STATE OF WASHINGTON

Department of Game

Second Biennial Report

OF THE

WASHINGTON STATE GAME COMMISSION

1934-1935

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BIENNIAL REPORT

OF THE

WASHINGTON STATE GAME COMMISSION

April 1, 1934, to March 31, 1936

LETTER OF TRANSMITTAL

To His Excellency,
Clarence D. Martin,
Governor of the State of Washington,
Olympia, Washington.

Dear Sir:

Herewith, is submitted in accordance with law, the second report of the Washington State Game Commission for the biennial period beginning April 1, 1934, and ending March 31, 1936, inclusive.

Respectfully submitted,

WASHINGTON STATE GAME COMMISSION

Thomas A. E. Lally, Chairman,
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TABLE OF CONTENTS

INDEX OF TABULATIONS

ILLUSTRATIONS

Two Years of Progress

PRESENTATION of the current biennial report is released in the nature of a "Progress Issue." Included herein, will be found tabulated summaries of the financial disbursements and expenditures incurred during the past two-year period, together with pertinent facts which reveal a practical statistical picture of fish and game propagation, conservation efforts and advancement along wild life guardianship. In the course of preparation, the State Game Commission has added a resume of work within the Department of Game . . . entering into the routine as well as allied fields of game management so that sportsmen of this commonwealth may learn, first hand, of the problems affecting their wild life heritage. Both by editorial comment and illustration, the frank equitable story of Washington game is given its rightful place under the sun.

Reverting to comparisons, it will be noted that in several instances, significant progress has been registered in the work of the Department during the first three years under state control. Forward strides are recorded for the first year of work under the State Game Commission. It was a period of rebuilding, reconstruction and dedication of a new state wild life program. Many changes were made, as pointed out in the report of the first biennium. However, the reorganization of a great state's game resources is not accomplished without a period of trial and error. Mistakes have been remedied as soon as apparent.

The biennium was faced by the Commission with the knowledge that a firm foundation had been laid and much of the groundwork for future progress under way. It is well to state that the Department has added considerably to the efficiency of its organization and in every field it can be said work has been constructive, permanent and of a practical nature,—a game task from which sportsmen of today and tomorrow will reap a silvery harvest and good hunting. The records will show the Department's revenue is steadily increasing with more anglers and nimrods taking to field and stream. New construction completed insures a greater output of birds and fish for the ensuing biennial period and enables the Department to approach its work of propagation with enlarged facilities and better operating resources than in any prior period in the history of Washington game life management. The fruits of modernized equipment will be returned in a measure to sportsmen and a major share will go toward replenishing depleted fish and game stocks.

The State Game Commission takes more than a passive view of the past two years—experimentation period—and approaches the new biennium with confidence and assurance that progress along all fields of departmental work will advance. It should be borne in mind, however, that the work of any state game department never really reaches the stage of sufficiency. There must be a continuity of advancement, new problems to be faced and mastered. Hundreds of new recruits to the sportsmen army annually place an additional strain on the field stocks of fish, upland birds and big game. Sportsmen of today are paying for the wasteful and unwarranted destruction of Washington game by another generation. The Department of Game today is busily working to safeguard the future of its game resources—providing you with a life insurance in recreation and outdoor thrills.

(1) Wild goats, closed to hunting. (2) Elk on Hoh River, Olympic Peninsula. (3) Bruin and cubs. (4) Chinese and mutant pheasants. (5) Deer in night feeding.

Washington's Wild Life Heritage

STEPPING from the busy maelstrom of the workaday to the natural quiet of mountain stream, range or marshland, is but a short drive over paved highways. Nature is literally brought to the sportsman's doorstep. In only the more remote areas of the state is it necessary today to use pack horse or pack board over long treks. With the opening of game country to the auto traveler has come a sharp gain in the number of license holders during the past few years . . . fast cars and better roads have given impetus to hunting and fishing by sportsman and layman. The public has been attracted to the sport by easy and convenient access to hunting and angling spots.

AT NATURE'S DOORSTEP

In the well-rounded life, play and diversion should be intermixed with work. There is a restful, invigorating and health-building tonic to be enjoyed in a week-end hunting expedition or early morning angling trip. Aside from the adventure and test of skill, this "body-tune-up" is surely worth the effort, though the hunter's luck may be poor that day. The back to nature cure is not equalled in gymnasium or athletic field. Game resources yearly pay health dividends and an interest-bearing bonus in sport and high adventure. Nature asks nothing in return, save thrift and economy in the use of its treasures. CONSERVATION should be the keynote of every sportsman's creed, that hunters and anglers of the future may enjoy its wild life and scenic gems.

Value of State Game Resources

Rightly named the Evergreen State, Washington has won a nation-wide reputation as a scenic paradise and game center. Through travel literature and tourist publicity, the story of Washington's upland birds, big game and sport fish has become symbolical with the natural resources of this state.

BUSINESS BUILDER

Probably the greatest attraction to the out of state tourist and vacationer in selecting the Evergreen Playground for rest and recreation is the lure of Washington game. It is safe to say that many tourists and vacationists coming to this state each year do so to fish and hunt. Figured from a business standpoint this yearly influx of sportsmen, spending thousands of dollars through trade avenues of city and urban localities, has benefited business in many sections during the year.

FUN IN FIELD AND STREAM

Moreover, it should be explained that the range of sportsmen today spreads over the entire state with hunters of the west slope driving . . . in a fraction of time . . . to eastern game regions. The great variety of hunting and angling in Washington is a temptation to sportsmen to drive many miles away from home in quest of new game trophies. This circulating fan of sportsmen to distant corners of the state has proved a stimulant to the country tradesmen and rural business is spurred by expenditure of money by hunters and anglers for food, lodging, accessories and car expense, together with miscellaneous items of equipment accessory to the sport. In many districts Washington's rural, country-side merchant and businessman has become dependent in a large measure on this seasonal trade.

MUST PLAY PART

As time goes on the game resources of eastern states will become depleted, causing American sportsmen to depend more and more upon Washington game. It behooves every business man to support the wild life program of the State Department of Game. It will pay in future millions of dollars yearly from tourist trade.

Judged strictly in terms of monetary values, Washington's rich and vast game assets cannot be accurately measured in dollars and cents. Even the most exhaustive and comprehensive survey of Washington's wild life population can at best be but an approximation.

Itemization of Game Assets

Considering the dividends paid sportsmen in sport and recreation and the amount of money paid out by hunters and anglers during the season for equipment, food, transportation and miscellany, the value of game resources to this state may be set roughly at one hundred and fifty million dollars. This estimate may be considered for sake of comparison, spread over the following classifications: (1) Value to this state annually as a tourist and travel asset, (2) intra-state circulation of money by hunters and anglers for purchase of necessary supplies and equipment, (3) its natural worth to sportsmen and laymen in a free turn-over each year of sport and health building elements, (4) receipts from licenses, fees and permits, (5) the $500,000 yearly sum which enters state trade channels from sale of raw fur pelts, (6) part played by big game, birds and fish as a food provider.

Angler's haven, game fish stream, Snohomish county.

Mountain goat, Chelan county. At present there is a closed season on these prized hunter's trophies.

Coordination of Wild Life Interests

The aim of the Commission is to work for a coordinated program of constructive thought and understanding between the Department and the various outdoor and camping organizations throughout the state. These organizations are largely dependent upon the natural resources of Washington . . . its mountains, lakes and streams. Through its proposed educational program, the wild life and conservation objectives of the Department would be brought before such organizations as the Washington Sports Council and other sportsmen organizations, granges, park departments, schools, 4-H clubs, mountaineering and ski clubs, Boy Scouts, Girl Scouts, Camp Fire Girls and similar character-building and outing groups.

New Outlook on Wild Life Problems

While it is the duty of the Department of Game to intelligently conserve the game life of this state, guard against infringement and violation of the game code and carry on a sound educational program, the Commission is not unmindful of the valued assistance rendered by sportsmen groups in working for a game minded state.

Typical wild goat and sheep country, Chelan county.

STATE GAME CONSCIOUS

Looking back to the pre-state control era of game, a sharp contrast is noted in the scope of interest taken by sportsmen's associations. Game interest was, more or less, centered in localities served solely by sportsmen with only limited efforts expended to promote far-reaching state game projects. The state has suffered from a lack of coordinated consideration of the vital questions affecting Washington game. Extremely encouraging is the present outlook for a "game conscious" state, with sportsmen lending every helping hand in this direction. Sportsmen are thinking today in terms of benefiting the state as a whole and are supporting legislation providing for conservation for game life rather than conservation for aid of the sportsmen. It is plain that this progressive feeling of nimrods and anglers presages an era of accomplishment in fulfilling the conservation efforts administered by this Department.

CONSTRUCTIVE MOVEMENTS

Constructive movements are being supported by sportsmen's groups in several sections of the state to promote needed legislation governing pollution, grazing conditions, uniform seasons, conservation of wild life, game preserve surveys, federal control of game, etc.

Sportsmen's Associations Lend Aid

The Washington State Sports Council and the more than two hundred state sportsmen groups, county and local units, have enjoyed a period of advancement in the accomplishment of their program and activities during the past two-year period. Working diligently and wholeheartedly these organizations have constantly sought to remove the last vestige of unsportsmanlike practices and game management obsolescence. The Game Commission commends these organizations for their stand on matters of game conservation and problems pertaining to propagation and understanding of the aims of this Department. The Commission wishes to warmly voice its appreciation for the cooperation state sportsmen associations are giving to the Department of Game.

SERVICES CITED

In a biennial report of this form, which is necessarily limited to the highlights of the Department, only a few of the many excellent examples of aid rendered by these groups can be included here. Outstanding services of sportsmen can be thus summarized:

Aside from the thousands of predators destroyed by state protectors during the past two years, it is well to cite the exceptional work in control of the natural enemies of game life in which sportsmen's associations have participated during this biennium, and the cooperation given protectors by the grange, farmers and landowners. To point out how these agencies assist in predatory control, one needs only to list the kill of one eastern Washington county which waged a predatory animal drive during 1935. A total of 24,303 game predators were counted in the contest. The itemized kill reads: 6,066 ground squirrels and groundhogs, 8,736 magpies, 4,296 sparrows, 1,826 rats, 532 owls, 1,202 rattlesnakes, 534 hawks, 546 porcupines, 212 crows, 151 coyotes, 92 watersnakes, 80 skunks, 20 kingfishers and 10 bobcats.

