....	.....	573.00
Revelstoke	81	81.00	359	89.75	318	31.80	202.55
Rossland	65	65.00	1,906	476.50	143	14.30	555.80
Salmon Arm	204	204.00	987	246.75	2,786	278.60	729.35
Smithers	234	234.00	386	96.50	.....	.....	330.50
Stewart	.....	.....	3	.75	.....	.....	.75
Telegraph Creek	23	23.00	.....	.....	.....	.....	23.00
Vancouver	1,196	1,196.00	9,220	2,305.00	33,121	3,312.10	6,813.10
Vernon	226	226.00	1,956	489.00	11,840	1,184.00	1,899.00
Victoria	107	107.00	5,856	1,464.00	6,888	688.80	2,259.80
Williams Lake	380	380.00	1,476	369.00	.....	.....	749.00
Totals	12,474	$12,474.00	80,247	$20,061.75	114,629	$11,462.90	$43,998.65
						Less refunds	63.85
							$43,934.80

Revenue Derived from Sale of Resident Anglers', Guides', Free Farmers', and Prospectors' Firearms Licences, January 1st to December 31st, 1949

Government Agency	Anglers		Guides		Free Farmers	Prospectors		Total
	No.	Amount	No.	Amount	No.	No.	Amount	
Alberni	1,445	$1,445.00	4	$30.00	14	.....	.....	$1,475.00
Ashcroft	268	268.00	.....	.....	14	11	.....	268.00
Atlin	.....	.....	2	20.00	.....	6	.....	20.00
Barkerville	230	230.00	4	55.00	.....	36	.....	285.00
Burns Lake	677	677.00	84	665.00	24	33	.....	1,342.00
Clinton	927	927.00	179	1,975.00	8	7	.....	2,902.00
Cranbrook	2,573	2,573.00	14	140.00	27	34	.....	2,713.00
Creston	1,152	1,152.00	10	100.00	24	5	.....	1,252.00
Cumberland	2,588	2,588.00	14	145.00	49	1	.....	2,733.00
Duncan	1,192	1,192.00	7	70.00	79	.....	.....	1,262.00
Fernie	1,245	1,245.00	46	445.00	3	.....	.....	1,690.00
Golden	670	670.00	71	790.00	18	5	.....	1,460.00
Grand Forks	511	511.00	19	175.00	32	1	.....	686.00
Greenwood	344	344.00	.....	.....	24	16	.....	344.00
Kamloops	3,108	3,108.00	107	1,090.00	112	20	$3.00	4,201.00
Kaslo	353	353.00	3	25.00	7	11	.....	378.00
Kelowna	2,687	2,687.00	2	10.00	81	8	1.00	2,698.00
Lillooet	568	568.00	12	120.00	3	64	2.00	690.00
Merritt	672	672.00	1	5.00	28	2	.....	677.00
Nanaimo	2,335	2,335.00	2	20.00	70	3	.....	2,355.00
Nelson	2,917	2,917.00	9	100.00	24	25	.....	3,017.00
New Denver	620	620.00	.....	.....	8	3	.....	620.00
New Westminster	11,556	11,556.00	4	55.00	121	38	8.00	11,619.00
Oliver	583	583.00	.....	.....	6	1	.....	583.00
Penticton	2,246	2,246.00	1	10.00	23	6	.....	2,256.00
Pouce Coupe	629	629.00	117	945.00	37	9	.....	1,574.00
Powell River	826	826.00	.....	.....	9	3	.....	826.00
Prince George	1,088	1,088.00	49	455.00	61	41	5.00	1,548.00
Prince Rupert	580	580.00	8	75.00	17	16	.....	655.00
Princeton	1,108	1,108.00	5	50.00	.....	48	4.00	1,162.00
Quesnel	462	462.00	39	380.00	76	52	.....	842.00
Revelstoke	528	528.00	7	75.00	9	9	.....	603.00
Rossland	2,480	2,480.00	.....	.....	5	21	.....	2,480.00
Salmon Arm	1,372	1,372.00	24	230.00	108	8	.....	1,602.00
Smithers	439	439.00	12	110.00	53	21	.....	549.00
Stewart	.....	.....	.....	.....	.....	2	.....	.....
Telegraph Creek	.....	.....	8	90.00	.....	10	.....	90.00
Vancouver	10,310	10,310.00	1	10.00	9	113	8.00	10,328.00
Vernon	2,000	2,000.00	5	50.00	189	17	4.00	2,054.00
Victoria	3,424	3,424.00	1	10.00	77	12	.....	3,434.00
Williams Lake	558	558.00	191	2,060.00	26	30	4.00	2,622.00
Totals	67,271	$67,271.00	1,062	$10,585.00	1,475	748	$39.00	$77,895.00

Revenue Derived from Sale of Non-resident Firearms, Non-resident Anglers', and Outfitters' Licences, January 1st to December 31st, 1949

Government Agency	General Firearms Licences		General Firearms Licences (Alternative)		General Firearms Licences (Special)		Anglers' Licences (Other than Canadian)		Anglers' Licences (Canadian)		Outfitters' Licences		Total
	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	
Alberni	1	$25.00	-----	-----	-----	-----	66	$462.00	3	$10.50	-----	-----	$497.50
Ashcroft	1	25.00	-----	-----	-----	-----	34	238.00	4	14.00	-----	-----	277.00
Atlin	-----	-----	-----	-----	1	$15.00	-----	-----	-----	-----	-----	-----	15.00
Barkerville	2	38.00	-----	-----	-----	-----	4	28.00	2	7.00	-----	-----	73.00
Burns Lake	12	300.00	-----	-----	3	45.00	62	434.00	6	21.00	-----	-----	800.00
Clinton	39	975.00	-----	-----	5	75.00	260	1,820.00	24	84.00	-----	-----	2,954.00
Cranbrook	128	3,200.00	-----	-----	3	45.00	435	3,044.00	96	336.00	-----	-----	6,625.00
Creston	36	900.00	-----	-----	3	45.00	672	4,704.00	71	248.50	-----	-----	5,897.50
Cumberland	7	175.00	-----	-----	1	15.00	342	2,394.00	27	94.50	-----	-----	2,678.50
Duncan	6	150.00	-----	-----	-----	-----	67	469.00	14	49.00	-----	-----	668.00
Fernie	110	2,750.00	-----	-----	5	75.00	134	938.00	680	2,380.00	2	$100.00	6,243.00
Golden	81	2,025.00	-----	-----	1	15.00	140	980.00	310	1,085.00	2	100.00	4,205.00
Grand Forks	-----	-----	-----	-----	2	30.00	339	2,373.00	2	7.00	-----	-----	2,410.00
Greenwood	16	400.00	-----	-----	-----	-----	65	455.00	1	3.50	-----	-----	858.50
Kamloops	49	1,225.00	-----	-----	1	15.00	715	5,005.00	59	206.50	-----	-----	6,451.00
Kaslo	8	200.00	-----	-----	-----	-----	134	938.00	21	73.50	-----	-----	1,211.50
Kelowna	5	125.00	-----	-----	-----	-----	1,370	9,593.50	41	143.50	-----	-----	9,862.00
Lillooet	2	50.00	-----	-----	-----	-----	18	126.00	3	10.50	-----	-----	186.50
Merritt	-----	-----	-----	-----	-----	-----	54	378.00	-----	-----	-----	-----	378.00
Nanaimo	10	250.00	-----	-----	1	15.00	161	1,127.00	23	80.50	-----	-----	1,472.50
Nelson	3	75.00	-----	-----	1	15.00	823	5,761.00	84	294.00	-----	-----	6,145.00
New Denver	-----	-----	-----	-----	-----	-----	17	119.00	7	24.50	-----	-----	143.50
New Westminster	1,187	29,675.00	1	$50.00	1	15.00	6,440	45,079.00	60	210.00	-----	-----	75,029.00
Oliver	277	6,925.00	-----	-----	-----	-----	2,065	14,455.00	3	10.50	-----	-----	21,390.50
Penticton	12	300.00	-----	-----	1	15.00	387	2,709.00	31	108.50	-----	-----	3,132.50
Pouce Coupe	139	3,475.00	-----	-----	10	150.00	156	1,092.00	261	913.50	4	200.00	5,830.50
Powell River	-----	-----	-----	-----	-----	-----	17	119.00	-----	-----	-----	-----	119.00
Prince George	46	1,150.00	-----	-----	1	15.00	64	448.00	9	31.50	-----	-----	1,644.50
Prince Rupert	8	200.00	-----	-----	-----	-----	52	364.00	3	10.50	-----	-----	574.50
Princeton	-----	-----	-----	-----	-----	-----	54	378.00	4	14.00	-----	-----	392.00
Quesnel	1	25.00	-----	-----	-----	-----	29	203.00	3	10.50	-----	-----	238.50
Revelstoke	10	250.00	-----	-----	-----	-----	69	483.00	31	108.50	-----	-----	841.50
Rossland	-----	-----	-----	-----	-----	-----	284	1,988.00	15	52.50	-----	-----	2,040.50
Salmon Arm	20	500.00	-----	-----	2	30.00	815	5,705.00	60	210.00	-----	-----	6,445.00
Smithers	1	25.00	-----	-----	-----	-----	9	63.00	3	10.50	-----	-----	98.50
Telegraph Creek	13	325.00	-----	-----	-----	-----	3	21.00	-----	-----	-----	-----	346.00
Vancouver	199	4,968.00	1	50.00	3	45.00	441	3,083.50	34	119.00	-----	-----	8,265.50
Vernon	4	100.00	-----	-----	-----	-----	269	1,883.00	18	63.00	-----	-----	2,046.00
Victoria	12	300.00	-----	-----	4	60.00	234	1,638.00	22	77.00	-----	-----	2,075.00
Williams Lake	26	657.00	-----	-----	-----	-----	53	371.00	4	14.00	-----	-----	1,042.00
Totals	2,471	$61,763.00	2	$100.00	49	$735.00	17,353	$121,469.00	2,039	$7,136.50	8	$400.00	$191,603.50
												Less refunds	214.00
													$191,389.50

Statement of Non-resident Ordinary Firearms and Anglers' (Minors) Licences, January 1st to December 31st, 1949

Government Agency	Non-resident Ordinary Firearms Licences		Anglers' Licences (Minors)		Total
	No.	Amount	No.	Amount	
Alberni	----	------	2	$2.00	$2.00
Ashcroft	----	------	3	3.00	3.00
Barkerville	----	------	1	1.00	1.00
Burns Lake	----	------	5	5.00	5.00
Clinton	1	$3.00	88	88.00	91.00
Cranbrook	1	3.00	25	25.00	28.00
Creston	1	3.00	55	55.00	58.00
Cumberland	----	------	42	42.00	42.00
Fernie	----	------	42	42.00	42.00
Golden	----	------	61	61.00	61.00
Grand Forks	----	------	38	38.00	38.00
Greenwood	----	------	12	12.00	12.00
Kamloops	----	------	102	102.00	102.00
Kaslo	----	------	13	13.00	13.00
Kelowna	----	------	178	178.00	178.00
Lillooet	----	------	2	2.00	2.00
Merritt	----	------	7	7.00	7.00
Nanaimo	----	------	13	13.00	13.00
Nelson	----	------	60	60.00	60.00
New Denver	----	------	5	5.00	5.00
New Westminster	1	3.00	866	866.00	869.00
Oliver	----	------	209	209.00	209.00
Penticton	----	------	27	27.00	27.00
Pouce Coupe	7	21.00	7	7.00	28.00
Prince George	----	------	9	9.00	9.00
Prince Rupert	----	------	1	1.00	1.00
Princeton	----	------	3	3.00	3.00
Quesnel	----	------	2	2.00	2.00
Revelstoke	----	------	5	5.00	5.00
Rossland	----	------	25	25.00	25.00
Salmon Arm	2	6.00	58	58.00	64.00
Vancouver	11	33.00	34	34.00	67.00
Vernon	----	------	24	24.00	24.00
Victoria	----	------	28	28.00	28.00
Totals	24	$72.00	2,052	$2,052.00	$2,124.00

Revenue Derived from Sale of Fur-traders', Taxidermists', and Tanners' Licences and Royalty on Fur, January 1st to December 31st, 1949

Government Agency	Resident Fur-traders' Licences		Resident Fur-traders' Licences (Transient)		Agent for Non-resident Fur-traders' Licences		Royalty or Tax on Furs		Taxidermists' or Tanners' Licences		Total
	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	
Atlin	3	$75.00					13	$78.75			$153.75
Barkerville							1	.25			.25
Burns Lake	14	350.00					29	1,057.15			1,407.15
Clinton	2	50.00					5	34.80			84.80
Cranbrook			1	$100.00			2	6.50			106.50
Fernie							5	76.25			76.25
Golden							5	31.25			31.25
Kamloops	3	75.00					7	66.00	1	$2.00	143.00
Kelowna							1	1.00			1.00
Lillooet	2	50.00									50.00
Merritt	4	100.00									100.00
Nanaimo									1	2.00	2.00
Nelson			1	100.00			7	93.30	1	2.00	195.30
New Westminster							9	41.77			41.77
Penticton	1	25.00									25.00
Pouce Coupe	15	375.00	4	400.00	1	$200.00	322	11,403.60	3	6.00	12,384.60
Prince George	5	125.00	3	300.00			67	5,539.00	1	2.00	5,966.00
Prince Rupert	6	150.00	2	200.00			33	821.13			1,171.13
Quesnel	5	125.00	1	100.00							225.00
Revelstoke							2	6.00			6.00
Rossland							1	1.66			1.66
Smithers	5	125.00					17	730.70			855.70
Stewart	1	25.00									25.00
Telegraph Creek	1	25.00					36	1,265.12			1,290.12
Vancouver	51	1,275.00	2	200.00			223	35,165.98	6	12.00	36,652.98
Vernon	1	25.00					4	6.50			31.50
Victoria							24	136.55	2	4.00	140.55
Williams Lake	7	175.00	2	200.00							375.00
Totals	126	$3,150.00	16	$1,600.00	1	$200.00	813	$56,563.26	15	$30.00	$61,543.26

Total Collections from Fur Trade, 1921 to 1949, Inclusive

Year	Fur Royalty or Tax	Fur-traders', Tanners', and Taxidermists' Licences	Total
1921	$24,595.80	$6,195.00	$30,790.80
1922	51,093.89	6,365.00	57,458.89
1923	60,594.18	6,930.00	67,524.18
1924	56,356.68	6,090.00	62,446.68
1925	48,737.78	7,550.00	56,287.78
1926	56,045.13	6,490.00	62,535.13
1927	61,629.96	9,695.00	71,324.96
1928	51,563.07	7,260.00	58,823.07
1929	40,769.89	6,560.00	47,329.89
1930	40,431.11	4,730.00	45,161.11
1931	41,056.08	4,925.00	45,981.08
1932	36,253.79	4,110.00	40,363.79
1933	39,592.48	4,575.00	44,167.48
1934	42,697.81	4,405.00	47,102.81
1935	44,986.95	4,845.00	49,831.95
1936	46,186.50	6,010.00	52,196.50
1937	47,257.48	6,440.00	53,697.48
1938	39,423.87	5,540.00	44,963.87
1939	44,238.00	4,949.00	49,187.00
1940	62,745.33	5,721.00	68,466.33
1941	56,755.30	6,370.00	63,125.30
1942	63,176.07	5,299.00	68,475.07
1943	52,122.03	6,232.00	58,354.03
1944	63,412.23	6,951.00	70,363.23
1945	93,793.40	10,559.00	104,352.40
1946	98,766.72	8,591.00	107,357.72
1947	92,637.14	6,707.00	99,344.14
1948	66,939.08	6,453.00	73,392.08
1949	56,563.26	4,980.00	61,543.26
Totals	$1,580,421.01	$181,527.00	$1,761,948.01

Comparative Statement Showing Pelts of Fur-bearing Animals on Which Royalty Has Been Collected during the Period 1921 to 1949, Inclusive