Crow shoots have been held by nearly all major sportsmen's groups and the drive on predators has been engaged in by associations and sportsmen's organizations from time to time during the biennium. Service to the state in this way is of inestimable worth. The Commission takes this opportunity to thank these groups for their aid in predatory control.

HELP PROTECTORS

Work of the game protector is busiest at hunting and angling time. It is during these seasons that the patrol tasks mount in vigilance and guardianship. Protectors on many occasions have expressed their gratitude and appreciation for help rendered by sportsmen during hunting and fishing seasons.

Code of Game Ethics Needed

The need for good sportsmanship is as important to the nimrod and angler as fair play is to the highly trained athlete. With the element of adventure and competitive sport entering into hunting and fishing, it is only natural that sportsmen become careless, over zealous for game and unmindful of the common law of conservation. Mention of sportsmanship is directed at that category of license holder who annually contribute their share in flagrant and unwarranted abuses of the sportsmen's common-sense rule on range and stream.

This state has banned the use of pump guns and automatics with a capacity of more than three shells for a just reason. Hunters with these arms could cripple and lose birds long after they had passed beyond killing range. The three shell limit on upland birds now in effect has curbed to a marked degree wild shooting, waste in game hunting and maiming birds from spent shells.

Sky view of corner of 1936 Western Washington Sportsmen's Show, Green Lake, Seattle.

FAIR PLAY NEEDED

Hunters should mark well the fact that every year sees a decrease in the number of native grouse, blue grouse and sage hens and approaching years will see shorter seasons and bag limits. The Commission asks of hunters but one favor, that they exercise the spirit of fair play in both upland bird and big game hunting.

It is deemed impossible to stock the state by artificial propagation alone. At best, game farm production can be only supplementary to the wild hatch.

MUST GUARD FUTURE

Today the free hunting era of the pioneer's quest for food is over and city and town folk hunt and fish for the sheer fun and thrill of the sport. Just as our natural landmarks, forests and streams must be guarded for future posterity, the vast state wild life resources must also be preserved. A few concrete facts along this line will help explain this point. Few sportsmen or laymen have, perhaps, visioned the game situation in the following way: that your $3.00 automobile license permits you only to drive. Such items as gas, tires and accessories you purchase. In the case of a $3.00 hunting and fishing license the hunter, for example, may bag $50.00 worth of deer meat, $50.00 worth of birds and top it off with $50.00 worth of fish. Thus it is the primary duty of the Department to supply the people of Washington state with sport in angling and hunting. It is not in the sense of the word a food provider.

TRESPASSING

In too many instances license holders over-estimate the rights that their license represents. Expressly, it does not give hunter or angler the right to trespass. Permission should be asked from the landowner or responsible authority. The simple courtesies you would expect from hunters under the same circumstances should be considered.

Public Can Aid Conservation

In the interests of conservation, outdoor organizations are in a strategic position to be of valuable service to the Department. There will be worked out from time to time proposals and projects whereby these outdoor groups will be invited and encouraged to join with the Department in solution of game conservation problems.

COMMEND PUBLIC INTEREST

The Commission commends the interest displayed by these groups in the national aspects of wild life and conservation of all related fields of the nation's natural resources, as well as the attention paid to these problems as they relate directly to the Department of Game. As one of the first ranking game states, Washington is finding capable spokesmen among state sportsmen in the consideration of federal game life trends. Only by the united coordination and cooperation of sportsmen groups can legislation be passed which will be advantageous to the great game life of the State of Washington in matters of state as well as federal concern.

Game Refuges

UNDER the former plan of game control game preserve boundaries, in many cases, were lacking in one or more of the four necessities governing an adequate game refuge: (1) heavy population of game during hunting season, (2) location in country capable of providing year-around feed for game increase from protection, (3) situation so that overflow game resulting from protection will feed surrounding territory, (4) natural boundaries. State control has given Washington sportsmen a system of boundaries which is based on the natural lines provided by roads, streams, ridges and trails. Changes in the old boundaries were started in September of 1935 by the Department's game management expert. Definite strides have been made to date in redesignating game preserve lines in the counties of Asotin, Benton, Chelan, Columbia, Clallam, Ferry, Garfield, Stevens, Spokane, Okanogan, Walla Walla and Kittitas.

Boundary Survey Under Way

The following survey is being developed under supervision of the game director: (a) discontinuance of old boundaries when necessary, (b) establishment and designation of new boundary lines following natural landmarks. It should be stated, however, that it was not necessary in all cases to alter and redesignate boundaries in game preserves. The State Game Commission has taken advantage of every workable and practical feature of the former boundary system. As rapidly as possible state game refuges will be changed to take advantage of natural boundary lines.

HASTEN PROJECT

Because of the scope and specific nature of the game refuge survey, work must be carried on under favorable conditions in conjunction with the game survey project under way. It is the hope of the State Game Commission that this important work will be completed at the earliest possible date.

Preserve Boundaries Clearly Posted

Placement of boundary markers at intervals along state game preserves is one of the constructive projects now being carried on in the state. Boundary lines previously lacked uniformity. They are now being properly posted and marked. Preserve lands stretching over several miles of trail or road

are being carefully marked with "You are now entering State Preserve" signs and similar markers. At the compass terminus of preserves, corner markers are placed throughout the state. The hunter in the future may drive freely through refuges, thus designated, with full knowledge of the game boundaries and limits. Ultimate completion of this useful service, like the establishment of preserve boundaries, will be extended over a period of time.

Recommend Scientific Game Surveys

State research activity in all fields of game, propagation, disease, feed and habits, is becoming an increasingly important subject in the efficient management of the Department of Game. Supervised surveys and research projects in the State of Washington have been given marked impetus under the guidance of the State Game Commission. Scientific game surveys have been successfully carried on in many states and it is expected that many of the pertinent problems relating to the care and propagation of fish and game will be explained with the completion of contemplated surveys.

QUESTIONS ANSWERED

Highly important questions are to be answered in a survey of Washington's big game. A sample survey questionnaire used in survey work would seek solution of these timely points: (1) location and condition of all big game—winter, spring and fall feeding ranges—and their food habits, (2) aggregate number of deer and elk and the sex ratio, (3) where to logically situate the big game preserves, (4) facts pertaining to reproduction of fawns and calves, (5) migratory habits, (6) prevalence of predatory animals, (7)

Water-hewed rocks provide a restful setting for a bit of angling.

During hunting season Washington forests are dotted with camps of nimrods.

mortality, i. e., disease, poaching, predatory and winter feed losses, (8) utilization of range in relation to domestic live stock, (9) breeding habits, (10) relation to other animals, (11) where big game is shot.

Divided Opinion on Uniform Seasons

Plans must be tried and tested by time and experience to prove their worth in the field of game management as in business. Sportsmen have sought for years to perfect a uniform hunting season which would be satisfactory to license holders of both the eastern half of the state and in western Washington. The State Game Commission has given close study to the problem and careful thought to sportsmen's protests that many hunters about the state were moving to other game regions to take advantage of open seasons there, thus adding materially to their big game score. What to do about game hogs was a subject of wide conjecture. In time for the 1935 hunting season the Commission perfected a plan for state-wide big game uniform seasons. The previous year three deer seasons were set aside determined by climatic seasons. Shooting dates for 1935 were listed to open on October 20th and close November 1st, regulating the first blanket season. Sportsmen associations throughout the state were generous in their interest and evidenced a friendly desire to assist the State Department of Game during this trial period.

CLIMATIC DIFFERENCES

From some sources there were comments to the effect that the new hunting period conflicted with the variance in climatic seasons existing between the eastern and western halves of the state. Due to this permanent geographical difference, perfection of a model uniform season for Washington hunters is beset with complications. The Commission is cognizant of the issues affecting the uniform season plan and believes that definite progress has been made along this line.

State College Big Game Survey

Preliminary survey of Washington big game, which is preparatory to a state-wide study of elk and deer, is being conducted under the supervision

of Dr. R. L. Webster, Professor of Zoology, Washington State College. A full summer of study of big game in western Yakima county will be concluded with detailed recommendations being made in the fall to the State Game Commission. The need for a comprehensive planned survey of Washington big game problems has resulted in this detailed study by the Washington State College with the cooperation of the Department of Game. Purpose of the survey may be thus summarized: to obtain further detailed data on factors affecting the welfare of Washington elk and deer.

Work is moving steadily forward on the project and the present program of study will be continued until a sound groundwork of informative data is completed. George Van Vleet, Jr., instructor in zoology and teacher of game management at Washington State College, with Burton Lauckhart, graduate of the State College game management course, have been assigned to the survey.

Section of over-grazed area in elk feeding grounds on Olympic peninsula.

Government Builds Roads and Trails

Building of forest trails and roads into heretofore inaccessible regions of the state by the Civilian Conservation Corps, has favored sportsmen with a fine system of guide posts to the big game country, fishing spots and the primitive breeding grounds of upland birds, available in the past only by pack train or on foot. This criss-crossing of trails in remote areas in a word, has moved "Main Street" from the usual haunts of hunters to the primitive country. It is easy to foresee that in the future the problem of conserving these breeding and spawning areas will become more acute, calling for drastic regulations to cope with the problem.