Calendar Year	Number and Kind of Pelts on Which Royalty Has Been Collected																				Amount of Royalty Collected
	Bear	Badger	Beaver	Fisher	Fox, Silver	Fox, Cross	Fox, Red	Fox, Blue (Farmed)	Fox, Black	Fox, Platinum (Farmed)	Lynx	Marten	Mink	Muskrat	Otter	Racoon	Skunk	Squirrel	Weasel	Wolverine	
1921	2,489	.....	473	711	62	259	297	.....	.....	.....	1,240	11,128	10,693	75,185	666	2,651	361	.....	26,285	329	$24,595.80
1922	2,127	.....	26,359	536	88	356	443	.....	.....	.....	1,855	12,181	18,932	139,232	915	6,069	715	.....	24,603	298	51,093.89
1923	1,397	.....	32,212	575	114	422	650	.....	.....	.....	2,666	10,043	19,276	127,846	832	5,204	813	.....	37,408	216	60,594.18
1924	1,339	.....	24,619	627	210	920	1,281	.....	.....	.....	4,830	11,780	20,201	91,599	769	4,595	681	.....	29,878	251	56,356.68
1925	1,199	.....	18,231	524	248	1,145	1,592	.....	.....	.....	6,488	7,535	18,795	67,331	713	4,959	802	.....	25,210	208	48,737.78
1926	1,505	.....	18,478	1,038	419	2,226	2,881	.....	.....	.....	8,250	9,920	24,158	48,426	783	5,120	798	.....	30,952	325	56,045.13
1927	1,529	.....	24,418	1,149	674	2,342	2,590	.....	.....	.....	6,385	11,008	16,548	63,884	1,068	7,488	1,132	.....	38,337	502	61,629.96
1928	1,735	.....	20,662	887	573	910	1,031	.....	.....	.....	4,397	11,610	11,968	65,130	981	7,141	1,114	.....	46,782	487	51,563.07
1929	1,165	.....	14,787	749	226	1,056	1,028	.....	.....	.....	2,583	11,265	8,226	52,696	856	5,271	725	.....	67,619	323	40,769.89
1930	1,105	.....	17,137	681	150	601	579	.....	.....	.....	1,584	9,172	8,995	84,500	838	3,790	837	.....	62,630	354	40,431.11
1931	641	.....	18,123	663	267	532	539	.....	.....	.....	1,599	8,066	10,528	106,920	807	3,171	543	.....	42,893	206	41,056.08
1932	592	.....	12,624	558	917	583	644	102	.....	.....	1,273	8,750	12,977	100,509	662	3,555	640	.....	48,357	236	36,253.79
1933	281	.....	11,741	602	2,174	714	972	342	.....	.....	2,064	11,433	17,066	91,230	723	2,891	513	.....	43,321	233	39,592.48
1934	254	.....	10,826	709	2,769	1,249	1,532	232	.....	.....	3,543	9,747	21,408	127,111	770	2,419	562	.....	43,666	207	42,697.81
1935	118	.....	13,593	721	2,696	1,698	2,413	287	.....	.....	3,661	8,979	21,453	107,339	573	1,983	353	.....	34,910	227	44,986.95
1936	141	.....	14,269	760	2,910	2,165	2,662	336	.....	.....	3,507	10,071	20,362	91,591	754	2,856	408	.....	36,307	267	46,186.50
1937	472	.....	15,932	676	3,693	1,626	1,827	530	.....	.....	2,751	9,849	18,030	70,166	824	2,972	391	.....	48,043	279	47,257.48
1938	405	.....	15,291	502	3,016	672	840	560	.....	.....	1,582	8,461	20,146	76,516	596	2,278	475	.....	44,159	215	39,423.87
1939	456	.....	18,748	538	3,312	552	628	472	.....	.....	1,125	9,038	27,579	85,553	667	2,107	329	62,797	50,197	191	44,238.00
1940	200	.....	20,652	558	2,772	605	733	553	.....	.....	1,226	9,678	37,986	117,506	749	1,798	424	589,355	71,580	213	62,745.33
1941	94	.....	21,107	585	2,144	597	863	265	.....	.....	1,295	9,200	20,675	116,722	706	2,648	313	400,938	32,949	246	56,755.30
1942	92	44	18,266	1,289	2,351	1,083	1,447	354	.....	.....	1,373	8,351	43,424	89,759	485	2,125	477	672,415	57,299	196	63,176.07
1943	151	28	17,257	446	2,130	1,696	2,612	274	.....	.....	1,520	6,540	30,408	93,931	417	3,170	321	475,859	52,114	128	52,122.03
1944	234	21	18,147	685	1,902	3,234	4,688	223	2	1	2,419	11,077	39,307	88,182	721	3,546	582	379,299	32,236	209	63,412.23
1945	189	34	23,968	788	1,560	3,156	5,696	602	1	.....	3,235	11,345	35,805	88,146	685	3,238	427	471,854	34,239	260	93,793.40
1946	230	13	22,899	782	1,570	1,549	3,030	221	.....	.....	2,046	11,604	37,693	65,573	844	3,019	286	621,969	52,811	272	98,766.72
1947	209	15	20,427	814	1,599	790	993	707	.....	47	1,992	11,971	41,275	60,433	724	2,647	142	553,812	52,492	164	92,637.14
1948	173	3	15,892	731	296	327	374	22	.....	5	1,194	7,798	33,451	73,432	653	1,796	31	345,444	28,135	209	66,939.08
1949	159	.....	15,120	482	39	114	165	.....	.....	.....	580	5,950	9,249	80,678	450	1,577	11	351,598	20,769	182	56,563.26
Totals	20,681	158	522,258	20,366	40,881	33,179	45,030	6,082	3	53	78,263	283,550	656,614	2,547,126	21,231	102,084	15,206	4,925,340	1,216,181	7,433	$1,580,421.01

NOTE.—Royalty first put into effect in July, 1921.

Particulars of Various Pelts of Fur-bearing Animals on Which Royalty Has Been Paid, January 1st to December 31st, 1949

Government Agency	Number and Kind of Pelts on Which Royalty Has Been Paid															
	Bear	Beaver	Fisher	Fox, Silver	Fox, Cross	Fox, Red	Lynx	Marten	Mink	Muskrat	Otter	Racoon.	Skunk	Squirrel	Weasel	Wolverine
Atlin	4	36	------	------	1	1	2	11	4	------	------	------	------	------	------	------
Barkerville	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Burns Lake	------	150	42	3	20	21	65	145	181	901	4	------	3	6,445	686	1
Clinton	------	2	------	------	------	------	------	------	7	148	------	------	------	300	75	------
Cranbrook	2	------	------	------	------	------	------	4	------	------	------	------	------	------	------	------
Fernie	1	12	------	1	------	------	1	34	3	3	------	------	------	10	20	------
Golden	2	------	------	5	------	------	------	------	------	289	------	------	------	------	1	1
Kamloops	------	14	3	1	2	12	------	17	------	------	------	------	------	------	------	------
Kelowna	------	------	------	------	------	------	------	------	2	------	------	------	------	------	------	------
Nelson	------	------	------	------	2	1	------	43	8	208	------	1	------	------	------	------
New Westminster	------	------	------	------	1	7	------	------	------	329	------	2	------	81	------	------
Pouce Coupe	57	4,985	90	8	27	41	220	774	252	2,704	21	------	------	69,965	3,184	45
Prince George	3	2,424	62	9	21	31	91	344	364	4,355	21	------	1	15,200	1,054	19
Prince Rupert	------	232	3	4	2	5	9	76	588	9	21	------	------	184	68	1
Revelstoke	------	------	------	------	------	------	------	4	------	------	------	------	------	------	------	------
Rossland	------	------	------	------	------	------	------	------	------	------	------	------	------	83	------	------
Smithers	------	183	11	1	4	------	3	135	62	535	5	------	------	4,660	330	8
Telegraph Creek	1	559	10	1	1	1	35	104	165	115	6	------	------	2,381	210	51
Vancouver	55	6,523	260	4	26	43	154	4,247	7,442	71,076	361	1,564	7	252,279	15,141	56
Vernon	------	------	1	2	1	------	------	------	------	------	------	------	------	------	------	------
Victoria	33	------	------	------	6	2	------	12	171	6	11	10	------	10	------	------
Totals	159	15,120	482	39	114	165	580	5,950	9,249	80,678	450	1,577	11	351,598	20,769	182

LIST OF FUR CONFISCATED UNDER "GAME ACT," JANUARY 1ST TO DECEMBER 31ST, 1949

Date of Confiscation	Confiscated from	Confiscated at	Kind of Fur Confiscated					
			Beaver	Mink	Muskrat	Racoon	Weasel	Squirrel
Jan. 20	Herman Lowen	Chilliwack	---	---	5	---	---	---
Feb. 14	M. W. Cornish	Alert Bay	---	---	---	1	1	---
Mar. 7	A. McMillan	Prince George	---	---	---	---	1	---
,, 17	N. Maryschuk	Lulu Island	---	---	9	---	---	---
,, 24	Jack Horlich	Trail	---	---	7	---	---	---
,, 25	W. R. Smith	Courtenay	1	---	---	---	---	---
,, 25	Bill Hershey	Little Fort	---	---	---	---	1	26
,, 29	H. Krause	Kelowna	---	---	---	---	---	9
,, 29	S. R. Raskelly	Goldstream	---	4	---	---	---	---
,, 30	M. F. Wagner	Baldonnel	---	---	---	---	3	---
June 1	John Velkin	Hope	2	---	---	---	---	---
,, 3	Roy Hobday	Long Lake	---	---	20	---	---	11
,, 20	J. Dalrymple	Sayward	2	---	---	---	---	---
July 13	P. Cyernicki	Waldo	3	---	---	---	---	---
,, 13	B. Morgan	Ashcroft	2	---	---	---	---	---
,, 13	G. Jones	Hope	2	---	---	---	---	---
Sept. 20	Herbert Ellis	Ladner	---	---	6	---	---	---
Oct. 24	Leo T. Jack	Tulsequah	---	1	---	---	---	---
Dec. 30	John Thompson	Sardis	---	---	1	---	---	---
,, 30	Elmer Dirks	Sardis	---	---	3	---	---	---
,, 30	John Ewert	Sardis	---	---	3	---	---	---
	Totals		12	5	54	1	6	46

NOTE.—The sum of $437.60 was received during 1949 from the sale of confiscated and surrendered fur.

LIST OF FIREARMS CONFISCATED UNDER "GAME ACT," JANUARY 1ST TO DECEMBER 31ST, 1949

Date of Confiscation	Confiscated from	Confiscated at	Kind of Firearms Confiscated	
			Rifles	Shotguns
Jan. 5	Joe Antalek	Pitt Meadows	1	---
,, 14	Thomas Schmnuk	Oliver	1	---
,, 19	William Green	Ladner	---	1
,, 19	Fred Gutshar	Steveston	---	1
,, 19	Keith Ingram	Steveston	---	1
,, 19	P. P. McGee	New Westminster	1	---
,, 20	Gordon McIntosh	Half Moon Bay	1	---
,, 25	Donald Reid	Silver Creek	1	---
,, 25	Chick Hamm	Silver Creek	1	---
,, 28	Jack Cummings	Kelowna	1	---
,, 28	William McGimpsey	Willow Point	1	---
Feb. 9	Ed. Engle	Sardis	1	---
,, 10	Gordon Grafton	Vancouver	1	---
,, 25	S. J. Fleming	Burnaby	1	---
Mar. 10	Ed. Michaud	Prince Rupert	---	1
,, 15	John Anderson	New Westminster	---	1
,, 15	David Winter	New Westminster	1	---
,, 18	Mike Wishlow	Slocan Park	1	---
,, 21	C. F. Webb	Minto	1	---
,, 24	L. L. Oppen	Perow	1	---
,, 28	Ray Silver	Kilgard	---	1
,, 28	Norman Waterworth	Chilliwack	1	---
,, 29	R. J. Singer	North Vancouver	1	---
Apr. 5	Eric Anderson	North Vancouver	1	---
,, 5	Andre Perret	North Vancouver	1	---
,, 19	John Kovacs	Sardis	1	---
,, 27	Harold Wood	New Brighton	1	---
,, 27	Jack Grennan	New Brighton	1	1

List of Firearms Confiscated under "Game Act," January 1st to December 31st, 1949—*Continued*

Date of Confiscation	Confiscated from	Confiscated at	Kind of Firearms Confiscated	
			Rifles	Shotguns
May 23	Donald Hanna	Vancouver	1	—
,, 23	Herbert Nolan	Vancouver	1	—
,, 25	E. Tam	Trail	1	—
,, 25	D. Truant	Trail	1	—
June 1	David Lovett	Vancouver	1	—
,, 1	Leslie Leiper	Vancouver	1	—
,, 1	E. Reeves	Chilliwack	1	—
,, 8	A. Snowden	Chilliwack	1	—
,, 13	John Tymick	Kamloops	2	1
,, 13	Terry Duncan	Vancouver	1	—
,, 13	John O. Kelly	Vancouver	1	—
,, 22	John Stevens	Luxton	1	—
,, 22	Victor Skinner	Victoria	1	—
,, 22	John King	Victoria	1	—
,, 27	James Steffler	Hespler, Ont.	1	—
July 4	Ed. Cline	Los Angeles	1	—
,, 13	Charles Willwan	Zeballos	1	—
Aug. 29	H. W. Wakeman	Chilliwack	1	—
,, 31	Allan G. Mount	Trenton, N.J.	1	—
Sept. 17	T. Tinga	Courtenay	1	—
,, 27	D. F. Armitage	Vancouver	1	—
,, 27	William Anderson	Vancouver	1	—
Oct. 7	A. Puskas	Vancouver	1	—
,, 24	Donald Hill	Vancouver	1	—
,, 24	David Stubbs	Vancouver	1	—
,, 24	Otto Kakoske	Minto	1	—
,, 24	Wm. Trader (alias Bell)	U.S.A.	1	—
,, 28	Ronald A. Baker	Vancouver	1	—
,, 28	Bernard Belyh	Vancouver	1	—
,, 28	William Graff	Delta	1	—
,, 28	Gerald McMillan	Delta	1	—
Nov. 14	Eugene Marcotte	Princeton	1	—
,, 14	Jack V. Miller	Cawston	1	—
,, 15	M. A. Edinger	Arras	1	—
,, 15	David Ward	Abbotsford	1	—
,, 15	Thomas Wookey	Princeton	1	—
,, 17	Harvey Brown	Langley	1	—
,, 17	Steve Kassa	Princeton	1	—
,, 17	L. J. McNaughton	Port Alberni	1	—
,, 17	J. T. Batie	Princeton	1	—
,, 22	J. H. Brown	Vancouver	1	—
,, 22	C. J. Stewart	Vancouver	1	—
,, 22	M. Antoniak	Pitt Meadows	1	—
,, 22	L. Stranaghan	Saanich	—	1
,, 22	O. Wallace	Victoria	1	—
,, 24	R. Fontaine	Youbou	1	—
,, 28	A. Amero	Chilliwack	—	1
,, 28	A. Allenby	Sardis	1	—
,, 28	B. Mitchell	Sardis	1	—
,, 29	R. Black	Delta	1	—
Dec. 2	W. Koop	Yarrow	1	—
,, 5	E. Ekland	Donald	1	—
,, 8	J. D. A. MacKay	Gibsons Landing	1	—
,, 8	J. H. Nelson	Gibsons Landing	1	—
,, 21	D. Dufault	Edgewater	1	—
	Totals		76	10

Note.—The sum of $166.58 was received during 1949 from the sale of confiscated firearms.

Bounties Paid during the Year Ended December 31st, 1949

Government Agency	Wolves		Cougar	Coyotes		Total
	$25	$40	$20	$2	$4	
Alberni	.....	.....	42	.....	.....	$840.00
Atlin	4	.....	.....	.....	9	136.00
Barkerville	.....	6	.....	.....	6	264.00
Burns Lake	195	.....	.....	.....	560	7,115.00
Clinton	.....	15	34	.....	565	3,540.00
Cranbrook	3	.....	21	.....	251	1,499.00
Cumberland	2	.....	44	.....	2	938.00
Duncan	4	.....	35	.....	.....	800.00
Fernie	.....	.....	7	.....	36	284.00
Fort Fraser	15	.....	1	.....	.....	395.00
Golden	.....	.....	8	.....	196	944.00
Grand Forks	.....	.....	4	.....	65	340.00
Kamloops	18	24	38	.....	638	4,722.00
Kaslo	.....	.....	4	.....	15	140.00
Kelowna	.....	.....	4	.....	105	500.00
Lillooet	.....	8	27	.....	78	1,172.00
Merritt	.....	.....	6	.....	659	2,756.00
Nanaimo	2	.....	17	.....	.....	390.00
Nelson	.....	.....	21	.....	145	1,000.00
New Westminster	1	.....	6	.....	18	217.00
Penticton	.....	.....	2	.....	328	1,352.00
Pouce Coupe	154	.....	2	.....	125	4,390.00
Powell River	.....	.....	11	.....	.....	220.00
Prince George	308	.....	10	.....	276	9,004.00
Prince Rupert	64	.....	3	.....	22	1,748.00
Princeton	.....	.....	5	1	145	682.00
Quesnel	.....	50	30	.....	394	4,176.00
Revelstoke	.....	.....	.....	.....	8	32.00
Rossland	.....	.....	.....	.....	21	84.00
Smithers	41	.....	.....	.....	109	1,461.00
Salmon Arm	.....	.....	5	.....	111	544.00
Stewart	4	.....	.....	.....	.....	100.00
Telegraph Creek	155	.....	.....	.....	55	4,095.00
Vancouver	1	6	60	.....	54	1,681.00
Vernon	.....	.....	33	.....	211	1,504.00
Williams Lake	.....	100	44	.....	1,639	11,436.00
Totals	971	209	524	1	6,846	$70,501.00