Dollar Sign Stalks the Fur Animal

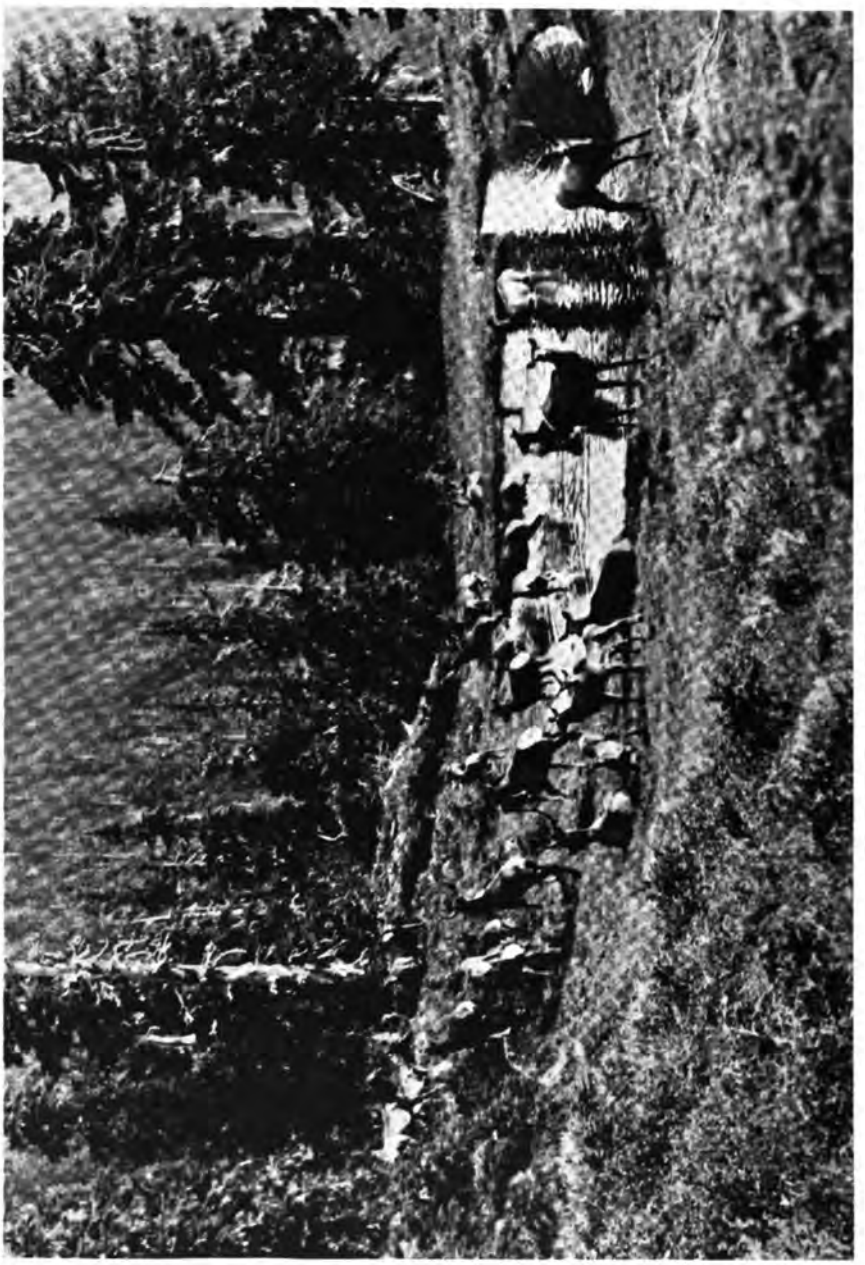
AWAY from the hum of city traffic and out into the habitat of the fur animal, trappers ply an annual business in pelts in the State of Washington. A total of 4,051 trappers paid the $5.00 resident citizen trapping fee, totaling the sum of $20,255.00 from this source for the biennium, 1934 and 1935. Few sportsmen are aware of the size of the state trapping industry and its place as a major pay-roll builder. Basing a comparison on the number of pelts taken during the trapping season of 1935-1936, there appears to be no great dearth of fur bearing animals. With 2,236 trappers licenses issued in 1934, this year fell only a bit short of the peak year of 1929 which listed 2,513 licenses. The low year for issuance was 1917 with only 122 licenses sold to trappers.

A trapper's take of cougar pelts.

TRAPPER'S ANNUAL YIELD

Trappers in Washington sell more than a half million dollars worth of fur pelts yearly and will total approximately $1,000,000 for the biennial period. Figures shown herewith were compiled by the raw fur department of a mail-order house. The table shows the number of pelts taken, the type of animal and the value of the take recorded during the open trapping season of 1935-1936.

Animal	No.	Amount Paid
Muskrats	50,000	$45,000.00
Skunks	5,000	4,000.00
Mink	12,000	95,000.00
White Weasel	2,000	1,000.00
Gray Weasel	2,000	40.00
Brown Weasel	2,000	600.00
Wolf	6,000	20,000.00
Wildcats	1,500	2,500.00
Badger	1,500	7,500.00
Marten	2,000	20,000.00
Otter	400	5,500.00
Lynx	40	1,200.00
		$202,340.00



Herd of Roosevelt Elk, Olympic Peninsula.

Federal Acts Affecting Game

Regulations G-20A—T-8½

NO federal regulation has been viewed with the amount of apprehension and concern in Washington State as the Department of Agriculture's regulation known as G-20A ordered in May of 1934. This regulation strikes at the very roots of state game rights and future maintenance and operation of fish, upland birds and big game in this state. In every community served by sportsmen groups, the federal action has attracted a storm of protest from active outdoor organizations, the state press and game-minded individuals. The Commission is heartily in accord with the attitude taken by these agencies and supports the belief that the Department of Agriculture is overstepping legal bounds by exercising federal jurisdiction over the game resources of states.

GOVERNMENT WOULD CONTROL

Movement on the part of the government to control state game would include allocation to the government right to regulate seasons, bag limits, set license fees and provide for fishing and hunting laws in the National Forests. Despite the Secretary's assurance that power will be applied only in cases where states fail to wholeheartedly cooperate with the Forestry Service, the Commission looks upon the regulation with some concern at this time. Any attempt by the Department of Agriculture to infringe on state game rights, either by application of the provisions of regulations G-20A or T-8½, or through other measures, will be vigorously opposed by this Commission. Game is an integral unit of the natural resources of the state and not the property, or the ward, of government agencies.

GAME DEPARTMENT AIDS

This Commission has strived constantly to assist and aid the Department of Agriculture in working for systematic and scientific management of the wild life resources of Washington. It is the wish of the Commissioners that the cooperative understanding existing between this Department and the U. S. Forestry Service and Biological Survey continue during the ensuing years.

SUMMARY OF ACTS

Here are transcripts of the two federal regulations—G-20A and T-8½—which have aroused all game-minded sportsmen of Washington:

REG. G-20A—When the Secretary shall determine upon consideration of data and recommendations of the Forester that the regulation or the prohibition for a specified period of hunting and fishing upon any National Forest or portion thereof is necessary for the accomplishment of the purposes above set forth, he shall designate such National Forest or portion thereof, specify the sex of animals to be killed, fix the fees to be paid for permits, designate the authorized official to whom application for permit shall be made, and describe the terms and conditions under which hunting and fishing shall be conducted with a view of carrying out the purpose of this regulation. Public notice of such designation shall be given by such means as the Forester shall deem adequate for the purpose. Carcasses of animals or fish taken under permit shall be marked or tagged for identification as directed by the Forester.

REG. T-8½—Upon National Forest lands designated under Reg. G-20A, the following acts are prohibited:

Hunting, trapping, catching, disturbing or killing any kind of game or non-game animal, or game or non-game birds, or taking the eggs of any such bird, except during hunting and fishing seasons established by the Secretary and in accordance with the terms and conditions of a permit issued by a duly authorized officer which is valid and subsisting at the time.

Taylor Grazing Act

Passage of the Taylor Act in June, 1934, providing for the leasing of public domain for grazing and for the creation of grazing districts, divided the game-minded public who have loyally worked to protect and conserve wild life resources of their state and some few stockmen who have ruthlessly worked to guarantee feeding ranges in the National Forests. With one stroke of legislation Congress opened the final 165,000,000 acres of public domain to grazing interests.

SEEK CORRELATION

Game authorities have studied the grazing conditions existent in Washington's National Forest lands carefully and have pointed out to Forest Service officials the vanishing numbers of big game due to inroads of armies of cattle and sheep to primitive regions. Sportsmen organizations throughout the state have considered the problem of depleted big game feeding areas and are generally in favor of measures which will provide for a correlation of grazing interests pledged to wild life conservation. In many states watersheds have already been destroyed and wild life habitats made uninhabitable for game. Excessive use of National Forest lands for grazing to the detriment of big game and wild life is objected to by every sports-minded citizen. The fact that forest officials have not exercised their prerogative to the fullest in arbitrarily eliminating live stock from game regions which are over-grazed has stirred Washington sportsmen to renewed action.

TEN YEAR GRAZING PERMITS

Conflict between sportsmen and live stock interests reached a high level in this state when it was learned that Forest officials were considering the issuance of ten year grazing permits to permittees now using forest lands. Sportsmen have stated they recommend a full investigation of range conditions before permanent permits are granted stockmen.

SIDE WITH SPORTSMEN

On the question of grazing, the Commission is inclined to side with Washington sportsmen. It will always support the policy of furtherance and maintenance of state game resources, and the open movement launched by the Forest Service and the Department of Interior to further hamper and restrict big game feeding ranges has not the support of the State Game Commission.

STATE STUDIES PROBLEMS

Looking at the grazing problem in a broad light, the current obstacles facing conservationists is wrought with difficulties. Millions of acres of public land is rented to stockmen by the government at a price so low that it shapes up as a government subsidy. How some of these herds are ruining

the watersheds in the eleven western states—the last frontier of American game—is known too well. Passage of the Taylor Grazing Act virtually signed the death warrant for our elk and deer in grazing regions of the state. Viewing the grazing situation, the Commission gives full consideration to the investments and interests dependent upon the forest area resources and is not basing its opinion solely upon the increased influx of cattle and sheep. All forest natural products were given equal study in their relationship to game.

Room for Both Livestock and Game

The Commission takes the stand that a clearer and coordinated understanding between Government, State Department of Game, livestock and sportsmen interests is essential to a satisfactory disposition of the grazing problem. Summarized, there is room in the West and the State of Washington for both livestock and game, but there must be a correlation of usage before any constructive program of conservation can be developed. The Commission will continue to work for a solution of a fair ratio of game and livestock on the grazing ranges of this state.

Feeding of elk in winter range by State Department of Game, Yakima County.

Indian Steelhead Question

REVIVAL of the Indian steelhead question, a periodic controversy faced by the Department, proved troubling in several instances during the biennium, calling for disciplinary action. Court decisions passed during the winter of 1936 were in favor of the Department of Game's rigid measures aimed against commercial fishing of steelhead trout by Indians within the five-mile zone bordering reservations.

INDIAN GAME RIGHTS

The Department has approached the Indian commercial question on the theory that the game rights of Indians end at reservation borders. Rumors have continued to spread of flagrant violations by Indians of game laws. Reports circulated charged specifically that Indians of western Washington were catching fish in ton lots by spreading their nets at the mouths of streams. Ready markets for bootleg fish were found by Indians in the fish marts of unscrupulous fish dealers who encouraged the Indian to ply his practice of illegal fishing. Steelhead trout have been found marked "salmon" and game fish have been ingeniously disguised to exploit the dealer's sales ruse. Game protectors have worked to rid the state of these practices at every turn.

FRIENDLY RELATIONS

Relations between Washington Indian tribes and the Department of Game have been extremely friendly. Indians are generally conscientiously observing the game rules. Over-zealousness on the part of a few young Indians, lured by offers of easy money, is largely responsible for the renewed vigilance order by the Department.

Challenge to a sport fisherman's prowess is this rushing western Washington waterfall.

Department of Game (10' x 40') display exhibit at Western Washington Sportsmen Show, Green Lake, Seattle. Department also exhibited an attractive booth at the spring Eastern Washington Sportsmen's Show. In addition to this varied display the Department exhibited game birds, migratory fowl and big game.

Education and Public Relations

PUBLICITY in the Department during the past biennium entered a wide field and utilized a number of practical and successfully executed public relation medias. The Commission will continue to apprise the public of the program and activities of all Department of Game divisions. Education and instruction of the sportsman to observe game laws and regulations and pointing out the hunting and fishing resources of the Evergreen State is a precept the Commission strongly advocates.

NEWS BULLETINS

From the Department office timely bulletins are issued. These include a news release mailed to the state press, radio stations, national periodicals and to the game departments of all states and an informative personnel bulletin released to all state game employes monthly. A third bulletin is dispatched at monthly intervals to Washington Sportsman's clubs reporting game data and facts. Through these medias, the Commission is directing a concerted educational drive through its editorial releases to make Washington's sportsmen game conscious. The State Department of Game has been publicized via radio broadcasts by members of the Commission and the state director of game during the past biennium on several occasions.

TALKS AND FILM SHOWINGS

In addition the story of the Department's work has been brought before various sportsman clubs, civic organizations and schools by members of the Commission and Department heads. The new moving picture machine, recently purchased, will be used in telling the romantic and practical phases of the Department's activities. The film picture of Washington's game and

fish resources has been supplemented in recent months with new views and has been re-edited.

It is the thought of the Commission that tangible illustrations of the vigilance and work of the Department should be brought vividly before the public. The program of game education thus will be developed on an even broader scope in the future.

To Broaden Educational Program

As the paragraph on "public relations" has enumerated, the Department has progressed to a certain degree in its educational program through its several bulletins and press releases carried on during the biennium. It is the opinion of the Commission however, that special emphasis should be placed on this phase of the Department during the next two-year period. It is one thing to advise a sportsman that he will be prosecuted for an infraction of the game code, but quite a more pleasing and helpful admonishment if he is told why he should not commit the infraction.

WIDE SCOPE OF STUDY

Schools of the state, sportsman associations, community groups and clubs offer a fertile field for educational studies on GAME CONSERVATION. The Department "movies" will be used more extensively and special stress is to be placed on educational work during the next two years.

EDUCATE LICENSEES

With added stress placed on educating licensees to respect and support the game code, the Commission believes a further sizable decrease in arrests can be made during the ensuing biennium. The Department works on the practical theory that the efficiency of the game patrol is measured in the reduction of arrests and minimizing of violations, rather than building up a record total of arrests.

Exhibit of game fish, 1936 Western Washington Sportsmen's Show, Seattle.

State Game Patrol

GAME protection is not only a problem of policing and law enforcement but in addition is one of education and vigilance. Since the early days of game protection in this state, sportsmen and the general public viewed the game warden with respect, but were little disposed to cooperate in the broader and more practical phases of game management and conservation. The smartly uniformed protectors of the present era are trained along all fields of game control. It is interesting to note that the friendly companion-like attitude reflected by Washington game protectors today has given rise to the willing assistance of the public. It is through this welcome coordination of state and public interests that much progressive activity is expected to develop.

Protectors Gain Public Cooperation

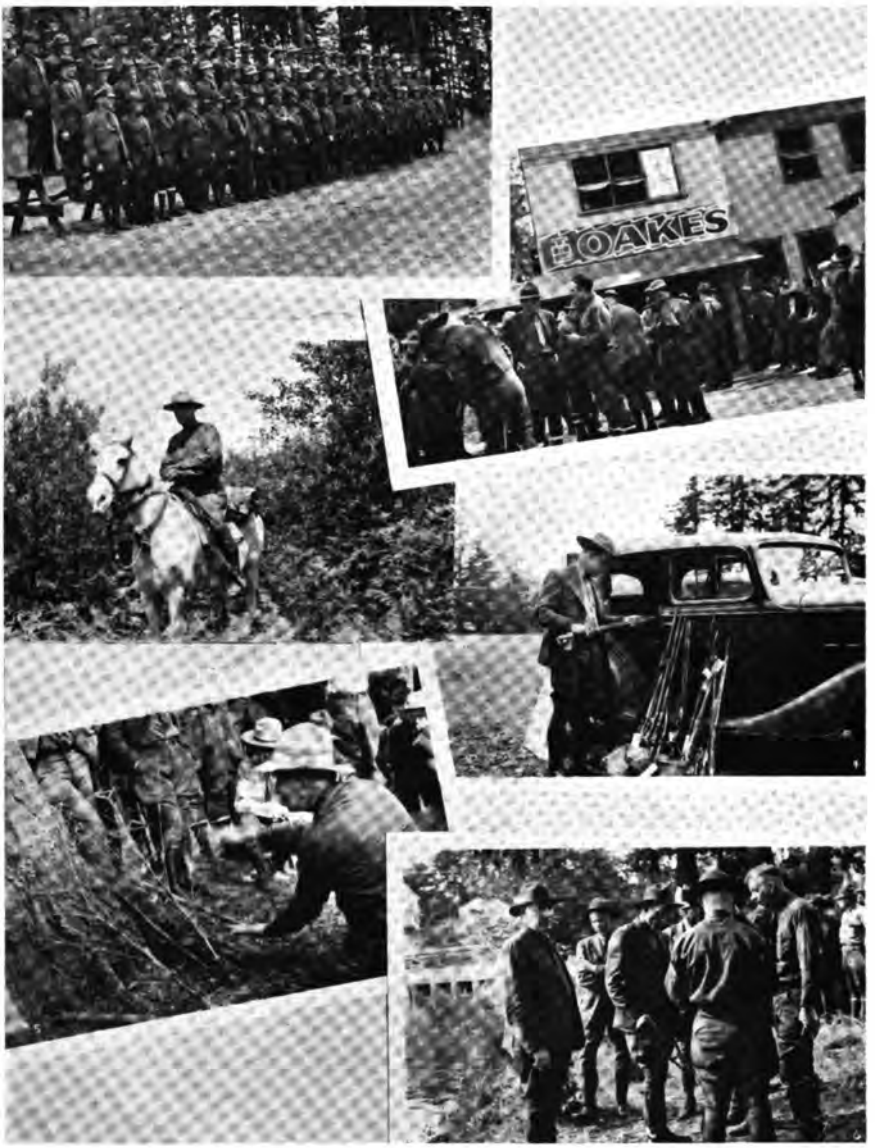
Work of protectors is replete with ramifications and manifold services. They are duty-bound to effect arrests and guard their game districts with strict vigilance. Patrol members, therefore, must not only be familiar with their own immediate police assignment, but must also be versed in the important allied fields of conservation and game management. He is, in truth, a CONSERVATION SPECIALIST. For instance, he is expected to be thoroughly conversant with game laws and game management, more so, in fact, than the best informed sportsman and farmer in his district.

Routine Covers Diversified Field

Work activity which may be charged directly to protectors includes: (a) licenses—protectors are assigned the duties of recorder and bookkeeper for all clerical work necessary in the disposition of game licenses, big game seals, bounty permits and other fees incidental to the handling of licenses in his district, (b) bird planting—protectors yearly aid the game propagation division in the liberation and planting of thousands of upland birds, (c) protectors whose districts are near streams and lakes, assist the game fish division in the planting of large numbers of fingerlings and frys annually, (d) seining fish, (e) predatory control, (f) depredatory beaver trapping—strict measures must sometimes be clamped on the mischievous forest builder and he is often caught in the act of destroying farmer's property. Protectors live-trap these busy fellows in summer and steel-trap them in winter when they become over zealous, (g) during rush times at Department hatcheries and game farms, protectors are called upon to assist, (h) feeding game during winter is a routine job which requires considerable time and application by protectors, (i) on matters of pollution, game patrol members are instructed to keep a sharp lookout for possible pollution spots, dams which are improperly equipped with fish ladders, lake closures and desirable game preserve sites. In the performance of their duties the 66 district protectors travel on an average of 100,000 miles monthly.

Must Understand Game Management

Let us look at the points which must be considered in providing for an adequate and efficient understanding of GAME MANAGEMENT methods of protectors. Game management deals directly with land use and farm practices. Protectors, as a part of their routine tasks, mingle frequently with



The following photos were taken at the annual meeting of the state patrol force, Lake Steilacoom, near Tacoma. (1) State patrol force at company front. (2) Protectors chat before assembly. (3) Mounted game protectors patrol the heavily forested areas. (4) Part of confiscated guns, rods and creels taken by protectors for game code violations. (5) Laying a bobcat trap. (6) Group instruction in coyote trapping.

farmers and landowners, obtaining their viewpoint and reaction to problems relating to game control and conservation.

HELP FARMERS

Much is to be gained from a realization of the farmer's problems in cementing and fostering protector-farmer friendships. Protectors have pointed the way to farmers and landowners alike the sincere desire of the Department to cooperate and assist in the satisfactory handling of game matters.