Comparative Statement of Bounties Paid from 1922 to 1949, Inclusive

Calendar Year	Wolves	Cougars	Coyotes	Crows	Magpies	Eagles	Owls	Total
1922	303	372	1,092	53,443	2,246	7,095	17,625	$60,494.80
1923	162	195	1,687	.....	70	20	172	14,840.00
1924	195	173	5,175	172	.....	89	.....	20,398.40
1925	291	137	7,276	.....	.....	.....	.....	24,397.00
1926	336	183	14,070	5,770	.....	.....	.....	41,077.00
1927	344	372	20,192	10,046	2,487	.....	.....	65,377.95
1928	452	444	3,672	.....	.....	.....	1,025	50,709.25
1929	411	530	1,881	.....	.....	.....	1,389	42,122.00
1930	312	491	1,544	.....	.....	.....	403	36,090.25
1931	310	701	2,864	.....	3,427	.....	1	42,036.15
1932	.....	8	.....	.....	.....	.....	.....	80.00
1933	1	628	.....	.....	.....	.....	.....	6,285.00
1934	221	572	.....	.....	.....	.....	.....	6,825.00
1935	561	430	1,877	.....	.....	.....	.....	12,374.00
1936	837	599	1,950	.....	.....	.....	.....	20,350.00
1937	828	423	1,400	.....	.....	.....	.....	19,540.00
1938	915	384	2,094	.....	.....	.....	.....	21,018.00
1939	1,159	366	1,971	.....	.....	.....	.....	26,399.00
1940	1,659	285	2,038	.....	.....	.....	.....	23,131.00
1941	1,002	196	1,924	.....	.....	.....	.....	16,868.00
1942	1,039	261	1,546	.....	.....	.....	.....	17,397.00
1943	1,017	265	1,221	.....	.....	.....	.....	16,587.00
1944	1,321	301	1,259	.....	.....	.....	.....	20,243.00
1945	1,202	472	5,506	.....	.....	.....	.....	46,627.00
1946	932	461	2,720	.....	.....	.....	.....	22,392.00
1947	1,102	519	2,976	.....	.....	.....	.....	36,386.00
1948	1,156	725	3,911	.....	.....	.....	.....	58,344.00
1949	1,180	524	6,847	.....	.....	.....	.....	70,501.00
Totals	19,248	11,017	98,693	69,431	8,230	7,204	20,615	$838,889.80

Big-game Trophy Fees Paid by Non-residents, January 1st to December 31st, 1949

Name and Address (Government Agency)	Species									Amount
	Bear, Grizzly	Bear, Black or Brown	Caribou	Deer, Coast	Deer, Mule or White-tailed	Mountain-goat	Mountain-sheep	Moose	Wapiti (Elk)	
Barkerville	1	3	.....	.....	.....	.....	.....	.....	.....	$65.00
Burns Lake	5	15	3	.....	4	20	4	32	.....	2,775.00
Clinton	17	29	.....	.....	72	27	10	550	.....	39,145.00
Cranbrook	17	13	.....	.....	19	26	.....	10	30	3,880.00
Fernie	17	15	.....	.....	13	24	.....	24	37	4,935.00
Golden	15	17	.....	.....	27	71	.....	39	34	6,665.00
Greenwood	.....	.....	.....	.....	48	.....	.....	.....	.....	1,215.00
Kamloops	3	2	3	.....	9	9	.....	9	.....	1,115.00
Lillooet	1	1	.....	.....	1	.....	.....	2	.....	200.00
Nelson	1	2	.....	.....	1	2	.....	.....	.....	115.00
New Westminster	4	2	.....	2	33	7	4	54	.....	4,610.00
Oliver	.....	3	.....	.....	32	2	.....	30	.....	2,645.00
Penticton	1	5	.....	.....	.....	.....	.....	.....	.....	75.00
Pouce Coupe	38	37	62	.....	13	55	68	45	3	8,760.00
Prince George	12	21	10	.....	3	10	2	42	.....	3,645.00
Prince Rupert	4	3	.....	.....	1	.....	.....	6	.....	525.00
Princeton	.....	.....	.....	.....	1	.....	.....	.....	.....	25.00
Quesnel	.....	2	3	.....	.....	2	3	18	.....	1,270.00
Revelstoke	4	6	1	.....	.....	.....	.....	.....	.....	280.00
Salmon Arm	1	.....	.....	.....	.....	.....	.....	.....	.....	50.00
Smithers	1	8	.....	.....	.....	1	.....	.....	.....	105.00
Telegraph Creek	8	3	.....	.....	.....	8	6	3	.....	595.00
Vancouver	1	2	.....	.....	4	11	1	5	2	830.00
Vernon	.....	.....	.....	.....	1	.....	.....	.....	.....	25.00
Williams Lake	.....	2	.....	.....	4	6	.....	11	.....	860.00
Totals	151	191	82	2	286	281	98	880	106	$84,410.00

PROSECUTIONS (PROVINCIAL GAME DIVISIONS), JANUARY 1ST TO DECEMBER 31ST, 1949

Description of Offence	Divisions (*see* Foot-note) "A"	"B"	"C"	"D"	"E"	Dismissals	Convictions	Total No. of Informations Laid	Fines or Penalties Imposed
Game Animals									
Allowing dogs to run or hunt deer	1	2	1	.....	1	.....	5	5	$50.00
Killing or hunting game animals of female sex	.....	8	8	4	.....	.....	20	20	1,640.00
Killing, hunting, or in possession of game animals under one year of age	1	.....	4	1	.....	1	5	6	325.00
Killing, hunting, or in possession of game animals during close season	3	7	16	4	2	.....	32	32	1,700.00
Possession of game animals from which evidence (sex) removed	.....	1	2	.....	.....	1	2	3	20.00
Possession of untagged moose, elk, or deer	1	1	2	1	.....	.....	5	5	230.00
Possession of big game on premises of logging camp, etc.	1	.....	1	4	.....	1	5	6	310.00
Hunting or pitlamping deer at night	4	1	.....	.....	2	.....	7	7	500.00
Exceeding bag-limit on big game	.....	.....	1	.....	.....	.....	1	1	.....
Keeping big-game animals in captivity without permit	.....	.....	.....	.....	1	.....	1	1	25.00
Firearms									
Carrying firearms or hunting on game reserve	1	2	.....	2	4	.....	9	9	95.00
Carrying firearms or discharging same in or from automobile	17	33	45	23	37	1	154	155	1,927.00
Carrying or in possession of unplugged repeating shotguns	3	.....	1	2	2	.....	8	8	75.00
Discharging firearms on or across highway in prohibited area	2	2	.....	.....	5	1	8	9	175.00
Discharging firearms in closed areas (Burrard Inlet)	.....	.....	.....	.....	3	.....	3	3	30.00
Minors carrying firearms unaccompanied by an adult	5	.....	1	.....	.....	.....	6	6	20.00
Fur Trade and Trapping									
Trapping or carrying traps without a licence	3	.....	9	1	2	.....	15	15	418.00
Possession of untagged beaver pelts	.....	1	3	1	2	.....	7	7	70.00
Interfering or trapping on another person's trap-line	.....	1	2	1	.....	.....	4	4	110.00
Fur-trader buying furs without licence	.....	1	1	1	.....	.....	3	3	60.00
Trapping or in possession of fur during close season	.....	.....	5	1	2	.....	8	8	130.00
Failing to make returns on trapping licence	.....	.....	1	1	.....	.....	2	2	10.00
Fur-trader failing to keep record-book	.....	.....	.....	1	.....	.....	1	1	100.00
Possession of unprime pelts	.....	.....	.....	1	.....	.....	1	1	10.00
Allowing traps to remain set after close of season	.....	.....	.....	1	.....	.....	1	1	10.00
Licences									
Guiding without a licence	.....	1	1	.....	1	.....	3	3	120.00
Non-resident carrying firearms without a licence	.....	8	2	2	2	.....	14	14	570.00
Non-resident angling without a licence	3	12	2	.....	5	.....	22	22	270.00
Resident carrying firearms without a licence	45	16	63	37	104	.....	265	265	2,530.00
Resident angling or carrying fishing tackle without a licence	58	22	26	1	92	.....	199	199	1,890.00
Loaning or using another person's licence	.....	.....	2	.....	4	1	5	6	210.00
Migratory Game or Non-game birds									
Hunting migratory game birds during prohibited hours	4	6	3	.....	2	1	14	15	140.00
Hunting migratory game birds from power-boat	.....	2	.....	.....	5	.....	7	7	270.00
Hunting migratory game birds with a rifle	.....	.....	.....	1	1	.....	2	2	40.00
Hunting or in possession of migratory game birds during close season	1	3	.....	1	22	1	26	27	612.50
Hunting or in possession of non-game or insectivorous birds	.....	.....	.....	.....	2	.....	2	2	35.00
Special Fishery Regulations									
Angling for trout during close season	.....	5	10	.....	24	.....	39	39	410.00
Jigging or molesting salmon or trout on spawning-grounds	1	4	.....	.....	2	.....	7	7	142.00
Possession of or using salmon roe in prohibited area	1	.....	.....	.....	2	.....	3	3	30.00
Exceeding bag-limit on trout	4	3	1	.....	.....	.....	8	8	215.00
Exceeding bag-limit on salmon	.....	.....	.....	.....	8	.....	8	8	70.00
Possession of undersized trout	10	6	4	.....	7	.....	27	27	316.50
Using gear designed to catch more than one fish	.....	.....	.....	.....	6	.....	6	6	52.50
Using more than two lines while trolling	1	.....	.....	.....	.....	.....	1	1	10.00
Angling in prohibited area	.....	.....	.....	.....	3	.....	3	3	20.00
Using more than one rod while angling	.....	.....	2	.....	1	.....	3	3	35.00

PROSECUTIONS (PROVINCIAL GAME DIVISIONS), JANUARY 1ST TO DECEMBER 31ST, 1949—*Continued*

Description of Offence	Divisions (*see* Foot-note) "A"	"B"	"C"	"D"	"E"	Dismissals	Convictions	Total No. of Informations Laid	Fines or Penalties Imposed
Upland Game Birds									
Allowing dogs to hunt game birds during nesting season	1	-----	-----	-----	3	-----	4	4	40.00
Exceeding bag-limit on upland game birds	-----	1	-----	2	-----	2	1	3	85.00
Hunting upland game birds during prohibited hours	-----	-----	2	-----	-----	-----	2	2	20.00
Hunting, killing, or in possession of upland game birds during close season	7	14	26	3	25	2	73	75	1,285.00
Possession of untagged pheasants	-----	-----	2	-----	1	1	2	3	35.00
Game birds on premises of a shop	-----	-----	-----	1	-----	-----	1	1	10.00
Hunting pheasants with a rifle	-----	-----	-----	-----	2	-----	2	2	20.00
Miscellaneous									
Making false statement to obtain licence or bounty	2	-----	3	1	4	-----	10	10	175.00
Trespassing upon closed land without owner's permission	3	-----	-----	-----	13	2	14	16	220.00
Hunting moose without required big-game licence	-----	-----	2	-----	-----	-----	2	2	20.00
Frightening or molesting game birds on game reserve	-----	-----	1	-----	-----	-----	1	1	10.00
Allowing pheasant tags to be used by another person	-----	-----	1	-----	-----	-----	1	1	50.00
Obtaining a licence while previous licence suspended	-----	-----	1	-----	-----	-----	1	1	50.00
Guiding on other than own territory	-----	-----	1	-----	-----	-----	1	1	10.00
Non-resident hunting big game without a guide	-----	-----	2	-----	-----	-----	2	2	20.00
Allowing another person to use his big-game tag	-----	-----	1	-----	-----	-----	1	1	25.00
Failing to stop automobile when called upon by officer	-----	-----	1	-----	-----	-----	1	1	10.00
Guide failing to make necessary returns	-----	-----	1	-----	-----	-----	1	1	15.00
Obstructing an officer in the discharge of his duties	-----	-----	-----	-----	2	1	1	2	10.00
Using tracer shells while hunting big game	-----	-----	-----	-----	1	-----	1	1	10.00
Totals	183	163	263	99	407	16	1,099	1,115	$18,148.50

Gaol Sentences

Possession of upland game birds during close season, one (ten days).
Pitlamping deer, six (total of twenty-three months).
Angling without a licence, one (five days).
Carrying firearms without licence, two (ten days).
Untagged deer, one (sixty days).
Exceeding bag-limit on deer, one (sixty days).
Interfering with another person's trap-line, one (three months), one (seven days).
Angling during close season, one (seven days).
Possessing game animals of female sex, one (thirty days).
Possessing big-game animal under one year of age, one (thirty days).

NOTE.—"A" Division: Vancouver Island area and part of Mainland. "B" Division: Kootenay and Boundary areas. "C" Division: Kamloops, Yale, Okanagan, Cariboo, and Lillooet areas. "D" Division: Atlin, Skeena, Omineca, Fort George, Peace River, and Yukon Boundary areas. "E" Division: Vancouver, Coast, and Lower Mainland areas.

Hunting and Fishing Accidents, 1949

Date	Name of Wounded Person	Name of Person Responsible for Accident	District	Cause of Accident	Nature of Injuries	Result of Injuries
Feb. 14	William Nikolaychuk	Lester L. Oppen	Perow	Accidental discharge of rifle	Shot in right thigh	Not serious.
Mar. 3	David C. Hobbs	Robert James Singer	North Vancouver	Ricochetting of bullet off water	Shot in right leg	Not serious.
Aug. 18	Harry Capotblanc	Narcisse Capotblanc	Snake River	Accidental discharge of rifle in pack-sack	Shot in left leg	Not serious.
Sept. 6	Lawrence Gilbert	Edward Paul	Big Lake	Mistaken for a moose	Shot in left arm and side	Crippled left arm.
,, 15	Jacob Fehr	Avory Blanchard	Renata	Shot in mistake for a bear during the night and while using lights	Shot in right side of chest	Killed.
,, 15	Jacob Freisen	Avory Blanchard	Renata	Shot in mistake for a bear during the night and while using lights	Shot in left upper arm	Crippled arm.
,, 19	William Loucks	William Johnstone	Cassidy	Mistaken for a deer	Shot in abdomen	Recovered.
,, 20	Leonard Kercher	Maurice Allen Edinger	Arras	Mistaken for a moose	Shot in left back	Not serious.
,, 24	A. R. Unwin	Self	Invermere	Accidental discharge of shotgun while loading same	Shot in right hand	Not serious.
Oct. 2	James Henry and dog and Thomas Graham	Harold E. Illebrun	Fort St. James	Movement of dog mistaken for grouse	All three slightly wounded about body	Not serious.
,, 4	Kenneth Fossum	Self	McCoy Cove, Queen Charlotte Islands	Accidental discharge of rifle	Shot in left leg	Not serious.
,, 10	Allan B. Betts	Self	Cranbrook	Accidental discharge of shotgun while withdrawing same from his truck	Shot in chest	Died.
,, 13	Howard Lavigne	Self	Kwinitsa	Drawing shotgun muzzle first from a rowboat	Shot in left hand	Not serious.
,, 15	Robert W. Dowding	George Tarlier	Ladner	In line of fire	Six pellets in face	Not serious.
,, 15	Joseph Moreau	Self	Ladner	Accidental discharge of shotgun by dog jumping on it	Shot in left arm and right thumb	Severed left arm.
,, 16	Roy Woods	Robert Ellison	West Vancouver	In line of fire	Shot in left shoulder blade	Not serious.
,, 23	Robert Berkey	Leslie Wargo	Hillcrest	In line of fire	Seventy pellets in body and face	Lost sight in left eye.
,, 28	H. J. Bush	Self	Genoa Bay	Accidental discharge of shotgun	Left chest blown away	Killed.
,, 29	Norman Knight	Self	Goldstream Lake	Handling loaded firearm in auto	Shot in groin	Died.
Nov. 6	John Balloni	Clarence Cameron	Gabriola Island	Accidental discharge of falling shotgun	Shot in arm, leg, and chest	Not serious.
,, 6	George E. Shires	Self	Tabor Lake	Accidental discharge of shotgun while removing from boat	Shot in left arm	Arm severed at elbow.
,, 11	Trueman H. Oliver	Gordon Houston	Ladner	In line of fire	Pellet in left hand	Not serious.
Dec. 4	James Flewin	Self	Ecstall River	Accidental discharge of firearm while index finger in muzzle	Lost index finger	Not serious.
,, 17	Herbert Richards	Self	Terra Nova, Lulu Island	Capsizing of duck-punt	Drowned	Drowned.
,, 28	E. G. McMinn	Self	Somenos Lake	Capsizing of boat while hunting ducks	Drowned	Drowned.
,, 29	Adam Dick	Self	Kingcome Inlet	Picking up rifle by barrel from a sled	Shot in left side	Recovered.

Note.—Wherever, after careful investigation, circumstances warranted action being taken against the parties responsible for hunting accidents, firearms licences held by such parties have been cancelled by the Game Commission, and in various cases other action has been taken.