Jurisdiction of Game Patrol

Although work of the patrol is, strictly speaking, limited to protection and conservation, the Department has moved to widen the authority of its protectors in order to insure greater efficiency in the field. Through an arrangement with the State Bureau of Fisheries, all game protectors have been appointed deputy fisheries inspectors to serve without pay in order to assist the Food Fish Department. In turn all food fish inspectors have been appointed special deputy game protectors to serve without additional pay to assist the Department of Game in enforcement of game laws.

WHERE IT ENDS

Before leaving the subject of patrol jurisdiction a paragraph on the scope of protector authority answers an oft repeated question, "Where does the protector's beat start and end?" The protector's authority spans the state to its far corners and is not limited exclusively to his immediate patrol district. This administration of authority was ordered for the good reason that under an obsolete police system game protectors were limited to their assigned territory. Violations occurring over a territory line could not be disciplined or prosecuted by the protector. Today Washington's game patrol makes arrests at the point of violation.

RECORD OF ARRESTS

Arrests in western Washington patrol districts again held high over arrests in the eastern Washington districts. Western Washington had a total of 2,905 with eastern Washington arrests counting 1,381 for the last two-year period.

TOTAL ARRESTS AND FINES FOR YEARS 1934, 1935

Year	Arrests	Fines
1934 (fiscal)	2,532†	$53,694.75
1935 (fiscal)	1,752‡	51,165.25

† Includes 67 Food Fish cases.
‡ Includes 50 Food Fish cases.

SPECIAL DUTIES

Specific duties of the river patrol are best explained by the statement that protectors are constantly on the alert for illegally set gill nets in rivers passing through their district. Life with the protector is one round of hustle

(1) A state game protector starts on an Olympic Peninsula predatory hunt. (2-3) Bag of coyotes taken by protectors. Game protectors accounted for 517 coyotes during 1935. (4) Two cougar game destroyers taken by protectors, Olympic Peninsula. (5) Coyote trapped.

and bustle and he is too often called to other tasks and cannot participate in all-night vigils to spot the illegal use of gill nets or ferret out "deer shiners." The floating and river patrols consist of two men each whose responsibility is to pursue law violators and investigate cases of game code infringement.

Each winter there are the illegal gill netters to contend with on the rivers of the western slope. The river patrol clears the river of nets and makes a number of arrests. After completion of the steelhead run, a patrol may be sent to eastern Washington to assist protectors there during the hunting season. They then return in the fall to the Puget Sound region and the territory embracing western Washington to renew their river vigilance. Briefly, the floating patrol works on the order of a flying squadron—ready at a moments notice to go to a point of law infringement. Members of this specialized patrol do not wear the customary patrol uniform, but work as plain clothesmen.

Protectors are Trained and Experienced

Keen vigilance of game protectors has made this feature of the Department one of the most efficient of state police units. Experienced and trained to game control, they enter the field with a thorough knowledge tempered by a clear understanding of the rights and problems of sportsman and farmer.

GUARD FUTURE

It is, of course, extremely important that the Department keep capable and alert protectors in the field the year around if the future conservation of Washington game is to be provided for. NOTE: If this Department expended all of its income in the propagation of birds through its game farms, we would run far short of the number shot each year.

Game Violations Decrease

Due to the educational program projected through protector-landowner contacts and the interest taken by the Department in working for a "game conscious" state citizenry, violations and arrests have decreased sharply during the last year of the biennial period, April 1, 1935, to March 31, 1936.

DEPARTMENTAL VIGILANCE

Comparison of arrest figures for this biennium reveals a graphic picture. Records of protectors are indicative of departmental vigilance. Early in the development of the state patrol, there were frequent violations and infringements of game laws by license holders who had not been taught to respect the game code, the rule of protectors and the underlying fundamentals of conservation of wild life. Organization of the state patrol with its unified force of protectors and all around efficiency has checked violations which, in turn, have cut down arrests. The first year of this biennial period, April 1, 1934, to March 31, 1935, saw a general tightening and strengthening of game laws. Round up of violators during this year of close vigilance resulted in 2,532 arrests. Through education and enforcement methods the Department of Game has reduced this number of arrests for the last biennial year, April 1, 1935, to March 31, 1936, to 1,752 arrests. This is a decrease of 31% over the previous year.

Floating and River Patrols

This last biennium has seen the inauguration of a plain clothes police unit working in conjunction with the work of protectors. The Commission is pleased to report that this novel step in the direction of game vigilance has proved quite successful during this two-year experimental stage and is now a regular and permanent adjunct to the Department.

Three Patrol Boats Operated

Purchase of two patrol boats during the biennium for operation on state rivers, lakes and salt-water game centers has proved an efficient and worthwhile protective auxiliary to the game patrol force. Lack of adequate transportation on lakes and streams as well as Puget Sound and San Juan Island waters formerly prevented the game force from making a systematic patrol of inaccessible water points.

In the San Juan Islands, one of the favorite fishing and hunting rendezvous of sportsmen, a 30-foot seagoing patrol boat is operated through the twelve months of the year. Constant watch is kept by the game protector piloting this boat in curbing all types of game code violations and infringements in the Islands and surrounding waters. A motorcycle is carried aboard for use in patrolling roads and trails which thread these islands.

For patrolling Lake Washington, Puget Sound waters and islands a fast patrol boat, purchased June 12th, 1936, is maintained and affords swift transportation to all water points in and around Seattle. The boat is also used to patrol rivers for gill nets.

The large patrol boat maintained on Lake Chelan has proved a valuable protective link in regulating hunting and fishing in this territory. It also is the sole means of transportation to the headwaters of Lake Chelan, a distance of 55 miles. Sleeping and cooking accommodations are provided in both the San Juan and Lake Chelan patrol boats.

One of three speed boats used by the Department of Game in patrolling Puget Sound waters and Washington rivers and lakes.

REPORT OF PATROLLING DEPARTMENT
Fines, Arrests, Convictions, Etc.

	April 1, 1934 to March 31, 1935	April 1, 1935 to March 31, 1936
Total number of arrests	2,532*	1,752*
Total number of acquittals	118	64
Total number of convictions	2,414	1,688
Total number of appeals	5	26
Food fish cases included	67	50
Jail sentences imposed	10,701 days	6,122 days
Jail sentences suspended	8,642 days	4,929 days
Fines assessed	$53,604 75	$51,165 25
Fines suspended	15,624 05	10,846 50
Fines collected	13,915 20	10,081 45
Fines served out in jail	15,612 00	17,410 00
Fines unpaid	8,543 50	12,227 30
Bail forfeitures	3,086 50	306 25

* Includes food fish cases.

RECORD OF ARRESTS BY COUNTIES, STATE OF WASHINGTON

WESTERN WASHINGTON COUNTIES	No. Arrests April 1, 1934 to March 31, 1935	No. Arrests April 1, 1935 to March 31, 1936
Clallam	125	69
Clark	63	53
Cowlitz	58	57
Grays Harbor	74	58
Island	29	6
Jefferson	58	34
King	354	271
Kitsap	63	27
Lewis	58	50
Mason	54	41
Pacific	39	18
Pierce	195	128
San Juan	11	9
Skagit	141	110
Skamania	67	39
Snohomish	186	79
Thurston	87	48
Wahkiakum	2	12
Whatcom	75	57
Totals	1,739	1,166

EASTERN WASHINGTON COUNTIES	No. Arrests April 1, 1934 to March 31, 1935	No. Arrests April 1, 1935 to March 31, 1936
Adams	11	4
Asotin	16	16
Benton	20	9
Chelan	43	70
Columbia	23	8
Douglas	2	...
Ferry	24	18
Franklin	8	2
Garfield	13	11
Grant	15	36
Klickitat	20	3
Kittitas	105	51
Lincoln	17	11
Okanogan	55	45
Pend Oreille	68	46
Spokane	78	92
Stevens	80	67
Walla Walla	9	8
Whitman	52	35
Yakima	134	54
Totals	795	586
GRAND TOTAL	2,532	1,752

PROTECTION DIVISION—ADMINISTRATION AND GENERAL EXPENDITURES
April 1, 1934, to March 31, 1935—April 1, 1935, to March 31, 1936

	Fiscal Year April 1, 1934, to March 31, 1935		Fiscal Year April 1, 1935, to March 31, 1936		
	Total		Salaries and Wages	Operations	
Salaries and wages	$88,454 86		$98,028 62		
Private autos—mileage	23,226 84		.....	$25,885 81	
State cars—expenses operating	19,108 57		.....	18,218 48	
New cars purchased for employees	7,582 19		.....	2,864 45	
Fares—railroad, boat and stage	339 30		.....	289 86	
Meals	4,174 13		.....	5,212 66	
Rooms	1,164 37		.....	1,388 58*	
Telephone and telegraph	380 74		.....	437 78	
Boat expenses	.....		.....	840 99	
Pastures and expense—state horses, horse hire	.....		.....	283 15	
New equipment	812 14		.....	2,708 96	
Expense Game Protectors' meeting	224 14		.....	.....	
Medical aid and industrial insurance	4,177 33		.....	3,186 07	
Miscellaneous expenses	1,464 709		.....	480 44	
Totals	$82,664 45		$98,028 62	$61,883 23	
Grand Totals		$151,119 31			$159,921 85
Special fur-bearing trapping—					
Salaries and wages	$4,386 82		$3,880 74		
Miscellaneous	188 37‡		.....	$123 48	
Grand Totals		$4,575 19			$4,004 22
Special predatory animal hunters—					
Salaries and wages	$1,886 91		$1,031 74		
Miscellaneous	.....		.....	$648 15	
Grand Totals		$1,886 91			$1,679 89
Feed in the open	$848 56		.....	$1,161 66§	
Total		$848 56			$1,161 66

* Includes expense of Game Protectors' meeting.

† Includes boat expenses, pasture expense and horse hire.

‡ Beaver taken by predatory beaver trappers are resold for a profit by the Department of Game. Money received therefrom is deposited to the credit of the Game Fund. Special trappers are paid at the rate of $3.00 per pelt. Trapping of beaver often is necessary when the "carpenters of the wood" cause damage to farms, irrigation canals, dykes, etc. During the summer months beaver who become depredatory are live-trapped and liberated away from farming communities.

§ U. S. Department of Agriculture paid for feed in amount of $112.28 which was purchased and fed by employees of Game Department.

Forces Unite to War on Predators

ON patrol duty, protectors keep a sharp lookout for predatory animals. It is essential that the patrol destroy predators at every opportunity to protect game. Coyotes, bobcats and cougars are the most active destroyers of game. The coyote annually destroys a great number of birds, while the cougar cuts deeply into the ranks of deer and elk each year. The fact that a cougar kills an average of one deer weekly supports the Department's orders to check the wily cougar destroyer.

Bounty Hunters Trail Predators

Sharpshooting bounty hunters annually kill thousands of predators. With their dogs, these hardy woodsmen trail the predator to his native lair, calling upon their knowledge of animal habits and a quick trigger to boost their bounty payments. Bounty hunters are paid on the ratio of $25 for

(1) Large elk killed by cougar, which in turn was taken by predatory hunter shown in lower right. (2) State game protector and a trio of big cougar bagged in vicinity of Orient, Ferry county. (3) Lynx in trap.

cougar, $5 for bobcats and $1 for the coyote. Under Department regulations bounty hunters may retain their pelts. There are approximately 2,169 bounty hunters in the field issued permits by the Department of Game.

BOUNTY PAYMENTS

Bounty money is paid from receipts of big game seals—metal tags—exclusively. The hunting season of 1935 marked the first year of big game seals. The statute was enacted at the last session of the legislature at the behest of Washington sportsmen.

NOTE: See section under licenses for explanation and financial statement of big game seals.

Summary of Predatory Payments

Figures compiled on predatory payments for the first year under the bounty law reveal that the Department approved payment of a total of $15,156. This sum includes bounty awards for killings of 4,011 coyotes,

PREDATORY ANIMAL BOUNTIES

April 1, 1935 to March 31, 1936

COUNTY	Coyote	Bobcat	Cougar
Adams	$240 00	.....	.....
Asotin	51 00	$25 00	.....
Benton	711 00	30 00	.....
Chelan	24 00	65 00	.....
Clallam	12 00	1,355 00	$1,425 00
Clark	26 00	115 00	.....
Columbia	74 00	100 00	.....
Cowlitz	35 00	650 00	300 00
Douglas	66 00	40 00	.....
Ferry	117 00	35 00	.....
Franklin	250 00	.....	.....
Garfield	143 00	5 00	.....
Grant	828 00	145 00	.....
Grays Harbor	4 00	480 00	150 00
Island	.....	.....	.....
Jefferson	5 00	165 00	125 00
King	78 00	800 00	.....
Kitsap	.....	.....	.....
Kittitas	76 00	50 00	.....
Klickitat	224 00	305 00	.....
Lewis	52 00	860 00	175 00
Lincoln	105 00	15 00	.....
Mason	6 00	115 00	50 00
Okanogan	246 00	355 00	25 00
Pacific	22 00	590 00	.....
Pend Oreille	4 00	5 00	25 00
Pierce	14 00	390 00	.....
San Juan	.....	.....	.....
Skagit	24 00	530 00	25 00
Skamania	3 00	130 00	50 00
Snohomish	62 00	585 00	.....
Spokane	121 00	5 00	.....
Stevens	200 00	80 00	.....
Thurston	2 00	15 00	.....
Wahkiakum	5 00	185 00	.....
Walla Walla	35 00	.....	.....
Whatcom	10 00	465 00	.....
Whitman	26 00	.....	.....
Yakima	108 00	135 00	.....
Totals	$4,011 00	$8,795 00	$2,350 00
Grand Total		$15,156 00	

NOTE—Bounty payments were made on the basis of the following scale: Cougar, $25.00; Bobcats, $5.00; Coyotes, $1.00.

1,759 bobcats or lynx and 94 cougars. The first year of big game seal sales recorded 47,253 metal tags sold for a net of $23,626.50. There are approximately 2,169 bounty permittees in the field. These predator destroyers are assessed no fee, but must have the approval of game protectors in their districts.

Sportsmen Join In Predatory Control

Sundays and holidays, during off seasons, are days of keen adventure for youthful predatory hunters and there's a thrill or two in the offing for the oldsters as well—stalking and destroying the common enemies of game life. Predatory hunts have been a program feature of many sportsmen's organizations throughout the state. Several outdoor groups have well planned shoots for boys with an attractive offering of prizes.

THE DAY'S BAG

Leaving city surroundings, the predatory seeker hies away to points of known predatory activity. His day's bag may contain only a crow's nest or a squirrel or two. If hunting is good he may return with a sorté of varmints and predators. A look into the predatory takes of all state sportsmen's groups would show in the neighborhood of 100,000 game foes destroyed annually.

U. S. Biological Survey—Predatory Control

PREDATORY control is a major conservation measure. Predators preying upon game life are one of the greatest single forces which must be controlled in order to give sportsmen full benefit of artifically propagated game and the natural reproduction of game. Agencies interested in the conservation of game life have waged predatory drives throughout the year which have accomplished much in the way of eliminating common game destroyers.

Four major conservation agencies are actively engaged in predatory control in Washington today. They include: the U. S. Biological Survey, bounty permittees, Washington sportsmen and Department of Game protectors.

Although their time is taxed with many routine duties, including sales of game licenses and protection, game protectors have made a creditable showing in predatory work. The state must necessarily rely on the game patrol for predatory service, the Department having no other means of checking the spread of predators. The Washington legislature at its 1935 session allocated to the U. S. Biological Survey $20,000 of state game funds to be used by the government in predatory work. The money has been used mainly to date for the payment of hunters' salaries and expenses incidental to control.

Fund Allotted Without Department's Permission

It should be pointed out that the State Game Commission has steadfastly maintained that jurisdiction of paid bounty hunters should be under departmental management and, therefore, the $20,000 in game department

funds was appropriated to the U. S. Biological Survey without their permission. The game fund, which is built up from license revenue, was set aside from other departmental funds for the express purpose of turning back to game conservation and propagation dollar for dollar value on license fees. As the official agency delegated to carry out game protection, conservation and game propagation, the Commission is not in accord with this diversion of departmental funds. An analysis of state game department predatory control programs shows that in only two instances are states, other than Washington, appropriating department funds to the U. S. Bureau of Biological Survey.

Control of predators is best promoted by the Department of Game as a connecting unit in the protection and conservation of wild life. Bounty permittees, numbering 622, who are paid from revenue received from sale of big game seals, made a total of 5,864 predatory kills during 1935, receiving payments totalling $15,156.

For the same period, 1935, the hunters of the U. S. Biological Survey recorded killings of 2,198 predators which included 110 coyotes taken by state game protectors. From the $20,000 allocated from the game fund, the Bureau paid out in hunters' wages alone, $10,448.39.

STATE GAME PROTECTORS' KILL AND LIST OF PREDATORS TAKEN AT STATE GAME FARMS—1935

PROTECTORS' PREDATORY KILL—1934-1935

Predatory Animals	1934	1935
Cougar	14	5
Bobcats	10	56
Coyotes	207	517①
Skunks	57	108
Beaver	86	91
Miscellaneous	1,015	3,169
Total	1,389	4,006

Predatory Birds	1934	1935
Crows	1,527②	1,843③
Magpies	1,023④	2,400⑤
Kingfishers	210	328
Bluejays	73	185
Hawks	186	712⑥
Owls	18	129
Miscellaneous	258	126
Total	3,295	5,783

① Includes 1 timber wolf.
② Add. 2 nests destroyed.
③ Add. 20 crow's nests and 28 eggs destroyed.
④ Add. 103 nests and 130 eggs destroyed.
⑤ Add. 234 magpie nests and 468 eggs destroyed.
⑥ Add. 2 hawks' nests and 5 eggs destroyed.

PREDATORS TAKEN AT STATE GAME FARMS

April 1, 1935-March 31, 1936

Bluejays	27
Cranes	3
Crows	34
English Sparrows	37
Golden Eagle	1
Gopher	1
Ground Hog	3
Ground Squirrel	91
Hawks (all species)	356
Jackrabbit	1
Kingfishers	26
Magpies	122
Mink	40
Mountain Beaver	22
Owls	274
Prairie Falcon	38
Rats	127
Raven	1
Skunks	88
Squirrels	32
Snakes	51
Weasels	126
Miscellaneous	235
Total	1,736

PREDATORY WORK REPORTED BY U. S. BIOLOGICAL SURVEY

Month	Hunters' Wages	Coyote	Bobcat	Bear	Misc.	Total
1935—						
April	$1,311 83	573	15	.....	1	589
May	1,882 11	343	17	1	.....	361
June	280 00	15	12	1	.....	28
July	135 00	15	5	.....	.....	20
August	135 00	30	11	.....	.....	41
September	135 00	19	13	.....	.....	32
October	1,922 43	409	17	3	9	429
November	2,082 33	286	11	2	10	319
December	1,096 94	137	10	.....	.....	147
1936—						
January	1,057 75	101	9	.....	.....	110
February	410 00	12	.....	.....	.....	12
March	.....	.....	.....	.....	.....	.....
Total	$10,448 39	1,941	120	7	20	2,088
Taken by Game Protectors under supervision of U. S. Biological Survey	.....	110	.....	.....	.....	110
		2,051	120	7	20	2,198
Fur receipts	$2,971 63					
Skins unsold	34					

FEDERAL GOVERNMENT—

	Salaries	Other Expense	Coyote	Bobcat	Bear	Misc.	Total
	$17,221 29	$3,899 27	2,000	72	1	4	2,077
Fur receipts	.....	$866 89					

MISCELLANEOUS COOPERATION—

	Salaries	Other Expense	Coyote	Bobcat	Bear	Misc.	Total
	$712 81	.....	143	.....	.....	4	147
Fur receipts	.....	$473 04					

Total Fur Receipts $4,311 56

Total Catch—Animals 4,422

BOUNTY HUNTERS TAKE

Animals	Number
Coyotes	4,011
Bobcats or lynx	1,759
Cougar	94
Total	5,864

Note—Department of Game approved payment of $15,156.00 distributed over 622 active bounty permittees of the 2,100 predatory hunters.