Summary of Game-fish Culture Distributions, Showing Eggs, Fry, and Fingerlings, 1949

Kind of Game Fish	Eggs	Fry	Fingerlings
Cut-throat trout	257,280	219,275	.....
Eastern brook trout	.....	292,240	.....
Hybrids	19,260	23,810	.....
Kamloops trout	4,393,505	3,633,370	1,041,656
Kokanee	1,920,000	417,000	.....
Totals	6,590,045	4,585,695	1,041,656

Summary of Game-fish Eggs, Fry, and Fingerlings at Departmental Hatcheries, December 31st, 1949

Hatchery	Cut-throat	Eastern Brook	Kamloops	Kokanee
	Eggs or Fry	Eggs or Fry	Fingerlings or Fry	Eggs or Fry
Nelson	.....	496,200	129,872	50,000
Puntledge Park	.....	.....	63,906	.....
Smiths Falls	1,000	.....	234,945	.....
Summerland	.....	.....	204,303	18,518
Totals	1,000	496,200	633,026	68,518

Summary

Eggs	6,590,045
Fry	4,585,695
Fingerlings	1,041,656
Total distributions	12,217,396
On hand at hatcheries, December 31st, 1949	1,198,744
Total	13,416,140

Game-fish Culture Branch—Summary of Trout Plantings, 1949

Hatchery or Station (Particulars of Plantings or Liberations)	Kind of Fish or Eggs										
	Cut-throat		Eastern Brook		Kamloops			Kokanee		Hatcheries	
	Eggs	Fry	Eggs	Fry	Eggs	Fry	Finger-lings	Eggs	Fry	Eggs	Fingerlings or Fry
Vancouver Island											
Puntledge Park Hatchery											
Black Creek							2,500				
Boat Lake							2,500				
Cameron Lake							5,000				
Comox Lake							6,000				
Company Dam							6,000				
Crabapple Lake							500				
Cusheon Lake							5,000				
Dog Lake							2,000				
Dot Lake							300				
Grant Lake							5,000				
Great Central Lake							8,000				
Horn Lake							5,000				
Kemp Lake							9,000				
Little River							200				
Long Lake							4,000				
Lower Campbell Lake							5,000				
Matheson Lake							5,000				
Maxwell Lake							5,000				
Mohun Lake							2,500				
Morrison Creek							2,000				
Oyster River							3,500				
Prospect Lake							5,000				
Quamichan Lake							10,000				
Quinsam River							1,000				
Roberts Lake							2,500				
Rogers Lake							8,000				
Shawnigan Lake							33,500				
Silver Lake							2,000				
Somenos Lake							6,000				
Spencer Creek							2,000				
Sproat Lake							10,000				
Sutton Lake							2,000				
Thetis Lake							15,000				
Tsable River							1,000				
Tsolum River							5,000				
Upper Quinsam River							2,500				
Westwood Lake							20,000				
Wolfe Lake							5,000				
Malaspina Rod and Gun Club							5,000				
Totals							219,500				

Game-fish Culture Branch—Summary of Trout Plantings, 1949—*Continued*

Hatchery or Station (Particulars of Plantings or Liberations)	Kind of Fish or Eggs										
	Cut-throat		Eastern Brook		Kamloops			Kokanee		Hatcheries	
	Eggs	Fry	Eggs	Fry	Eggs	Fry	Finger-lings	Eggs	Fry	Eggs	Fingerlings or Fry
Lower Mainland											
Cultus Lake Hatchery											
Campbell River							10,000				
Coquitlam River							4,000				
Deer Lake							4,000				
Hatzic Lake							6,107				
Kakawa Lake							1,893				
Lake of the Woods							2,000				
Little Sumas River							7,000				
Mill Lake							1,000				
Nicomekl River							10,000				
Nicomen Lake							5,000				
Salmon River							7,500				
Serpentine River							7,500				
Silver Lake							10,000				
South Alouette River							4,000				
H. E. Fowler (private sale)							200				
Dr. N. S. Hoar							250				
Totals							80,450				
Smiths Falls Hatchery											
Cultus Lake							67,000				
Kakawa Lake							5,107				
Cultus Lake Hatchery											1,200[1]
Totals							72,107				1,200
Okanagan District											
Lloyd's Creek Hatchery											
Adams Lake						50,000					
Alta Lake					50,000						
Anesty Creek					50,000						
Aylmer Lake						10,000					
Beaver Dam Lake					30,000						
Beaver (Devick) Lake						10,000					
Blind Bay						50,000					
Bolean Creek					10,000						
Bouchie Lake					10,000						
Bowron Lake Chain					10,000						

Bridge Lake					150,000						
Canim Lake					150,000						
Caverhill Lake					50,000	20,000					
Cayoose Creek					50,000						
Charlie Lake					20,000						
Cheakamus Lake					50,000						
Chimney Lake					10,000						
Chum Lake						10,000					
Crown Lake						10,000					
Crystal Lake						30,000					
Dairy Lake						5,000					
Davis Lake					10,000						
Deka Lake					50,000						
Dutch Lake						20,000					
Eagan Lake					10,000						
Eagle Lake						20,000					
Eagle River					50,000						
83 Mile Lake					20,000						
East Barriere Lake					50,000						
Genier Lake						10,000					
Granite Creek					50,000						
Harper Lake						10,000					
Heffley Lake						50,000					
Hoopatatkwa Lake Chain					75,000						
Horse Lake					80,000						
Johnson Lake					10,000						
Kamloops Lake						100,000					
Kelly Lake					25,000						
Kinney Lake					10,000						
Knouff Lake						75,000					
Lac le Jeune						80,000					
Latremeuille Lake					10,000						
Leighton Lake						15,000					
Little Mamquam					50,000						
Lucerne Lake					50,000						
Machete Lake					35,000						
Mann Lake					5,000						
Mara Lake					60,000						
Milburn Lake					10,000						
Miller Lake						30,000					
Monte Lake						10,000					
McConnell Lake						10,000					
McLeese Lake					50,000						
Nita Lake					30,000						
North Barriere Lake					50,000						
Palmer Creek					170,000						
Paul Lake						300,000					
Pavilion Lake						30,000					
Pillar Lake						30,000					
Pinantan Lake						100,000					
Pinaus Lake					50,000						

[1] Kamloops.

GAME-FISH CULTURE BRANCH—SUMMARY OF TROUT PLANTINGS, 1949—*Continued*

Hatchery or Station (Particulars of Plantings or Liberations)	Kind of Fish or Eggs										
	Cut-throat		Eastern Brook		Kamloops			Kokanee		Hatcheries	
	Eggs	Fry	Eggs	Fry	Eggs	Fry	Finger-lings	Eggs	Fry	Eggs	Fingerlings or Fry
Okanagan District—*Continued*											
Lloyd's Creek Hatchery—Continued											
Puntchesakut Lake					20,000						
Quotlenemo Lake					20,000						
Rosemond Lake						25,000					
Salmon River					50,000						
Seymour River					90,000						
Sheridan Lake					20,000						
Shuswap Lake						381,775					
Sock Lake					5,000						
Spanish Lake						5,000					
Square Lake						20,000					
Stake Lake						10,000					
Summit Lake					10,000						
Tunkwa Lake						25,000					
Turquoise Lake						10,000					
Tyaughton Lake					50,000						
Unnamed lake					5,000						
Watch Lake					50,000						
Williams Lake					50,000						
Western States Federated Sportsmen					1,000						
Bulkley Valley Rod and Gun Club					60,000						
Malaspina Rod and Gun Club					50,000						
Ocean Falls Rod and Gun Club					75,000						
Prince George Rod and Gun Club					150,000						
Prince Rupert Rod and Gun Club					100,000						
Terrace Rod and Gun Club					50,000						
Cultus Lake Hatchery										300,000[1]	
Kaslo Hatchery										2,000[1]	
Puntledge Park Hatchery										300,000[1]	
Totals					2,506,000	1,561,775				602,000[1]	
Penask Lake Hatchery											
Alleyne Lake						10,000					
Boss Lake						5,000					
Cowan Lake						3,000					
Crater Lake						5,000					
Davis Lake						5,000					
Gillis Lake						5,000					
Glimpse Lake						15,000					

Harmon Lake						10,000					
Harvey Hall Lakes						20,000					
Hensell Lake						3,000					
Hornet Lake						5,000					
Jackson Lake						5,000					
Kentucky Lake						10,000					
Loosemore Lake						5,000					
Lost (Kump) Lake						10,000					
Ludwig Lake						10,000					
Moore Creek					100,000						
Nevue Lake						5,000					
Penask Creek						3,300					
Peterson Lake						5,000					
Robertson Lake						10,000					
Stoney Lake						5,000					
Thalia Lake						10,000					
Wasley Lake						10,000					
Cranbrook Hatchery										350,000[1]	
Lloyd's Creek Hatchery										1,830,000[1]	
Nelson Hatchery										1,000,000[1]	
Totals					100,000	174,300				3,180,000[1]	
Beaver Lake Hatchery											
Arlington Lake						10,000					
Barclay Creek					100,000						
Brown Lake						5,000					
Coldstream Creek					70,000						
Crooked Lake						35,000					
Crooked and Island Lakes						5,000					
Dee Lake						35,000					
Deer Lake						35,000					
Doreen Lake						15,000					
Edwin Lakes						20,000					
Echo Lake						40,000					
Eight Mile Creek					75,000						
Island Lake						35,000					
Lakevale Lake						10,000					
Lost Lake						5,000					
Mabel Lake						25,000					
Oyama Lake						10,000					
Pats Lake						15,000					
Salmon River					50,000						
South Lake						15,000					
Swan Lake						20,000					
Trapper Lake						10,000					
Two Mile Creek					25,000						
Vance Creek					75,000						
Wilma Lake						10,000					
Revelstoke Rod and Gun Club					110,000						
Kelowna Rearing Ponds					230,000						

[1] Kamloops.

PROVINCIAL LIBRARY
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GAME-FISH CULTURE BRANCH—SUMMARY OF TROUT PLANTINGS, 1949—*Continued*

Hatchery or Station (Particulars of Plantings or Liberations)	Kind of Fish or Eggs										
	Cut-throat		Eastern Brook		Kamloops			Kokanee		Hatcheries	
	Eggs	Fry	Eggs	Fry	Eggs	Fry	Finger-lings	Eggs	Fry	Eggs	Fingerlings or Fry
Okanagan District—*Continued*											
Beaver Lake Hatchery—Continued											
Vernon Rearing Ponds						100,000					
Cranbrook Hatchery										320,000[1]	
Lloyd's Creek Hatchery										385,000[1]	
Nelson Hatchery										480,000[1]	
Puntledge Park Hatchery										200,000[1]	
Summerland Hatchery										972,000[1]	
Totals					735,000	455,000				2,357,000[1]	
Summerland Hatchery											
Agar Lake						5,000					
Allendale Lake						10,000					
Allison Lake						19,800	2,475				
Bear Lake						10,000					
Bear (Murphy) Lake						10,000					
Borgeson Lake						6,650	831				
Cedar Lake						5,000					
Chain Lake						5,000					
Chute Lake						5,000					
Clarke Lake						5,000					
Coquihalla Lake							10,000				
Dry Lake						7,200	900				
Echo Lake						20,000					
Elinor Lake						10,000					
Eneas Lake (Big)						5,000					
Eneas Lake (Little)						5,000					
Garnet Valley Dam							5,000				
Glen Lake						10,000					
Island Lake						5,000					
Kalamalka Lake							25,000				
Laird Lake						11,000	1,375				
Link Lake						5,000					
Misseuzla Lake						30,000					
Munro Lake						5,000					
McCaffrey (Blue) Lake						5,350	668				
Okanagan Lake						3,000	154,921				
Osoyoos Lake						75,000	32,000				
Osprey Lake						10,000					
Otter Lake							10,000				

Peachland Lake						10,000					
Pillar Lake							5,000				
Silver Lake						5,000					
Similkameen River						60,000					
Skaha Lake							116,300				
Sleeping Water Lake (private sale)							1,000				
Taylor Lake (Summit)						10,000	10,000				
Wells Lake						2,500					
Wilgress (Loon) Lake							5,000				
Wolf Lake						5,000					
Totals						380,500	380,470				
Kelowna Rearing-ponds											
Kalamalka Lake							5,693				
Okanagan Lake							1,000				
Woods Lake							22,250				
Totals							28,943				
KOOTENAY DISTRICT											
Nelson Hatchery											
Akokli (Goat) Creek					25,000						
Alta Lake								75,000			
Bear Lake					10,000						
Beaver Creek				35,000							
Big Cayuse Creek					25,000						
Big Sheep Creek				35,000							
Bonanza Creek								105,000			
Boundary Creek					20,000						
Boundary Lake				62,240							
Box Lake						35,000					
Canim Lake								100,000			
Caverhill Lake								100,000			
Champion Creek						28,000					
Champion Lake							2,520				
Christina Lake					70,000	30,000					
Cluculz Lake								50,000			
Cody Creek					5,000						
Conkle Lake						15,000					
Cottonwood Creek						6,300		100,000	150,000		
Cottonwood Lake						5,000					
Crawford Bay						15,000					
Crawford Creek								80,000			
East Barriere Lake								50,000			
Erie Lake				30,000							
Goat Creek								90,000			
Goat River					50,000			160,000			
Grave Lake									30,000		
Granby River						25,000					
Hill Creek					15,000						

[1] Kamloops.

Game-fish Culture Branch—Summary of Trout Plantings, 1949—*Continued*

Hatchery or Station (Particulars of Plantings or Liberations)	Kind of Fish or Eggs										
	Cut-throat		Eastern Brook		Kamloops			Kokanee		Hatcheries	
	Eggs	Fry	Eggs	Fry	Eggs	Fry	Finger-lings	Eggs	Fry	Eggs	Fingerlings or Fry
Kootenay District—*Continued*											
Nelson Hatchery—Continued											
Kootenay Lake							58,310				
Kootenay Lake (West Arm)						50,000	17,880		37,000		
Kootenay River						50,000	5,520				
Kalamalka Lake								50,000			
Kettle River (Westbridge)					60,000						
Kettle River (West Fork)					30,000						
Kokanee Creek								200,000	100,000		
Kuskanax Creek					10,000						
Lac la Hache								100,000			
La France Creek								80,000			
Loon Lake				15,000							
Meadow Creek				30,000							
Mission Creek								100,000			
Moyie Lake (Lower)								50,000			
Moyie Lake (Upper)								50,000			
McDonald Creek					25,000						
McKenzie Creek					15,000						
North Barriere Lake								50,000			
Okanagan Lake								100,000			
Palmer Bar Creek				15,000							
Pass Creek						72,000					
Porcupine Creek						10,000					
Redfish Creek								100,000	100,000		
Rock Creek					20,000						
Rosebud Lake				30,000							
Salmon River				10,000		30,000					
Salmon River (North Fork)						10,000					
Salmon River (South Fork)						10,000					
Shea Creek					25,000						
Shuswap Lake								100,000			
Six Mile Lakes						15,000					
Slocan Lake					100,000	50,000					
Slocan Pool							6,000				
Slocan River					50,000	50,000					
Squaw Creek					50,000						
Staubert Lake					30,000						
Summit Lake						35,000					
Sunshine Creek					50,000						
Wasa Lake				30,000							

Whatshan Lakes					60,000	20,000					
Wilgress Lake						10,000					
Wilson Lake					40,000						
Summerland Hatchery										165,000[2]	
Summerland Hatchery (scientific feeding)[1]										20,000[3]	
Totals				292,240	785,000	571,300	90,230	1,890,000	417,000	185,000	
Kaslo Hatchery											
Bjerkness Creek								26,000			
Fletcher Creek								26,000			
Kaslo Bay							72,200				
Redfish Creek								37,810			
Woodbury Creek								52,000			
Totals							72,200	141,810			
Gerrard Hatchery											
Lardeau River							97,756				
Staubert Lake								30,000			
Nelson Hatchery										70,000[1]	
Nelson Hatchery										1,960,000[3]	
Totals							97,756	30,000		2,030,000	
Cranbrook Hatchery											
Backwater Lakes						30,000					
Baptiste Lake		5,910									
Bartholomews Lake										10,000[4]	
Blue Lake						5,000					
Brewery Creek		5,000									
Bull River (between dams)										9,260[4]	
Bush Lakes					49,375						
Cartwright Lake						10,000					
Cedar Lake						10,000					
Columbia Lake					69,335						
Deer Lake						25,000					
Driftwood Lake	10,000										
Dunbar, Twin, and Bott Lakes	22,190										
Edwards Lake					25,000						
Elk River (north of Fernie)	67,145										
Elk River (south of Fernie)	68,535										
Fish Lakes		11,000									
Fish Lake (above Munroe Lake)		5,000									
Garbutts Lake					29,460						
Goat River	30,000										
Grave Lake						30,000					
Hall Lake		6,965									
Holgrave Lake		6,000									
Horseshoe Lake						10,000					
Jeffrey Lake		10,000									
Johnson Lake						17,370					

[1] Kamloops. [2] Eastern Brook. [3] Kokanee. [4] Hybrids.

GAME-FISH CULTURE BRANCH—SUMMARY OF TROUT PLANTINGS, 1949—*Continued*

Hatchery or Station (Particulars of Plantings or Liberations)	Kind of Fish or Eggs										
	Cut-throat		Eastern Brook		Kamloops			Kokanee		Hatcheries	
	Eggs	Fry	Eggs	Fry	Eggs	Fry	Finger-lings	Eggs	Fry	Eggs	Fingerlings or Fry
Kootenay District—*Continued*											
Cranbrook Hatchery—Continued											
Lillian Lake						10,000					
Loon Lake						12,500					
Lunds Lake						5,000					
Manistee Lake						10,460					
Michel Creek		20,000									
Mirror Lake						8,000					
Moyie Lake						38,470					
Moyie Lake (backwater)											10,000[4]
Moyie River (below lakes)		19,890									
Munroe Lake		28,200									10,415[4]
McBains Lake						10,000					
New Lake						5,000					
North Star Lake						10,000					
Paddy Ryan Lakes						10,000					
Peavine Creek					25,000						
Peckham's Lake						8,000					
Premier Lake						21,455					
Quartz Lake						5,000					
Rock (Stevens) Lake						9,825					
Rothwell Lake						5,000					
Silver Springs Lakes						8,000					
Skookumchuk River		21,605									3,395[4]
Smith Lake						20,500					
St. Mary's Lake	49,410										
Surveyor Lake						10,000					
Tamarac Lake						5,000					
Twin Lakes						5,000					
Windermere Lake					69,335	30,000					
Wiseman Creek	10,000										
Fernie Rearing-ponds		15,000									
Matthew Creek Rearing-ponds		15,000									
Revelstoke Hatchery										50,800[5]	
Totals	257,280	169,570			267,505	384,580				70,060	23,810
Revelstoke Hatchery											
Beaver Lake						5,000					
Butterball Lake						5,000					
Echo Lake						3,000					

Eight Mile Creek	----------	5,000	----------	----------	----------	----------	----------	----------	----------	----------	----------
Greely Creek	----------	----------	----------	----------	----------	5,000	----------	----------	----------	----------	----------
Griffin Lake	----------	10,000	----------	----------	----------	25,000	----------	----------	----------	----------	----------
Summit Lake	----------	9,705	----------	----------	----------	15,000	----------	----------	----------	----------	----------
Three Valley Lakes	----------	15,000	----------	----------	----------	35,000	----------	----------	----------	----------	----------
Victor Lake	----------	10,000	----------	----------	----------	12,915	----------	----------	----------	----------	----------
Totals	----------	49,705	----------	----------	----------	105,915	----------	----------	----------	----------	----------

[4] Hybrids. [5] Cut-throat.

Returns from 2,189 Holders of Special Firearms Licences, Showing Big Game, Fur-bearing Animals, and Predatory Animals Killed, Season 1948–49

Big Game

Bear	449	Mountain-goat	65
Caribou	27	Mountain-sheep	4
Deer	871	Wapiti (elk)	22
Moose	361		

Fur-bearing Animals

Beaver	4,809	Otter	228
Fisher	289	Racoon	730
Fox	351	Skunk	160
Lynx	345	Squirrels	67,042
Marten	3,282	Weasels	16,452
Mink	4,268	Wildcat	188
Muskrat	40,520	Wolverine	72

Predatory Animals

Cougar	139	Wolves	674
Coyotes	2,236		

Statement of Vermin Destroyed by Game Wardens during the Year 1949

Kind of Animals or Birds Destroyed	Game Divisions					Total
	"A"	"B"	"C"	"D"	"E"	
Animals						
Bear	1	21	32	38	3	95
Bobcats	.....	2	11	.....	1	14
Cougar	26	50	31	2	9	118
Coyotes	.....	173	516	125	21	835
Fox	.....	.....	.....	.....	28	28
Gophers	.....	235	.....	1	.....	236
Ground-hogs	.....	70	20	.....	.....	90
Wild (domestic) cats	315	81	183	29	338	951
Wild (domestic) dogs	113	86	72	3	40	314
Wolves	.....	.....	18	74	.....	92
Birds						
Crows	362	296	1,401	253	983	3,295
Eagles	74	22	47	36	24	203
Hawks	61	61	268	67	63	520
Magpies	.....	48	744	40	15	847
Mergansers	2	.....	.....	.....	.....	2
Owls	6	23	107	35	8	179
Ravens	61	26	133	154	21	395
Starlings	.....	.....	.....	.....	2	2

Summary of Liberation of Game Birds, 1949

Area	Pheasants
Vancouver Island—	
Alberni	96
Courtenay	500
Nanaimo-Parksville	182
Victoria (North and South Saanich)	252
Total	1,030
Lower Mainland—	
Agassiz	600
Burnaby	29
Chilliwack	1,558
Delta	2,532
Lulu Island	630
Matsqui	754
Mission (Hatzic and Nicomen Island)	2,106
Pitt Meadows	2,783
Sumas Prairie	1,992
Surrey	2,454
Total	15,438
Interior—	
Ashcroft	72
Creston	37
Dawson Creek	24
Fort St. John	24
Grand Forks	120
Kamloops	705
Kelowna	92
Nelson	48
Penticton	244
Salmon Arm	321
Summerland	6
Vanderhoof	64
Vernon	300
Total	2,057

Summary

District	
Vancouver Island	1,030
Lower Mainland	15,438
Interior	2,057
Total	18,525

Eighty-nine California quail were purchased and liberated in the Victoria district during the year.

NOTE.—Total cost covering purchase of all game birds listed was $34,700.15.

Statement of Game-bird Farmers, 1949

Number and Kind of Birds on Hand as at January 1st, 1949

Pheasants	6,404	Partridge	31
Quail	99		

Number and Kind of Birds Raised, 1949

Pheasants	22,833	Partridge	6
Quail	126		

Number and Kind of Birds Purchased, 1949

Pheasants	338

Number and Kind of Birds Sold, 1949

Pheasants	20,575	Partridge	18
Quail	96		

Number and Kind of Birds Killed or Died, 1949

Pheasants	3,177	Quail	3

Number and Kind of Birds on Hand as at December 31st, 1949

Pheasants	5,823	Partridge	19
Quail	126		

Note.—During the year 1949 there were 124 licensed game-bird farmers in the Province, but during the year 1949 twenty of these farmers discontinued business. There were six nil returns. Game-bird bands sold to licensed game-bird farmers during the year 1949 amounted to $168 (1,680 bands at ten cents each).

Miscellaneous Revenue, 1949

94 game-convention minutes at 75 cents per copy	$70.50
1,680 game-bird bands at 10 cents each	168.00
251 trap-line transfer fees at $2.50 each	627.50
1,029 game maps at 10 cents each	102.90
Proceeds, sale of trout eggs	15.00
Proceeds, export of live fur-bearing animals	160.00
Proceeds, permits export game meat	105.00
Total	$1,248.90

LIST OF GUIDES AND NON-RESIDENT OUTFITTERS, 1949

Definition of Guide Licence Classifications

A First-class Guide shall be one who has acted as a guide in the Province for a period of at least three years in the ten years immediately preceding his application for a guide's licence and who has suitable equipment for outfitting any person desiring to hunt game.

A Second-class Guide shall be one who has acted as a guide in the Province for a period of at least three years in the ten years immediately preceding his application for a guide's licence, but who cannot qualify as a First-class Guide.

An Assistant Guide shall be one who cannot qualify as either a First-class or Second-class Guide, and shall be entitled to act as a guide in the hunting of game birds or in angling for trout, and after securing a permit so to do from the Game Commission when employed by, or under the supervision of a First- or Second-class Guide to guide big-game hunters.

Lower Mainland Coast and Fraser Valley

Name and Address of Guide	Licence Grade
Dennis, James, Hope	1st
Herman, John, 1364 Eleventh Ave. West, Vancouver	Asst.
Smith, Frank J., Hope	2nd
Wells, Gordon, R.R. 2, Sardis	1st
Wells, Ray, Cultus Lake	1st

Vancouver Island

Name and Address of Guide	Licence Grade
Alsdorf, William, Campbell River	2nd
Boyles, Thomas J., Cobble Hill	2nd
Brimacombe, Herbert, Stuart Island	2nd
Burbridge, James, Campbell River	Asst.
Carnell, Harvey D., Lake Cowichan	2nd
Cathcart, John, Sayward	2nd
Drummond, Jack, Merville	2nd
Flesher, Eric R., Phillips Arm	2nd
Gillespie, G. K., Lake Cowichan	Asst.
Hancock, Arthur, Lake Cowichan	2nd
Hancock, Joseph A., Lake Cowichan	1st
Harding, Richard, Sayward	2nd
Houghton, Lawrence, Nanaimo	2nd
Kay-Nichols, Caesar, Sayward	2nd
Large, Edwin L., Campbell River	2nd
Marshall, Donald, Campbell River	2nd
Marshall, Duncan, Campbell River	2nd
Palliser, Charles H., Lake Cowichan	2nd
Palliser, W., Lake Cowichan	2nd
Parkin, Alvin, Campbell River	2nd
Robertson, George, 2329 Blanshard St., Victoria	2nd
Ryan, J., Campbell River	2nd
Welch, Phil, Port Alberni	2nd
Whittaker, Gordon, Upper Campbell Lake	2nd
Wilson, Jack, Sproat Lake, Alberni	2nd

Non-Resident Outfitters

Atkinson, Charles, Halcourt, Alberta.
Harrison, George, Banff, Alberta.
McCollough, Henry, Wembley, Alberta.
Phillips, Frank, 1551 St. Andrews, North Vancouver.
Ray, Jack, Beaverlodge, Alberta.
Russell, Andy, Twin Butte, Alberta.
Strom, Erling, Banff, Alberta.
Sunderman, Kelly, Hythe, Alberta.

Revelstoke-Salmon Arm and Okanagan Districts

Name and Address of Guide	Licence Grade
Becker, Johnnie, Sorrento	2nd
Bischoff, Fred, Magna Bay	2nd
Churchill, Thomas, Falkland	2nd
Cullis, Bert, Taft	2nd
De Simone, S. H., Revelstoke	1st
Durrand, W. D., Revelstoke	2nd
Engler, John, Lumby	2nd
Esswein, P. B., Magna Bay	2nd
Gardiner, Robert, Albas	2nd
Hansen, Robert Lee, Salmon Arm	1st
Hanson, Charles E., R.R. 1, Lumby	2nd
King, Edwin I., Westwold	2nd
Laforme, George W., Revelstoke	1st
Martin, Pete, Sicamous	2nd
Moser, A., Pillar Lake	Asst.
McBee, Milvin F., Sorrento	1st
McKay, John, Revelstoke	Asst.
McLellan, Francis B., Celista	2nd
MacKenzie, M. M., Lumby	2nd
Nelson, Eric A., Revelstoke	1st
Newman, Jack, Notch Hill	2nd
Oban, Frank, Eagle Bay	2nd
Potts, Bill, Sorrento	1st
Reese, Richard, Sorrento	1st
Reisterer, Lex, Magna Bay	2nd
Richards, Ralph, Magna Bay	2nd
Ritchie, Gordon K., Kelowna	Asst.
Softing, Berger, Lumby	2nd
Temple, Glory, Seymour Arm	1st
Walters, Jack, Sorrento	1st
Webber, James G., Vernon	Asst.
Werner, Carl, R.R. 1, Lumby	2nd
Wooldridge, Charles C., Notch Hill	Asst.
Young, A., Sicamous	Asst.

Grand Forks-Greenwood (Including Kettle Valley)

Name and Address of Guide	Licence Grade
Abel, Cummin, Kettle Valley	2nd
Acherman, Alfred William, Beaverdell	2nd
Anschetz, Chris, Rock Creek	2nd
Bohnet, James, Rock Creek	Asst.
Bradshaw, George A., Westbridge	2nd
Carey, Joe F., Westbridge	2nd
Cochran, Fred M., Westbridge	2nd
Fernstrom, Frederick, Greenwood	2nd
Fernstrom, John A., Kettle Valley	2nd
From, Helge, Westbridge	2nd
From, Ingvall, Westbridge	2nd
From, Oliver, Westbridge	2nd
Hall, D. Elmer, Westbridge	2nd
Hollingshead, Gerald, Westbridge	Asst.
Lockhart, Fred, Beaverdell	2nd
Lutner, E. C., Beaverdell	2nd
Petersen, Stanley G., Grand Forks	2nd
Rodwell, Dennis, Westbridge	Asst.
Smith, Howard J., Westbridge	2nd

Kamloops District

Name and Address of Guide	Licence Grade
Archibald, D. A., Clearwater	2nd
Archibald, David C., Clearwater	Asst.
Albrecht, Charles W., Quilchena	Asst.
Bell, Dorothy, Clearwater	Asst.
Boule, James, Savona	1st
Boyd, Kenneth G., Kamloops	Asst.
Boyko, John, Savona	Asst.
Brousseau, Clifford, Savona	1st
Burdett, George, Savona	1st
Burdett, Loretta, Savona	2nd
Cahoon, Charles, Westsyde	2nd
Cameron, James B., Savona	1st
Caywood, Phil, Clearwater	2nd
Clearwaters, Ralph W., Westsyde	1st
Cochran, Marvin, Darfield	2nd
Comeau, William L., Savona	Asst.
Cooper, Norman T., Savona	2nd
Cooper, Phil, Kamloops	1st
De Lisle, Henry G., R.R. 1, Louis Creek	2nd
Dever, Dolly, Savona	Asst.
Dexheimer, John, Savona	2nd
Douthwaite, Peter, McLure	1st
Dumont, Pascal, Red Lake	Asst.
Dunlop, William, Barriere	2nd
Douglas, K. Ellis, Kamloops	2nd
Felton, E. M., Valemount	2nd
Fennell, A. C., Chu Chua	2nd
Fennell, J. A., Chu Chua	2nd
Gaglardi, Charles, Kamloops	Asst.
Genier, Wilfred, Barriere	2nd
Gourlay, James R., Barriere	1st
Grant, Charles, McLure	2nd
Grant, Gordon, McLure	1st
Hagen, Harry, Barriere	2nd
Hansen, Howard, Little Fort	Asst.
Helset, Torbjorn, Clearwater	1st
Hogue, Henry A., R.R. 1, Clearwater	2nd
Hoover, Eldred, Black Pines	1st
Houghton, George, Pinantan	2nd
Humphrey, Ashton, Knutsford	Asst.
Irving, Frank, McLure	2nd
Johnston, Stan, Black Pool	Asst.
Kipling, John, Black Pines	2nd
La Fave, John W., Louis Creek	1st
La Fave, Ted, Agate Bay	Asst.
Latremouille, Joseph L., Little Fort	1st
Lean, Theodore B., Clearwater	1st
Lloyd, William, Red Lake	2nd
Loveway, Thomas V., Little Fort	2nd
Ludtke, Charles, Clearwater	2nd
Ludtke, Laurence, Clearwater	1st
Marriott, Robert, Heffley Creek	2nd
Marsden, Gladstone, Red Lake	Asst.
Mason, Allen C., R.R. 1, Louis Creek	2nd
Matthews, Maurice, Kamloops	Asst.
Morris, Ian, Red Lake	2nd
Morton, Alf, McLure	1st
Murray, George, Savona	1st
Macabee, Cyril, Savona	Asst.
McConnell, Ken, Louis Creek	2nd
MacDiarmid, Garfield, Clearwater	1st
MacDougall, Wallace J., Darfield	Asst.
McKain, J. W., Renata	Asst.
McLennan, Jimmy, Clearwater	Asst.
Nelson, Garald, Black Pines	2nd
Nelson, William L., Savona	1st
Nielson, Rendel, Pinantan	Asst.
Palmer, William F., Darfield	2nd
Peck, Ted., 4563 Third Ave. West, Vancouver	Asst.
Peel, Murrill, Pritchard	1st
Perry, Sam, Kamloops	Asst.
Rainer, Karl, Darfield	2nd
Savage, Jack, Kamloops	Asst.
Schreiber, Charles P., Darfield	1st
Scott, Duncan, Barriere	1st
Shook, Charles, Clearwater	2nd
Shook, Frank, Clearwater	Asst.
Small, Reg, Clearwater	1st
Smith, Henry, Barriere	2nd
Smith, John W., Savona	2nd
Thacker, George, Savona	Asst.
Turner, John, Criss Creek	2nd
Tuson, Clifford, Savona	1st
Vinie, Alec, Box 384, Kamloops	2nd
Welland, John, Red Lake	2nd
Woodward, Johnny, Little Fort	1st
Wilson, Don, Vinsulla	2nd
Withrow, Gordon, Valemount	Asst.
Wood, Jack, Ladysmith	Asst.