SPORTSMEN'S PREDATORY KILL

Animals	Number
Crows	6,383
Bobcats	51
Coyotes	1,783
Skunks	395
Sparrows	55,948
Magpies	14,461
Weasels	418
Owls	521
Hawks	1,276
Kingfishers	285
Squirrels	17,500
Mountain Beaver	1,580
Mole	2,151
Jackrabbits	494
Porcupines	545
Rats	17,770
Rattlesnakes	3,318
Wild House Cats	2,835
Gophers	11,235
Miscellaneous	1,100
Total	140,049

Note—This figure is only a partial list of predatory animals killed by sportsmen during 1935 and represents the predatory activities of eight eastern Washington sportsmen groups.

Depredatory beaver are removed from areas where the "carpenter of the woods" is destructive to orchards and farm property.

Game Farm Division

CONSTRUCTIVE advancement in the major phases of game farm management is reported for the eight state farm units. Difficult problems in upland bird propagation and routine matters of care and upkeep have been solved during the past two years. Operation of the farms is gradually approaching a high standard of efficiency.

Developments and Improvements

Here is a quick summary of milestones passed during 1934 and 1935: (1) distribution of birds in wild, (2) artificial propagation of birds—incubators, brooders, (3) improvements in field rearing methods, (4) low cost operation of game farms, (5) freeing of old established game farms of all stock eight months out of the year by holding mature birds on rented ground, (6) research, (7) new construction—open pen farms, installation of incubators, brooders. Due to these developments and improvements, the game farm division has given assurance of a larger upland bird output during the ensuing biennium.

Installation of Open Pen System

Interesting facts are listed on the introduction of the open pen system of holding upland birds. Formerly covered pens were used exclusively.

This method was tried, with fair returns, for the first time in Washington at the Ellensburg, Kennewick, Colville and Yakima game farms in 1935. These are irrigated farms, seeded to alfalfa, clover, etc., and all except Colville are on rented land. The advantage of rented land is that the farm may be moved to new ground should disease appear.

ADVANTAGES ITEMIZED

Briefly its advantages may be thus itemized: (a) enlarged space ratio on rearing field, (b) disease and feather picking minimized to a low degree, (c) more insect life available, (d) plenty of natural green feed, (e) cost per bird greatly reduced owing to the fact that 40 acres can be fenced for the cost of three 150′ x 150′ covered pens with an area of two acres, (f) young birds have 290 sq. ft. per bird on through the growing period to 12 weeks of age. This against 25 to 40 sq. ft. when placed in covered pens at six weeks of age.

BEST BIRD COUNTIES

The Department's open pen farms are located in the heart of the best bird counties and the small per cent the game farm division is unable to trap are considered as planted although no credit is taken on the records for these birds.

(1) Watering fountain and self feeder used for pheasant broodstock. (2) Searching for eggs. Attendants comb this 10-acre field of 8 pen divisions at four hour intervals daily during egg laying season. (3) Ringnecked pheasant cocks used as broodstock. (4) Eggs are placed in a cool under-ground cellar. (5) Pheasant eggs plucked from their hiding places in a grassy field. (6) Laying nests in a setting yard. (7) Gate to individual open pen field. (8) Covered pen, 30' x 50', used in trapping young birds at ten weeks of age, Kennewick Game Farm.

Covered Pen System Still Widely Used

This old established system of field rearing—moving birds to covered pens at about 6 weeks of age—is being practiced at the South Tacoma, Auburn, Spokane and Walla Walla game farms. Incubators and brooder equipment is installed to supplement the tried and proven field system. These units have a record of successful accomplishment. By holding all stock through the winter on rented ground, these older game farms are given a rest eight months of the year. Too, soil becomes diseased from use by birds, a condition which is remedied by a recess of eight months. All of these farms were plowed and seeded during the fall of 1935 and will have good cover crops in time for the young birds to come.

INCUBATORS AND BROODERS

By combining the field and incubator system at these farms, congestion is relieved on the rearing fields. Work with incubators and brooders is viewed by Department officials as very satisfactory, considering the early stage of this work. Average hatch on ringnecked eggs at South Tacoma is 69.1%. This average is taken from all eggs set and based on birds put in brooders. Figures on the melanistic mutant hatch show 56.9% on the same basis. Brooder birds were of good quantity with very little cannibalism or toe picking.

Winter Holding of Chinese Pheasants

One of the largest winter hold-overs of Chinese pheasants ever recorded in this state is reported for the winter of 1935-1936. Approximately 12,000 pheasants—10,000 hens and the remainder cocks—were held over from the 1935 hatch. The stock was held at the Kennewick and Ellensburg farms in open pens. Each farm has an area of 40 acres and is irrigated and seeded to alfalfa, clover and miscellaneous crops. By leaving the last cutting of alfalfa, birds had good cover for the winter months. Birds, thus held, were brailed and held in open pens of 3⅓ acres and 2½ acres. All pens were opened to allow the birds the range of the 40 acres. Brails were changed in November and again in February.

COST OF HOLDING

Actual cost of holding these birds for a period of five months was 20 cents per bird for feed. Five thousand five hundred choice hens were picked for broodstock for the season of 1936. The very best cocks were selected on a ratio of one cock to five hens.

BIRDS LIBERATED

Six thousand of this held-over stock was released throughout the state the first of March, 1936, and the balance was liberated in June of the same year. Birds released during these months were aged from 10 to 12 months. The June bird release was branded for study as to production in the wild. Thus the Department of Game's estimate on production in the wild from the 10,000 hens released this spring is five birds per hen, or 50,000 birds. It is estimated predators, hunters and weather conditions would reap a toll of 40% of these birds had they been released before the shooting season last fall.

Birds Trapped Winters of 1935 and 1936

Trapping of birds has been necessary under certain conditions during the past winter. It is a policy of the Department of Game to prevent, when-

(1-2) Brailing birds—straps are placed on the wings of game birds and rotated from time to time. (3) Pheasant hens being crated preparatory to liberation. (4) Pheasant hens and cocks held for liberation.

ever possible, Chinese pheasants or other birds giving trouble to farmers by destruction of farm crops. Birds are trapped in overstocked areas and taken to regions remote from farm centers. Birds are also transplanted in cases where an emergency exists of inbreeding which would bring about, unless corrected, deterioration of the field stock.

BIRDS TRAPPED

Quail were trapped in Okanogan county and liberated in many eastern and western Washington counties. Hungarian partridges were trapped in Garfield county and released in western Washington, Chinese pheasants were trapped in one game preserve in Spokane county and redistributed in more sparsely stocked districts of the county. Cocks used as breeders are selected from these wild trapped birds.

General Plan of Bird Liberation

Regular steps are taken in the liberation of birds. At the time birds reach the age of 10 to 12 weeks, game farm superintendents notify the Department's head office in Seattle supplying information that a specific number of birds of the proper age and size are ready for release. In turn, the office contacts the heads of sportsmen associations in the district set aside for planting. In addition the game protector is similarly informed.

FEEDING STATIONS

Establishment of feeding stations is attended to before snow flies. These stations should be placed in well-sheltered places where birds will have protection from air vermin. Once the birds locate these feeding stations, fear of starvation is over. It is advisable to put out very small amounts of grain

during November and December as natural food is plentiful at this period. The dole of grain is just enough to keep the birds close to the feeding grounds.

SHELTER PROVIDED

When storm breaks and food becomes scarce the birds will know where to look for help. Swale or swamp borders, weedpatches, bushy fence rows and wood lots are good locations for feeding stations. So far as practicable, feeding stations should be located where they may be tended with as little effort as possible and away from main traveled roads. During the winter months birds become quite tame and farmers and sportsmen can establish feeding stations close at hand, making a shelter of corn stalks or wheat bundles. Any shelter that will keep fresh snow off the grain will be of good help and will protect birds against vermin. Feeding boxes are highly recommended in saving grain losses. Grit, such as charcoal, oyster shell and limestone is very necessary at this time.

Practical Feed Experiments

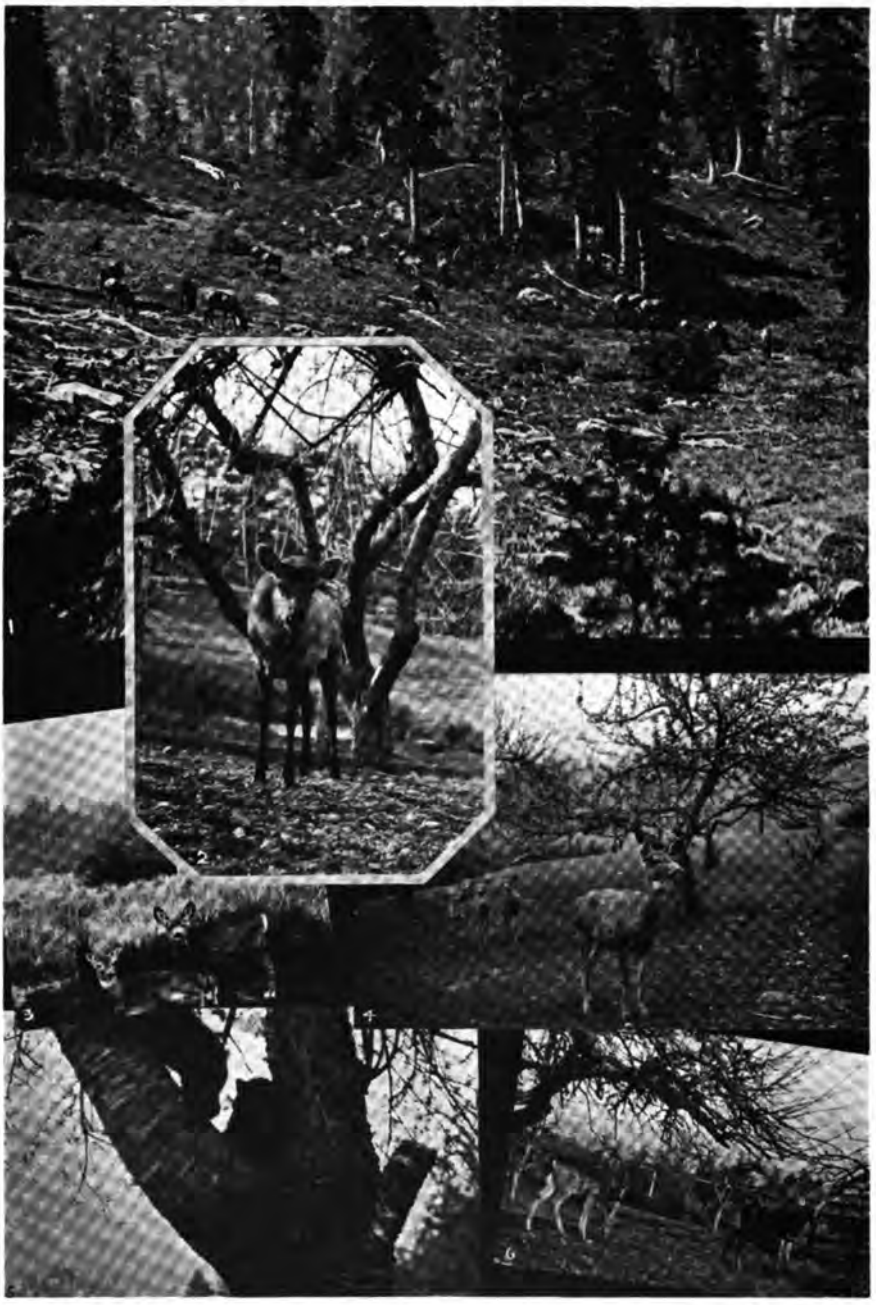
The game farm division has carried on a number of practical experiments with field reared and brooder reared birds during 1935. The Department fully realizes the value of scientific study and research in the feeding and care of birds and has lent considerable time to this end.