Similkameen (Penticton-Princeton-Keremeos)

Name and Address of Guide	Licence Grade
Armstrong, Allan C., Keremeos	2nd
Holding, Richard, Bankier P.O.	2nd
Le Lievre, George L., Penticton	2nd
Le Lievre, Lind J., Penticton	1st
Lewis, James William, Princeton	1st
Manion, Bert Robert, Tulameen	Asst.
Manion, William Bartlett, Tulameen	2nd
Wright, Brian, Princeton	2nd

PEACE RIVER (INCLUDING FORT NELSON AND LOWER POST)

Name and Address of Guide	Licence Grade
Anderson, Edward A., Dawson Creek	Asst.
Anderson, Stewart B., Dawson Creek	1st
Apsassin, Daniel, Fort St. John	Asst.
Artemenko, William, Fort St. John	2nd
Beattie, Robert, Gold Bar	2nd
Bedell, Richard, Rolla	Asst.
Behn, George, Fort Nelson	Asst.
Belcourt, Adolphus, Hazelmere, Alta. (Big Slough, B.C.)	2nd
Belcourt, Clarence, Mountain Valley, Alta. (Big Slough, B.C.)	2nd
Belcourt, Elbert, Mountain Valley, Alta. (Big Slough, B.C.)	Asst.
Belcourt, Francis, Goodfare, Alta.	Asst.
Belcourt, George, Lymburn P.O., Alta. (Kelly Lake, B.C.)	Asst.
Belcourt, Magloire, Mountain Valley, Alta. (Big Slough, B.C.)	2nd
Belcourt, William, Lymburn P.O., Alta. (Kelly Lake, B.C.)	Asst.
Brown, Wesley J., Fort St. John	1st
Calliou, Edward, Hazelmere, Alta. (Big Slough, B.C.)	Asst.
Calliou, Joe, Little Prairie	Asst.
Calliou, Johnny, Mountain Valley, Alta. (Big Slough, B.C.)	1st
Calliou, Pete, Little Prairie	Asst.
Calliou, Sam, Moberly Lake	2nd
Callison, Dennis W., Mile 422, Fort Nelson	1st
Cameron, Patrick, Moberly Lake	1st
Campbell, Alfred, Mountain Valley, Alta. (Big Slough, B.C.)	Asst.
Campbell, Harry, Goodfare, Alta. (Kelly Lake, B.C.)	Asst.
Cardinal, Harvey, North Pine	Asst.
Clovis, Roy, Baldonnel	Asst.
Callison, E. O., Mile 422, Fort Nelson	1st
Cooke, Frank, Dawson Creek	Asst.
Cottom, Clarence A., Hudson Hope	2nd
Courtepatte, Alfred, Mountain Valley, Alta. (Kelly Lake, B.C.)	Asst.
Courvoisier, Henry, Fort Nelson	1st
Davidson, J. O., Lower Post	1st
Davis, Albert, Moberly Lake	Asst.
Desjarlais, James, Moberly Lake	Asst.
Desjarlais, Joe, Moberly Lake	Asst.
Dhenin, Rene G., Fort St. John	1st
Dopp, Bruce D., Bear Flat	Asst.
Durney, Laviral, East Pine	1st
Durney, Milo, East Pine	1st
Edzera, George, Lower Post	2nd
Elden, Otto, Moberly Lake	Asst.
Fellers, Harold L., Fellers Heights	Asst.
Fleet, Delbert, Charlie Lake	Asst.
Garbitt, Theophile S., Moberly Lake	1st
Gauthier, Eugene, Mount Valley, Alta. (Big Slough, B.C.)	Asst.
Gauthier, Johnny, Moberly Lake	Asst.
Gibson, Harry B., Dawson Creek	1st
Gladu, Fred E., Lymburn P.O., Alta. (Kelly Lake, B.C.)	Asst.
Gladu, Isadore, Goodfare, Alta. (Big Slough, B.C.)	2nd
Gladu, William, Goodfare, Alta. (Big Slough, B.C.)	Asst.
Golata, Francis W., Dawson Creek	1st
Goodrich, George, Little Prairie	2nd
Gray, George D., Goodfare, Alta.	Asst.
Groat, Allen Henry, Sunset Prairie	2nd
Hambler, Elbert, Mountain Valley, Alta. (Big Slough, B.C.)	Asst.
Hambler, George, Lymburn P.O., Alta. (Kelly Lake, B.C.)	Asst.
Hambler, Joseph, Goodfare, Alta. (Kelly Lake, B.C.)	Asst.
Haralson, Lorne M., Fort Nelson	1st
Harvey, Tom, Lower Post	2nd
Holly, James, Fort St. John	Asst.
Harrold, John, Fort Nelson	Asst.
Houle, Joe, Arras	2nd
Hubbard, T. H., Muncho Lake	Asst.
Ireland, Guy E., Dawson Creek	Asst.
Jensen, Charlie, Fort Nelson	Asst.
Keech, Jack T., Little Prairie	Asst.
Kindt, B. R., Fort St. John	Asst.
Kruger, Clifford, Gold Bar	Asst.
Kruger, William, Hudson Hope	2nd
Lamont, Alexander, Fort St. John	2nd
Larson, Albin, Fort Nelson	1st
Letendre, Fred, Moberly Lake	Asst.
Letendre, James, Goodfare P.O., Alta.	Asst.
Letendre, Roland, Mountain Valley, Alta.	2nd
Longstreet, John, Gold Bar	Asst.
Longhurst, William J., Fort St. John	1st
Mitchell, Gabriel, Moberly Lake	Asst.
Monias, Jim, Moberly Lake	Asst.
Mould, Tom, Muncho Lake	2nd
McClarty, Fred, Dawson Creek	Asst.
McDonald, Charlie, Fort Nelson	2nd
McGarvey, George, Hudson Hope	Asst.
McGuire, Colum, Rolla	Asst.
MacLean, Arthur J., Bear Flat	2nd
McLean, William, East Pine	1st
McLeod, Rene B., Fort St. John	Asst.
Napoleon, Thomas, Arras	Asst.
Noskey, Narcisse, Goodfare, Alta. (Kelly Lake, B.C.)	1st
Paquette, Morris, Moberly Lake	1st
Parsons, Machelle, Fort Nelson	Asst.
Peck, Bruce, Hudson Hope	Asst.
Peck, O. Keith, Hudson Hope	Asst.
Peck, Donald, Hudson Hope	2nd
Peterson, A. F., Muncho Lake	2nd
Philpott, W. Henry, Montney	Asst.
Pitts, Ray W., Charlie Lake	2nd
Powell, Jack K., Bear Flat	Asst.
Powell, Pen, Hudson Hope	Asst.
Rissling, Peter, Dawson Creek	Asst.
Ross, James A., Dawson Creek	1st
Rutledge, Leo G., Hudson Hope	1st
Schatela, Alfred, Lymburn P.O., Alta. (Kelly Lake, B.C.)	Asst.
Sheffield, Callie A., Fort St. John	1st
Sheffield, Garth C., Taylor	Asst.
Supranent, John, Goodfare, Alta. (Kelly Lake, B.C.)	Asst.
Tipton, Ross, Dawson Creek	Asst.
Wanyandie, Paul, c/o W. Gerry, Mountain Valley, Alta. (Big Slough, B.C.)	2nd
Watson, Donald H., Bear Flat	Asst.
Watson, James H., Bear Flat	Asst.
Warn, W. Francis, Groundbirch	2nd
Wilde, Thomas, North Pine	2nd
Yeager, Daniel, Doe River	Asst.
Yeomans, Charles R., Walnut Grove	Asst.
Young, Andrew, Dawson Creek	Asst.
Young, Louis, Dawson Creek	Asst.

Cassiar (Telegraph Creek-Atlin)

Name and Address of Guide	Licence Grade
Asp, Phillip, Telegraph Creek	2nd
Ball, George B., Telegraph Creek	1st
Clever, Gene Bryan, Bennett	2nd
Day, Alfred, Telegraph Creek	2nd
Dennie, Andy, Telegraph Creek	2nd
Dennis, Alex, Telegraph Creek	2nd
Dennis, John Creyke, Telegraph Creek	1st
Hope, J. C., McDame Creek	Asst.
Jack, Alex, Telegraph Creek	2nd
Jack, Henry Taku, Atlin	2nd
Jackson, Richard, Telegraph Creek	2nd

Coastal Mainland to Prince Rupert

Name and Address of Guide	Licence Grade
Carter, Harold, Bella Coola	Asst.
Casperson, Morten, Hagensborg	2nd
Corbould, Gordon C., Suie, Bella Coola	2nd
Edgar, Herbert P., Bella Coola	Asst.
Husband, George W., Queen Charlotte City	2nd
King, Wesley C., Hagensborg	2nd
Lindsay, George, Massett	2nd
Merkel, W., Hagensborg	2nd
Nygaard, Martin, Bella Coola	1st
Robson, Bert, Atnarko	2nd
Stanton, James R., Glendale Cove	1st

Prince George District "A" (East to Mount Robson)

Name and Address of Guide	Licence Grade
Berghammer, Joseph, Ware	2nd
Bricker, William J., South Fort George	2nd
Brooks, George, South Fort George	1st
Buchanan, Edward G., South Fort George	2nd
Buchanan, Frank, South Fort George	2nd
Carr, Stanley J., Tête Jaune	1st
Chesser, Charles, Mount Robson	2nd
Corless (Jr.), Richard F., Prince George	1st
Crate, Harvey, Lucerne	Asst.
Crate, Lloyd, Lucerne	2nd
Fraser, Gordon W., Prince George	2nd
Gaugh, Allen H., Prince George	2nd
Hale, Stanley, Dome Creek	2nd
Hansen (Jr.), Anund, Hansard	Asst.
Hansen (Sr.), Anund, Hansard	1st
Hargreaves, Roy, Mount Robson	1st
Henry, George R., Prince George	Asst.
Henry, Walter J., Prince George	1st
Hobe, Henry, Hansard	2nd
Hooker, James B., Dome Creek	1st
Hooker, Kenneth W., Dome Creek	2nd
Jensen, Arne, Dome Creek	2nd
Jensen, Einer W., Dome Creek	2nd
Jensen, Ernest H., Dome Creek	1st
Johnson, Howard T., South Fort George	2nd
Labonte, Leo, Prince George	Asst.
Miller, Sam, Fort Ware	Asst.
Mills, Marshall, Tête Jaune	1st
Mintz, Arthur J., Tête Jaune	2nd
Mintz, Carl Ed., Tête Jaune	1st
Mostrom, George, Box 321, Prince George	2nd
New, George, Prince George	Asst.
Prather, Oliver J., Longworth	2nd
Prince, Andrew, Fort McLeod	Asst.
Sande, Walter J., Sinclair Mills	1st
Senkpiel, Verne, Prince George	Asst.
Simmons, Herbert, Prince George	2nd
Smith, James M., Loos	1st
Smith, Roy W., Prince George	2nd
Solonas, David, Fort McLeod	Asst.
Van Somer, James R., Prince George	2nd
Wade, Gordon D., South Fort George	Asst.
Witter, Henry L., Prince George	Asst.
Zlot, Mrs. Martha, Prince George	Asst.
Zlotucha, Antoni, Prince George	2nd

Prince George District "B" (West to Terrace)

Name and Address of Guide	Licence Grade
Alec, John Mac, Fort St. James	Asst.
Asline, Lawrence, Ootsa Lake	Asst.
Bates, George H., Vanderhoof	Asst.
Beaver, Albert E., Ootsa Lake	2nd
Bennett, Clifford C., Ootsa Lake	Asst.
Bennett, Vernon, Southbank	2nd
Benoit, David, Fort St. James	Asst.
Benson, Allen, Hazelton	2nd
Berry, Turner Dennison, Fort St. James	Asst.
Bird, Jim, Fort St. James	Asst.
Boyko, William, Finlay Forks	Asst.
Braaten, Edwin, Southbank	2nd
Buck, Earl A., Fort St. James	2nd
Christie, Ellis D., Southbank	Asst.
Conlon, Rita, Topley	2nd
Cooke, Ted, Vanderhoof	2nd
Darby, Linzy E., Isle Pierre	Asst.
Davidson, Charlie B., Vanderhoof	1st
Donald, Jimmie, Pendleton Bay	2nd
Evans, William Robert, Vanderhoof	Asst.
Fletcher, Allen E., Smithers	2nd
Foote, Charles H., Fraser Lake	2nd
Gardiner, William C., Smithers	2nd
George, Thomas Seymour, Telkwa	2nd
Gilliland, Donald W., Fort St. James	Asst.
Granger, Barrington H., Noralee	2nd
Grasser, William, Tatalrose	Asst.
Hamilton, George E., Fort St. James	Asst.
Harding, Clifford R., Fort St. James	2nd
Harlow, Edward S., Fort St. James	Asst.
Harrison, Alford J., Wistaria	Asst.
Harrison, Bryan R., Wistaria	1st
Harrison, C. B., Wistaria	Asst.
Harrison, E. M., Wistaria	Asst.
Harrison, Robert Owen, Wistaria	2nd
Henry, Stanley, Ootsa Lake	1st
Hensen, Frank E., Marilla	1st
Hindmarch, Floyd Ellis, Vanderhoof	2nd
Hipp, Anthony Julius, Terrace	Asst.
Horr, Roswell, Ootsa Lake	Asst.

PRINCE GEORGE DISTRICT " B " (WEST TO TERRACE)—*Continued*

Name and Address of Guide	Licence Grade
Hoy, David Henry, Fort St. James	Asst.
Hughes, Roland I., Vanderhoof	Asst.
Johnson, George M., Vanderhoof	2nd
Johnson, John H., Isle Pierre	2nd
Johnson, John K., Fort St. James	2nd
Jones, David Lewis, Fort St. James	Asst.
Knox, John, Ootsa Lake	1st
Kohse, Louis, Vanderhoof	2nd
La Rocque, Leo, Fort Fraser	Asst.
Laveck, William J., Prince George	2nd
Lee, John T., Hazelton	2nd
Leon, Paddy, Topley Landing	2nd
Lord, Roy, Tchesinkut Lake	Asst.
Lord, Samuel V., Tchesinkut Lake	Asst.
Lord, Walter H., Tchesinkut Lake	2nd
Love, Walter John, Hazelton	Asst.
Machell, Jack, Ootsa Lake	Asst.
Martin, Betty J., Smithers	Asst.
Martin, Eric S., Smithers	Asst.
Menard, Gerard, 728 Tupper St., New Westminster	2nd
Miller, Sam L., Isle Pierre	2nd
Mitchell, Sam, Williams Lake	Asst.
Munger, F. W. Roy, Houston	2nd
Murray, Alec Ronald, Fort St. James	Asst.
McConchie, Harry Russell, Fort St. James	Asst.
McDonald, Edward H., Nithi River	Asst.
McNeil, Clifford William, Ootsa Lake	1st
McNeil, John William C., Ootsa Lake	1st
Neighbor, Rersch, Tête Jaune	1st
Neighbor, Lorraine Z., Ootsa Lake	Asst.
Nelson, George William, Vanderhoof	2nd
Nelson, John Norman, Clemretta	2nd
Olson, John Victor, Summit Lake	Asst.
Pease, Clarence A., Nithi River	1st
Perison, Harold Magnus, Fort St. James	Asst.
Plowman, Clarence, Endako	2nd
Plowman, Enid Alice, Endako	Asst.
Plowman, W. C., Endako	Asst.
Prince, Alfred, Fort St. James	Asst.
Prince, Benoit, Fort St. James	Asst.
Prince, Dixon, Fort St. James	Asst.
Prince, John, Fort St. James	2nd
Prince, Norman, Fort St. James	Asst.
Prince, Teddy, Fort St. James	2nd
Rasmussen, Peter, Mapes	2nd
Ray, Ivan E., Fraser Lake	2nd
Rehill, Manlie, Ootsa Lake	1st
Reynolds, John William, Houston	2nd
Roumieu, David, Burns Lake	2nd
Sam, Duncan, Fort St. James	Asst.
Schultz, Albert L., Vanderhoof	2nd
Seyfarth, Joe, Fort St. James	2nd
Shea, James B., Telkwa	1st
Short, Fay Warren, Colleymount	Asst.
Simonson, Edwin, Hulatt	Asst.
Skin, Robert, Ootsa Lake	2nd
Smith, Harold Craig, Fort St. James	1st
Tetreau, Francis W., Southbank	Asst.
Tourond, Pete, Francois Lake	Asst.
Van Somer, Art, Ware	Asst.
Vantine, Douglas, Ootsa Lake	Asst.
Vantine, Edward, Ootsa Lake	1st
Vantine, William, Tatalrose	Asst.
Walker, Thomas A., Fort St. James	1st
Wiley, Alvin John, Southbank	Asst.
Wiley, Glen, Southbank	Asst.
Winsor, William J., Isle Pierre	2nd

CARIBOO DISTRICT "A" (100-MILE HOUSE SOUTH TO ASHCROFT AND INCLUDING CANIM LAKE AND LILLOOET)

Name and Address of Guide	Licence Grade
Archie, G., Forest Grove	1st
Archie, Jacob, Canim Lake	1st
Archie, Joe, Forest Grove	2nd
Archie, Sam, Forest Grove	2nd
Archie, Tommy, Canim Lake	2nd
Baker, Fred, Ashcroft	2nd
Baker, James A., Ashcroft	2nd
Baker, J. C., Clinton	1st
Baker, R. M., Clinton	1st
Barker, A. S., Canim Lake	Asst.
Bayne, Alfred H., Canim Lake	2nd
Begg, Chester M., 70-Mile House	Asst.
Bessette, A. J., Ashcroft	2nd
Bishop, J. A., Clinton	1st
Bob, Ed., Canim Lake	1st
Bones, Alex, Clinton	1st
Bones, Frank, Clinton	1st
Bones, Peter, Clinton	1st
Bones, Teresa, Clinton	2nd
Bothwick, Hector, Forest Grove	2nd
Bradford, A. N., R.R. 1, Fawn	1st
Brooke, H. A., Cache Creek	2nd
Camille, Francis, Canoe Creek	2nd
Chabara, Anna, 70-Mile House	2nd
Charlie, Jimmie, Forest Grove	2nd
Christopher, David, Canim Lake	2nd
Christopher, Peter, Canim Lake	1st
Christy, Frank, Moha	2nd
Christy, Thomas, Pavilion	Asst.
Cleveland, J. G., Bridge Lake	1st
Cleveland, L. C., Bridge Lake	1st
Cleveland, R. C., Bridge Lake	1st
Coldwell, H. W., Jesmond	1st
Colin, A. A., 100-Mile House	Asst.
Colin, Grover, 100-Mile House	Asst.
Colin, Victor, 100-Mile House	Asst.
Collins, B. G., Ashcroft	Asst.
Collins, E. M., Ashcroft	1st
Collins, Jack, Ashcroft	2nd
Collins, M. A., Cache Creek	2nd
Cunningham, Charles B., Bralorne	1st
Dahlgren, C., Bridge Lake	Asst.
Daniels, George, Canim Lake	2nd
Deane, J. C., Bridge Lake	2nd
Deker, English, Forest Grove	2nd
Dyer, G. H., 70-Mile House	2nd
Dougall, Vivian, Bridge Lake	Asst.
Dougherty, C. A., Ashcroft	1st
Dougherty, E. G., Clinton	1st
Edall, I. K., 100-Mile House	2nd
Edall, L. S., Fawn	2nd
Eden, R. B., 70-Mile House	2nd
Edens, Donald D., Lone Butte	2nd
Emmil, Wilford, 83-Mile House	Asst.
Erickson, Steve, Canim Lake	2nd
Faessler, C. J., Fawn	1st
Falkner, Henry, 83-Mile House	2nd
Fenton, Charlie, Clinton	1st

Cariboo District "A" (100-Mile House South to Ashcroft and Including Canim Lake and Lillooet)—*Continued*

Name and Address of Guide	Licence Grade
Fenton, Henry, Clinton	Asst.
Fenton, Walter, Jesmond	1st
Flaherty, R. J., 93-Mile House	1st
Flaherty, R. W., 93-Mile House	Asst.
Fowler, Norman, Clinton	1st
Frost, Freeman, Ashcroft	2nd
Gaines, Clinton, Fawn	2nd
Garrigan, A., Clinton	Asst.
George, Henry, Cache Creek	2nd
Gott, Joe, Clinton	Asst.
Graf, J., Fawn	Asst.
Graf, Mike, Fawn	1st
Greenlee, E. L., Canim Lake	1st
Grice, Percy, 70-Mile House	2nd
Grinder, Bert, Clinton	2nd
Grinder, E., Jesmond	2nd
Grinder, Isidore, Clinton	1st
Grinder, Johnny, Jesmond	1st
Grinder, Louise, Clinton	2nd
Grinder, Walter, Big Bar	1st
Grypuik, S., Ashcroft	Asst.
Hall, Marvin T., Bridge Lake	2nd
Hannah, Bruce, Clinton	2nd
Hansen, John F., Bridge Lake	1st
Hansen, Wesley B., Bridge Lake	2nd
Hendricks, I., Loon Lake	2nd
Higginbottom, Alfred, Jesmond	2nd
Higgins, C. L., Bridge Lake	1st
Higgins, E. D., Fawn	1st
Higgins, Elmer, Bridge Lake	Asst.
Higgins, K. E., Fawn	Asst.
Higgins, Marion, Bridge Lake	1st
Higgins, Ronald A., Bridge Lake	1st
Hodges, E. W., R.R. 1, Fawn	2nd
Holbrook, Ned, Moha	Asst.
Horn, Walter A., Lone Butte	2nd
Houseman, J. J., 100-Mile House	1st
Huckvale, Jim, Fawn	1st
Hunter, Mickey, Ashcroft	2nd
Hutchison, D. B., 70-Mile House	2nd
Johnson, Claude, Bridge Lake	1st
Johnson, J. A., 100-Mile House	1st
Johnson, Zale A., Bridge Lake	2nd
Keary, Charles J., Tyaughton Lake	2nd
King, C. J., Fawn	2nd
King, Gordon, R.R. 1, Fawn	2nd
Knauf, H. G., Fawn	1st
Koster, Henry, Empire Valley	2nd
Krebs, L. B., 100-Mile House	2nd
Land, Robert S., Moha	1st
Langley, Arthur L., 70-Mile House	2nd
Larson, J. O., Bridge Lake	1st
Larson, K. J., Fawn	2nd
Larum, S., Fawn	2nd
Leavitt (Jr.), F. W., Fawn	1st
Lebourdais, Joe, Clinton	2nd
Lehman, Albert, Lillooet	2nd
Levick, J. S., Fawn	2nd
Livingston, Niel, 70-Mile House	2nd
Lord, E., Buffalo Creek	2nd
Loring, Edwin, Clinton	2nd
Louie, Freddie, Canoe Creek	1st
Louie, Gavy, Canoe Creek	2nd
Mabbs, Alfred H., 70-Mile House	2nd
Mabbs, W. E., 70-Mile House	2nd
Mackie, Jim, Fawn	1st
Maclean, D., Fawn	2nd
Madden, E. E., Cache Creek	2nd
Marriott, R. H., Clinton	2nd
Mathewson, A. E., Ashcroft	2nd
Matier, Herb, Clinton	2nd
Martin, R. H., Bridge Lake	2nd
Mooring, Alex, Fawn	2nd
Morris, Daymond L., Forest Grove	1st
Munter, W., Fawn	2nd
Murray, George, Ashcroft	2nd
McMahon, J. C., 70-Mile House	2nd
McKay, John V., Lytton	2nd
McNiel, B. S., Fawn	1st
McNiel, H. M., Fawn	1st
Odian, E. J., Fawn	2nd
O'Keefe, Wally, Rexmount Ranch	1st
Olafson, H. J., Fawn	2nd
Oldman, Patrick, Shalalth	2nd
Osterlund, Ed., Moha	2nd
Parent, S. J., Fawn	2nd
Park, A. H., 70-Mile House	2nd
Park, J. P., 70-Mile House	2nd
Parkes, L. G., 70-Mile House	2nd
Paul, Louis, Canoe Creek	2nd
Peavler, Wendall C., Jesmond	2nd
Perrault, J., Jesmond	2nd
Petrie, Don, Bridge Lake	2nd
Pierro, J., Cache Creek	2nd
Pigeon, Aure, Clinton	1st
Pigeon, C. L., Clinton	2nd
Pigeon, N. G., Clinton	Asst.
Pigeon, Rosaire, Clinton	1st
Pinkney, Robert O., Canim Lake	2nd
Powell, H. J., Fawn	1st
Powell, T. G., Fawn	1st
Reinertson, R. J., Fawn	1st
Reynolds, Alvin J., Big Bar	1st
Reynolds, H. D., Big Bar	1st
Roberts, R. V., Bridge Lake	2nd
Roper, Alfred, Forest Grove	2nd
Rosette, Augustine, Gang Ranch	1st
Scheepbouwer, J. A., 70-Mile House	1st
Scheepbouwer, John C., 70-Mile House	2nd
Scheepbouwer, William, 70-Mile House	2nd
Schwartz, Tommy, Shalalth	Asst.
Scott, Douglas, 100-Mile House	1st
Sedman, J. E., R.R. 1, Fawn	2nd
Siebert, John, Jesmond	2nd
Singleton, Fred, Fawn	2nd
Stanislaus, Pat, Forest Grove	2nd
Thomason, D. M., Bridge Lake	1st
Thorsteinson, Charles, 93-Mile House	2nd
Tompkins, F. L., Clinton	Asst.
Turney, R. J., Fawn	1st
Umphrey, S. T., Fawn	2nd
Van Horlick, Buster, Clinton	2nd
Vecqueray, A. E., Clinton	2nd
Vecqueray, R. J., Clinton	2nd
Walsh, F. C., 70-Mile House	2nd
Watt, Lloyd, Ashcroft	2nd
Westman, James, Forest Grove	2nd
Whitley, W. P., 70-Mile House	2nd
Whittle, Percy, Canim Lake	2nd
Wigley, F. W., 70-Mile House	2nd
Wilkinson, Charles, 70-Mile House	2nd
Wilkinson, T. H., Fawn	2nd
Williams, Antro, Cache Creek	Asst.
Winteringham, Frank, Fawn	2nd
Womack, C. B., Lone Butte	2nd
Young, William, Clinton	2nd

Cariboo District "B" (100-Mile House North to Marguerite, East of Fraser River)

Name and Address of Guide	Licence Grade
Abram, H. E., Lac la Hache	2nd
Alexander, Jack, Lac la Hache	1st
Ash, Chris, Big Lake	2nd
Asserlind, H. C., Keithley Creek	2nd
Atkins, Dan, Horsefly	2nd
Barker, Peter, Big Lake	2nd
Barrett, Stanley, Likely	2nd
Barton, Thomas, Lac la Hache	1st
Bathgate, John, Lac la Hache	2nd
Bentley, J. J., Lac la Hache	Asst.
Bowe, Alfred, Williams Lake	2nd
Branch, E. J., Miocene	2nd
Brice, Jack, Big Lake	2nd
Brown-John, Victor, Horsefly	2nd
Curtis, Rae, Williams Lake	2nd
Dick, Mathew, Alkali Lake	2nd
Dixon, Maurice, Lac la Hache	2nd
Eagle, C. B., Lac la Hache	1st
Ewart, D. E., Lac la Hache	2nd
Felker, W. R., Williams Lake	2nd
Ford, Clair, Horsefly	2nd
Forster, H. H., Likely	1st
Gibbons, L. M., Horsefly	1st
Goetjen, Charles E., Horsefly	2nd
Graham, Jack, Horsefly	2nd
Graham, James, Horsefly	2nd
Gunn, John, Horsefly	1st
Haller, August, Lac la Hache	2nd
Hamilton, G. G., Williams Lake	2nd
Hamilton, H. M., Lac la Hache	1st
Hamilton, Peter, Williams Lake	2nd
Hamilton, Rae M., Williams Lake	2nd
Hamilton, Theodore, Lac la Hache	1st
Hamilton, Thomas, Williams Lake	2nd
Hamilton, Thomas Joseph, Ta Ta Creek	2nd
Herber, Archie, 150-Mile House	2nd
Hinsche, Fred, 150-Mile House	2nd
Hockley, George, Horsefly	1st
Hooker, F. C., Horsefly	1st
Hooker, F. P., Horsefly	Asst.
Hooker, S. B., Horsefly	1st
Hooker, Thomas, Horsefly	2nd
Hubbard, I. H., Horsefly	1st
Jacobson, John, Williams Lake	2nd
Jefferson, Jesse, Big Lake	2nd
Jefferson, Theodore, Big Lake	2nd
Jenner, Ernest, Horsefly	1st
Johnson, Floyd, 150-Mile House	2nd
Jones, Fred, Horsefly	1st
Jones, Lawrence, Horsefly	1st
Junek, Adolph, Horsefly	2nd
Kelly, James A., Soda Creek	2nd
Manley, D. V., Horsefly	2nd
Mann, Arnold, Likely	2nd
Mikkelson, Claus, Horsefly	2nd
Moore, John, Williams Lake	2nd
Morgan, D., Likely	1st
McBurney, Aubry, Keithley Creek	2nd
McDougall, Robert, Big Lake	1st
McKenzie, Kenneth, Big Lake	1st
Nicol, Alex, Horsefly	1st
Nicol, Shelley, Horsefly	1st
Oak, Ernest, Horsefly	2nd
Ogden, Lawrence, Lac la Hache	2nd
Ogden, Peter, Lac la Hache	Asst.
Otson, Arbor, Horsefly	2nd
Palmer, Norman Robert, Ochiltree	2nd
Patton, H., Big Lake	2nd
Pulver, George, 150-Mile House	1st
Petrowitz, Arthur, 150-Mile House	2nd
Prior, Joe, Hydraulic	2nd
Pulver, William G., 150-Mile House	2nd
Racher, Wilfred, Horsefly	1st
Robertson, A. H., Macalister	2nd
Robertson, H. T., Macalister	2nd
Robertson, Irene, Miocene	2nd
Robertson, Kenneth, Miocene	2nd
Sharp, William, Ochiltree	2nd
Speed, Douglas, Likely	2nd
Thygesen, Julius, Horsefly	1st
Vaness, John, Horsefly	1st
Walters, Glen, Horsefly	1st
Walters, Leonard, Horsefly	1st
Walters, R. I., Likely	2nd
Webster, Alfred, Horsefly	2nd
Webster, Alister, Horsefly	2nd
Weber, James L., Big Lake	2nd
Westwick, Burton, 150-Mile House	1st
Westwick, Freddie, 150-Mile House	2nd
Westwick, Lawrence, 150-Mile House	2nd
Wiggins, Wiley, Miocene	2nd
Williams, Aubry, Horsefly	1st
Williams, Rex, Lac la Hache	1st
Williams, Thelma, Horsefly	2nd
Wotzke, Herbert, Williams Lake	2nd
Wycotte, James, Williams Lake	2nd
Wynistra, J. W., Horsefly	2nd
Zirul, John, Lac la Hache	2nd

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VICTORIA, B. C.

Cariboo District "C" (Quesnel-Barkerville from Marguerite North)

Name and Address of Guide	Licence Grade
Allen, George Herbert, Quesnel,	1st
Armstrong, Wilfred R., Quesnel	2nd
Becker, Fred W., Wells	1st
Bobb, Edward R., Marguerite	2nd
Cochran, James Dean, Barkerville	1st
Coldwell, Harry, Punchaw	2nd
Cooper, Thomas Hiram, Quesnel	2nd
Dale, Joseph T., Woodpecker	2nd
Ellison, Ray Angal, Quesnel	2nd
Gerwin, Joseph, Nazko	2nd
Harrington, Alexander G., Quesnel	1st
Heaton, William Frank, Narcosli Creek	2nd
Hoffman, Pete, Cinema	2nd
Knudson, Leonard, Quesnel	2nd
Laurent, Louie, Nazko	Asst.
Lavington, Arthur C., Nazko	1st
Lavington, Harold A., Quesnel	1st
Lavoie, George Charles, Batnuni Lake	2nd
Miller, Isaac E., Punchaw	2nd
Moffat, Ronald H., Alexandria	2nd
Morris, Micke, Cinema	2nd
MacKenzie, Albert, Cinema	Asst.
MacKenzie, James H., Cinema	1st
McKitrick, Roy D., Wells	2nd
McKort, Clarence C., Alexandria	1st
McKort, Irvine, Alexandria	Asst.
O'Leary, Arthur, Quesnel	1st
Orr, William M., Chilliwack	2nd
Paley, Bob, Quesnel	Asst.
Paley, Harold, Quesnel	Asst.
Paley, Wallace, Quesnel	Asst.
Paley, Wayne, Quesnel	Asst.
Quanstrom, Carl, Quesnel	2nd
Quanstrom, Harry, Quesnel	2nd
Quanstrom, Julius, Quesnel	2nd
Rawling, Arden, Quesnel	2nd
Simrose, Martin, Cinema	1st
Sorum, Erick, Cottonwood	2nd
Tibbles, Fred, Quesnel	1st
Tibbles, James, Quesnel	2nd
Vernon, Clifford, Quesnel	Asst.
Young, Grover A., Wells	1st
Webster, Jim, Narcosli Creek	1st

Cariboo District "D" (Chilcotin District, Cariboo West of Fraser River)

Name and Address of Guide	Licence Grade
Baker, Clint, Redstone	Asst.
Baptiste, Gabriel, Tatlayoko Lake	Asst.
Baptiste, Pete, Alexis Creek	Asst.
Baptiste, Timothy, Kleena Kleene	2nd
Blacknose, Chel, Alexis Creek	2nd
Blatchford, John A., Alexis Creek	1st
Bliss, William M., Alexis Creek	1st
Bryant, Alfred L., Anahim Lake	1st
Bullion, Sammy, Hanceville	2nd
Butler, Lee, Tatla Lake	Asst.
Butler, Leonard, Tatla Lake	2nd
Christensen, Andy, Anahim Lake	2nd
Church, R. H., Big Creek	1st
Clayton, John H., Anahim Lake	2nd
Collier, Eric, Meldrum Creek	2nd
Collier, Veasy, Meldrum Creek	Asst.
Dester, Baptiste, Kleena Kleene	1st
Diehl, Leo J., Big Creek	2nd
Dorsey, Lester, Anahim Lake	1st
Elkins, Joe, Alexis Creek	2nd
Elkins, Marvin, Alexis Creek	2nd
Elkins, Thomas, Alexis Creek	1st
Erickson, Arthur, Anahim Lake	Asst.
Erickson, Carl B., Anahim Lake	Asst.
French, Robert, Redstone	2nd
Garland, Ed., Riske Creek	Asst.
Gowland, Russell H., Alexis Creek	2nd
Haddrell, George, West Summerland	2nd
Hance, Grover, Hanceville	1st
Haynes, H. K., Tatlayoko Lake	2nd
Haynes, Kenneth W. G., Tatlayoko Lake	2nd
Henderson, John, Tatlayoko Lake	1st
Henry, A. C., Big Creek	1st
Henry, Eagle Lake, Redstone	1st
Holte, Andrew, Anahim Lake	2nd
Holte, Thomas, Anahim Lake	2nd
Howarth, Dewey, Hanceville	Asst.
Hugo, Ambrose Mark, Big Creek	1st
Hutchinson, William A., Big Creek	2nd
Jasper, Delmar J. C., Riske Creek	Asst.
Jasper, Wesley N., Riske Creek	2nd
Johnson, T. William, Riske Creek	1st
Knoll, Alvis, Redstone	2nd
Kosmonek, Albert, Anahim Lake	Asst.
Lulua, Felix, Tatlayoko Lake	2nd
Lulua, Henry, Tatlayoko Lake	2nd
Lulua, Tommy, Tatlayoko Lake	2nd
Mackie, B. A., Anahim Lake	2nd
Mackill, Clarence, Kleena Kleene	1st
Maindley, John, Alexis Creek	2nd
Maxted, William F., Big Creek	2nd
Moore, James, Hanceville	2nd
Moore, K. B., Tatlayoko Lake	2nd
Mullen, Bernal A., Tatla Lake	2nd
Mulvahill, Randolph, Redstone	1st
Mulvahill, William W., Redstone	2nd
Nicholson, Donald R., Tatla Lake	2nd
Nicholson, Terrence, Tatla Lake	2nd
Paxton, Alex Robert, Alexis Creek	2nd
Phillips, P., Anahim Lake	2nd
Quilt, Frederick, Hanceville	2nd
Quilt, Jack, Hanceville	2nd
Quilt, Louis, Big Creek	2nd
Rafferty, Arthur T., Riske Creek	Asst.
Roberts, C. F., Riske Creek	1st
Roberts, Johnny, Anahim Lake	2nd
Ross, Eddie, Redstone	2nd
Ross, Peter, Redstone	2nd
Sammy, Danny, Hanceville	2nd
Sammy, Eugene, Hanceville	2nd
Sammy, Jimmy, Tatla Lake	2nd
Scallon, Felix, Big Creek	Asst.
Schuk, Edward A., Tatlayoko Lake	2nd
Scotty, Frank, Kleena Kleene	2nd
Sing, Isaac, Anahim Lake	Asst.
Squinas, Thomas, Anahim Lake	1st
Stephenson, Donald, Alexis Creek	2nd
Timothy, Dominic, Kleena Kleene	Asst.
Wier, Donald J., Alexis Creek	1st
Wilson, David F., Tatla Lake	2nd
Witte, Duane, Big Creek	1st
Witte, Frank, Big Creek	1st
Woods, William F., Hanceville	1st
Zulin, Willie, Anahim Lake	2nd

EAST KOOTENAY "A" (CRANBROOK-INVERMERE-GOLDEN DISTRICTS)

Name and Address of Guide	Licence Grade
Anderson, Charles D., Windermere	1st
Baldry, Charles, Windermere	2nd
Ball, James E., Invermere	Asst.
Belchek, Walter L., Canal Flats	Asst.
Bergenham, Peter, Beavermouth	1st
Bjorn, Henry Manning, Fort Steele	2nd
Broadfoot, Bruce, Donald	Asst.
Boyle, Jack, Golden	Asst.
Boyle, James, Invermere	2nd
Brewer, Carl, Invermere	2nd
Brogan, Alex, Canal Flats	2nd
Burns, Howard, Golden	Asst.
Canning, Lester, Skookumchuck	2nd
Carlson, Stanley, Ta Ta Creek	Asst.
Cooper, Albert, Invermere	2nd
Dobbie (Jr.), Alex, Invermere	2nd
Du Bois, Vaughn, Windermere	1st
Engles, Jack, Invermere	2nd
Feuz, Sidney, Golden	Asst.
Feuz, Walter, Golden	1st
Fisher, Tony, Fairmont	2nd
Francis, Nicklos, St. Mary's Reserve, Cranbrook	Asst.
Gabry, Michael, Brisco	2nd
Goodwin, Cecil, Invermere	2nd
Goodwin, Elwood, Edgewater	2nd
Gould, Percy, Canal Flats	1st
Hammond, Lyle, Golden	1st
Hansen, Trygvert, Wilmer	2nd
Hansen, Walter, Edgewater	2nd
Harrison, William O., Edgewater	1st
Hogan, Charles A., Spillimacheen	1st
Hogan, Charles M., Spillimacheen	1st
Hynes, Ben, Spillimacheen	Asst.
Johnson, Alexander, Invermere	2nd
Joseph, Camille, Fairmont	2nd
Joseph, Jerome, Fairmont	2nd
Kain, Isidor, Wilmer	2nd
King, Norman, Golden	1st
Lawrence, Charles, Golden	1st
Lindborg, Axel, Golden	1st
Lum, Peter Charles, Fort Steele	1st
Mitchell, Robert, Brisco	2nd
Morigeau, Martin, Fairmont	1st
McClain, Jess I., Spillimacheen	1st
McClain, Mrs. J. I., Spillimacheen	Asst.
McIntosh, Ewen M., Athalmer	2nd
McKay, Gordon, Invermere	1st
McKay, James, Invermere	Asst.
Nease, Joe Jimmy, Windermere	2nd
Nicholas, Dominic, Windermere	1st
Nicol, Arthur Henry, Fort Steele	1st
Nixon, Walter J., Invermere	1st
Pelton, Robert Benjamin, Cranbrook	2nd
Philips, Frank, 1551 St. Andrews, North Vancouver	1st
Phillips, Eclus C., Invermere	1st
Pommier, Emile, Skookumchuck	2nd
Rad, Gordon, Invermere	2nd
Richter, Frank, Invermere	1st
Robinson, Arthur E., Canal Flats	Asst.
Romane, William, Golden	2nd
Rutherford, Melville, Invermere	2nd
Schesser, Fred, Golden	Asst.
Seward, Arvid, Golden	1st
Sheek, W. P., Spillimacheen	1st
Smith, Harold, Athalmer	Asst.
Sparrow, John H., Windermere	2nd
Sykes, Harry, Spillimacheen	1st
Tegart, George, Edgewater	1st
Tegart, Hiram W., Brisco	1st
Tegart, James, Brisco	1st
Tegart, Robert, Windermere	2nd
Thomas, Orville Edward, Parson	Asst.
Thomas, Robert, Parson	2nd
Thompson, James, Brisco	1st
Thompson, Lionel, Edgewater	1st
Tyler, Graham, Invermere	2nd
Vernon-Wood, Nello, Brisco	1st
Webber, Sidney, Golden	1st
Weeden, Frederick, Wilmer	2nd
White, James Freeman, Fort Steele	1st
Wolfenden, Winson, Brisco	2nd

EAST KOOTENAY "B" (CRANBROOK EAST TO CROW'S NEST, INCLUDING FERNIE AND NATAL)

Name and Address of Guide	Licence Grade
Anderson, Fred, Wardner	1st
Arbuckle, John, Fernie	2nd
Ashman, Levi, Waterton P.O., Alta.	2nd
Baher, Mathias, Natal	1st
Baher, Martin, Natal	1st
Bohning, William, Natal	Asst.
Baher, Fred, Natal	Asst.
Barnes, Alfred, Fernie	1st
Barnes, J. N., Fernie	1st
Cults, Jack, Fernie	Asst.
Cunliffe, Thomas, Fernie	Asst.
Dvorak, Frank, Fernie	1st
Dvorak, Wenzel, Fernie	2nd
Eftoda, Gordon, Natal	2nd
Gorrie, Methven, Flagstone	1st
Gravelle, Alex, Flagstone	Asst.
Gravelle, Nick, Flagstone	2nd
Hammer, Andy, Wardner	Asst.
Hicks, Frank, Fernie	1st
Hicks, Philip, Fernie	1st
Kubinec, John P., Fernie	Asst.
Kubinec, Pete, Fernie	Asst.
Kobus, Steve, Fernie	Asst.
Letcher, George, Fernie	Asst.
Matric, Louis, Natal	Asst.
McGinnis, Earl, Natal	1st
McGuire, Albert, Flagstone	2nd
Philips, George, Flagstone	Asst.
Porco, Albert, Michel	1st
Porco, John, Natal	Asst.
Porco, Ralph, Michel	1st
Qualtert, E., Natal	Asst.
Reay, Charles Doyle, Jaffray	2nd
Reid, William, Fernie	Asst.
Riddell, Harry Scott, Wardner	2nd
Rosicky, Andrew, Wardner	Asst.
Rosicky, Anton, Wardner	1st
Rothel, Malcom, Natal	1st
Siple, Alfred, Wardner	1st
Smalik, Rudolph, Fernie	Asst.
Talbot, Percy, Natal	Asst.
Volpatti, Benjamin John, Natal	1st
Washburn, Len, Fernie	1st
Williams, Robert, Fernie	Asst.
Williams, Wilfred, Ferni	Asst.
Wise, Charles, Flathead	2nd

West Kootenay (Including Creston-Nelson-Slocan-Kootenay-Arrow and Trout Lakes Districts)

Name and Address of Guide	Licence Grade
Abey, Harry Ross, Kaslo	2nd
Besecker, L. D., Kaslo	2nd
Brett, Art, Wynndel	Asst.
Brogan, Joseph, Kingsgate	2nd
Carlson, Herman, Kaslo	Asst.
Clark, W. F., Howser	2nd
Cummings, Arnold, Boswell	2nd
Cummings, Ray, Boswell	Asst.
Gates, E. B., St. Leon, Nakusp	1st
Hagen, Frank, Wynndel	2nd
Hallgren, Sven, Ainsworth	1st
Hawkins, Sumner, Port Crawford	2nd
Kachuk, J., Trout Lake	2nd
Koch, Charles, Sanca	2nd
MacNicol, J. W., Johnson's Landing	2nd
Newbrand, Emil, Nakusp	2nd
O'Neil, Richard, Sanca	2nd
Oliver, George J., Grays Creek	2nd
Rodgers, Floyd C., Creston	1st
Rodgers, James L., Creston	1st
Schwartzenhauer, Carl, Deer Park	2nd
Small, Roy G., Beaton	1st
Wilkinson, D. D., Howser	Asst.

PERSONNEL OF GAME COMMISSION AS AT DECEMBER 31st, 1949

Attorney-General (Minister)	Hon. Gordon S. Wismer, K.C.	Victoria.
Game Commission (members)	Frank R. Butler	Vancouver.
	James G. Cunningham	Vancouver.

Headquarters

Chief Clerk	H. D. Simpson	Vancouver.
Intermediate Clerk	Miss I. Lawson	Vancouver.
Clerk	J. McLellan	Vancouver.
Clerk	W. Fowkes	Vancouver.
Secretarial Stenographer	Miss W. Cooper	Vancouver.
Senior Stenographer	Miss J. Smith	Vancouver.
Clerk-Stenographer	Miss P. Golder	Vancouver.
Clerk-Stenographer	Miss J. Mortimer	Vancouver.
Clerk-Stenographer	Miss R. McKay	Vancouver.
Clerk-Stenographer	Miss D. Voldsnes	Vancouver.

Game-fish Culture Branch

Fishery Supervisor	C. H. Robinson	Nelson.
Fishery Officer	E. Hunter	Nelson.
Fishery Officer	A. Higgs	Summerland.
Hatchery Officer	N. Lingford	Summerland.
Fishery Officer	R. A. McRae	Kaslo.
Fishery Officer	F. Pells	Cultus Lake.
Hatchery Officer	A. S. Frisby	Nelson.
Hatchery Officer	I. C. Inglis	Courtenay.
Hatchery Officer	J. D. S. Inverarity	Courtenay.
Hatchery Officer	F. H. Martin	Cultus Lake.
Hatchery Officer	C. O. Mellor	Cultus Lake.

"A" Division (Vancouver Island and Portions of Lower Mainland)

Inspector	G. C. Stevenson	Victoria.
Clerk	D. Keirs	Victoria.
Game Warden	J. W. Jones	Victoria.
Game Warden	R. W. Sinclair	Victoria.
Game Warden	W. S. Webb	Alberni.
Corporal Game Warden	O. Mottishaw	Alert Bay.
Game Warden	R. S. Hayes	Campbell River.
Game Warden	M. L. Gardiner	Courtenay.
Game Warden	F. P. Weir	Duncan.
Game Warden	F. H. Greenfield	Nanaimo.

"B" Division (Kootenay and Boundary Districts)

Inspector	C. F. Kearns	Nelson.
Clerk-Stenographer	Mrs. E. H. Edgar	Nelson.
Game Warden	R. A. Rutherglen	Nelson.
Game Warden	J. W. Bayley	Cranbrook.
Game Warden	B. Rauch	Cranbrook.
Game Warden	G. A. Lines	Creston.
Game Warden	J. J. Osman	Fernie.
Game Warden	N. Cameron	Golden.
Corporal Game Warden	A. F. Sinclair	Grand Forks.
Game Warden	H. Tyler	Invermere.
Game Warden	A. Monks	Penticton.
Game Warden	A. F. Gill	Princeton.
Game Warden	P. D. Ewart	Trail.

"C" Division (Kamloops, Yale, Okanagan, and Cariboo Districts)

Inspector	R. M. Robertson	Kamloops.
Clerk-Stenographer	Miss H. Swadling	Kamloops.
Game Warden	D. Ellis	Kamloops.
Game Warden	J. P. C. Atwood	Kamloops.
Game Warden	H. J. Lorance	Kamloops.
Game Warden	W. T. Ward	Kamloops.
Game Warden	R. H. Haynes	Alexis Creek.
Game Warden	W. I. Fenton	Clinton.
Game Warden	W. R. Maxson	Kelowna.
Game Warden	R. S. Welsman	Lillooet.
Game Warden	E. M. Martin	Merritt.
Game Warden	W. J. Hillen	Quesnel.
Game Warden	E. D. Cameron	Revelstoke.
Game Warden	D. Cameron	Salmon Arm.
Game Warden	R. Farquharson	Vernon.
Game Warden	E. Holmes	Wells.
Game Warden	L. Jobin	Williams Lake.

"D" Division (Atlin, Skeena, Omineca, Fort George, Peace River, and Yukon Boundary Districts)

Inspector	W. A. H. Gill	Prince George.
Clerk	R. J. Guay	Prince George.
Stenographer	Miss F. A. Sutton	Prince George.
Game Warden	A. J. Jank	Prince George.
Game Warden	L. G. Smith	Prince George.
Game Warden	D. G. H. Stevenson	Burns Lake.
Game Warden	J. A. McCabe	Fort Nelson.
Game Warden (Special)	B. Villeneuve	Fort Nelson.
Game Warden	J. D. Williams	Fort St. John.
Game Warden	J. W. Stewart	Lower Post.
Game Warden	R. W. C. Tate	Pouce Coupe.
Game Warden	L. J. Cox	Smithers.
Corporal Game Warden	E. Martin	Prince Rupert.
Clerk-Stenographer	Miss M. Boulter	Prince Rupert.
Game Warden	K. R. Walmsley	Prince Rupert.
Game Warden	R. O. Anderson	Vanderhoof.

"E" Division (Vancouver, Coast, and Lower Fraser Valley Districts)

Inspector	R. E. Allan	Vancouver.
Game Warden	R. S. King	Vancouver.
Corporal Game Warden	L. R. C. Lane	Vancouver.
Game Warden	F. R. Lobb	Vancouver.
Game Warden	H. D. Mulligan	Vancouver.
Game Warden	H. L. Rose	Vancouver.
Game Warden	A. J. Butler	Chilliwack.
Game Warden	H. P. Hughes	Cloverdale.
Game Warden	W. H. Cameron	Ladner.
Game Warden	P. M. Cliffe	Mission.
Game Warden	F. Urquhart	Port Coquitlam.

Predatory-animal Hunters

Predatory-animal Hunter Supervisor	W. W. Mair	Vancouver.
Chief Predatory-animal Hunter	J. Dewar	Extension.
Predatory-animal Hunter	A. L. Frost	Extension.
Predatory-animal Hunter	A. W. Hames	Extension.
Predatory-animal Hunter	K. Moores	Extension.
Predatory-animal Hunter	D. H. Denison	Fort Fraser.
Predatory-animal Hunter	C. G. Ellis	Kamloops.
Predatory-animal Hunter	G. Haskell	Nelson.

VICTORIA, B.C.
Printed by Don McDiarmid, Printer to the King's Most Excellent Majesty
1951

1,295-1250-4211