COST RATIO

One interesting experiment took this form. A dry commercial feed of mash in pellet form was used for the first 10 days. At this age the birds were put on to paks only for the next 30 days. At 40 days the chicks were put on a standard turkey food in pellet form with the addition of a commercial scratch food. Cost of rearing these birds was figured at 16½ cents each to ten weeks. Ninety-three per cent of this lot was liberated at ten weeks with a loss of 7%.

A careful check kept on lot No. 7 fed with an old established wet food showed a cost of 24½ cents per bird. These birds were reared in brooders. Mortality was in line with the above experiment on lot No. 6.

Two great horned owls bagged by Ellensburg game farm superintendent.



Wild life orphans of the forest. The Department yearly plays host to a number of game animals. Deer, elk and bear, as are pictured here in the orchard setting of the South Tacoma State Game Farm, often "stray" too far from mother's apron strings and are not "castoffs" as many suppose. (1) An elk range—herd of Olympic Peninsula Roosevelt elk. (2) A young elk says "good mornin'." (3-4-6) Are white tail and mule deer. (5) Bear cubs.

EARLY STOCKING

Early stocking of these areas with winter feed has been found a practical expedient. For example, 16 tons of alfalfa hay raised on the Colville game farm was transported during the fall of 1935 to Ferry, Stevens and Pend Oreille counties. This hay saved many deer which would have gone unfed during the heaviest snow fall in many years.

FEED AND UPKEEP COSTLY

At the South Tacoma game farm, the state has cared for an average of 19 bear cubs, 50 fawns and 10 elk calves during the past two years. Food and upkeep costs are heavy and time is diverted from the routine duties of the upland bird farm. Homes for the animals cannot be found in state parks, and city zoos are over-stocked. They are often so tame that they become an easy prey after being released in big game district.

Winter Feeding Upland Birds

During the hard winter when deep snows prevail and sleet storms form snow crusts, food becomes scarce for the dependent upland birds. Weed tops, wild fruits and seeds on the ground are covered over. The Department is well aware that if wild animals are allowed to become undernourished at this time, they become an easy prey for predators or may perish from cold. The loss of a bird during the winter means several birds less to help the farmer and to hunt the following fall. If the parent stock starves during the winter, hunters need not expect birds in sufficient numbers for fall shooting.

DELIVERY PROCEDURE

Date of delivery is usually set for one week after notices are mailed. Birds are examined and checked before liberation by both the sportsmen and protector. The driver responsible for the delivery obtains signatures on a regular form of this Department, of people residing on farms where birds are planted, attesting to the number and condition of birds planted.

DATA RECORDED

From experiments supervised under the field rearing system practical and useful data was recorded, much of which will be adapted for use in the ensuing biennium.

Candid Advice Offered on Orphan Game

The scraggly bruin cub and spindle-legged fawn seen cavorting beside a trail are not orphans and do not need the hunter's helping hand, license holders are reminded. In nearly every case the supposedly strayed and homeless little animal is but a stone's throw from a watchful parent. It is only in rare instances that cubs, fawns and calves are found and may be classified as strictly orphans. If license holders would bear this in mind, the state would be saved the expense of upkeep of animals "borrowed" by well-meaning sportsmen, farmers and private individuals.

CARE OF BIRDS

The Department of Game appreciates the valuable assistance received from sportsmen organizations, farmers and Boy Scouts in caring for wild life during the winter months. Feed bins have been kept well stocked with the help of these agencies. The Department raised alfalfa hay on the Colville game farm which was trucked back in the mountains where it was kept for winter feeding of deer. Owing to severe weather, roads were blocked throughout the winter of 1935 in this district and it was impossible to truck feed into areas for winter feeding.

Good Turns of Game Minded Groups

Many and varied are the useful services in which the outdoor groups of the state have participated during the past two years. Good turns performed by these friends of wild life go unsung, but in nearly every instance this work is of such importance that it is well to point out that the future of this state's game life depends upon the continued cooperation of these game minded groups. The Department of Game strives to encourage the organizations, whose program is largely predicated upon wild life, to assist in every worth while conservation service.

EGG ALLOTMENTS

To illustrate: The Department distributed during the biennium upwards of 10,000 Chinese pheasant eggs to 4-H clubs, sportsmen's groups, grange units and private individuals. Although actual returns were not as gratifying as expected, the Commission feels a substantial beginning has been made and the plan should receive added impetus during 1936.

COACH 4-H CLUBS

The 4-H club members were coached and sponsored by the Washington State College, Pullman. The plan of distribution may be described thusly: a maximum of 50 pheasant eggs was supplied club members and hatching and care of the birds up to 10 weeks of age was handled by members. The Department of Game agreed to pick up the birds at this age, paying 75 cents each to the member raising them to this stage.

Game Farm Division Development and Activity

Number of state game farms	8
New "open pen" farms constructed 1934-35: Kennewick, Ellensburg and Yakima	3
Eggs set, 1935	80,597
Hens held for spring release and broodstock, 1935	12,000
Birds liberated, 1934	26,013
Birds liberated, 1935	34,038

Migratory fowl feeding in an eastern Washington resting place. Note two swans in the picture. State game protectors often assist the U. S. Biological Survey in the care of migratory fowl.

Count of Eastern Washington Game Fowl

Control of Washington's water-fowl is under direct supervision of the U. S. Bureau of Biological Survey. The interesting table included here was compiled from statistical data summarized from 26 questionnaires mailed to various parts of eastern Washington where water-fowl were wintering and had to be fed during the bad weather conditions existent during the month of February, 1936.

COUNTY— In Eastern Washington	Numbers of Wintering Water-fowl Reported			Dead Water-fowl ACTUALLY Found and Counted		
	Ducks	Geese		Ducks	Geese	Coot
Adams	1,700	.....		12	.....	.....
Asotin	185	14		3	.....	.....
Benton	10,800	500		120*	.....	25
Ferry	200	.....		.....	.....	.....
Columbia	1,000	500		24	7	.....
Chelan	150	.....		.....	.....	.....
Garfield	11,000	600		8	.....	.....
Grant	600	.....		.....	.....	.....
Kittitas	1,000	.....		2	.....	.....
Okanogan	1,050	.....		3	.....	.....
Pend Oreille	325	7		4	.....	.....
Spokane	5,000	.....		30	.....	.....
Stevens	2,000	.....		10	.....	.....
Walla Walla	5,000	.....		4‡	.....	.....
Whitman	12,000	310		60	.....	.....
Yakima	3,000	27		.....	.....	15
Approximate totals	55,000	2,000	Actual totals.	258	7	40

* Includes 47 mallards; 51 teal; 14 baldpates; 7 scaup; 1 goldeneye.

† The ducks were 2 teal.

Except the * and † entries all dead ducks reported were mallards.

‡ State game protector reported he actually found 4 dead ducks but added that "There must have been 300."

Some of the figures for one county include ducks from an adjoining county as for example some southern Grant county ducks are shown in Adams county figures. These DO NOT also appear for Grant county. Wintering ducks were 95% mallards.

Game Farm Improvements, 1934-1935

Construction of a permanent nature which will greatly facilitate the future operation of game farms was added during the past biennium. In some cases, improvement projects are still uncompleted, but all of these will be ready for use during the coming biennium.

WORK JUSTIFIED

As the type of building and construction listed herewith would indicate, the Department is expending considerable money for needed improvements and installation of equipment which is deemed important to the successful and efficient operation of game farms. In many instances improvements made during the biennium have already given much needed service, fully justifying the expenditure.

South Tacoma Game Farm: Installation of one Jamesway 6,000 egg capacity incubator hatcher, building of six new brooder units with a total capacity of 3,600 birds, building of five outdoor portable brooders with a total capacity of 500 birds.

Auburn Game Farm: Fencing of a 15-acre rearing field, 250 new rearing coops, clearing of 15 acres of land, building of five outdoor portable brooders with a total capacity of 500 birds.

Ellensburg Game Farm: This unit was moved from the old location on Wilson creek to the 40-acre tract three miles northeast of Ellensburg. All fencing, consisting of 2½ miles, was installed—3 ft. of 1-inch mesh, 20-gauge wire buried 12 inches in the ground and 5 ft. of 2-inch mesh, 20-gauge wire completing the 7-ft. wall. All outside fences have 2 ft. overhang. An addition of two rooms was added to the house.

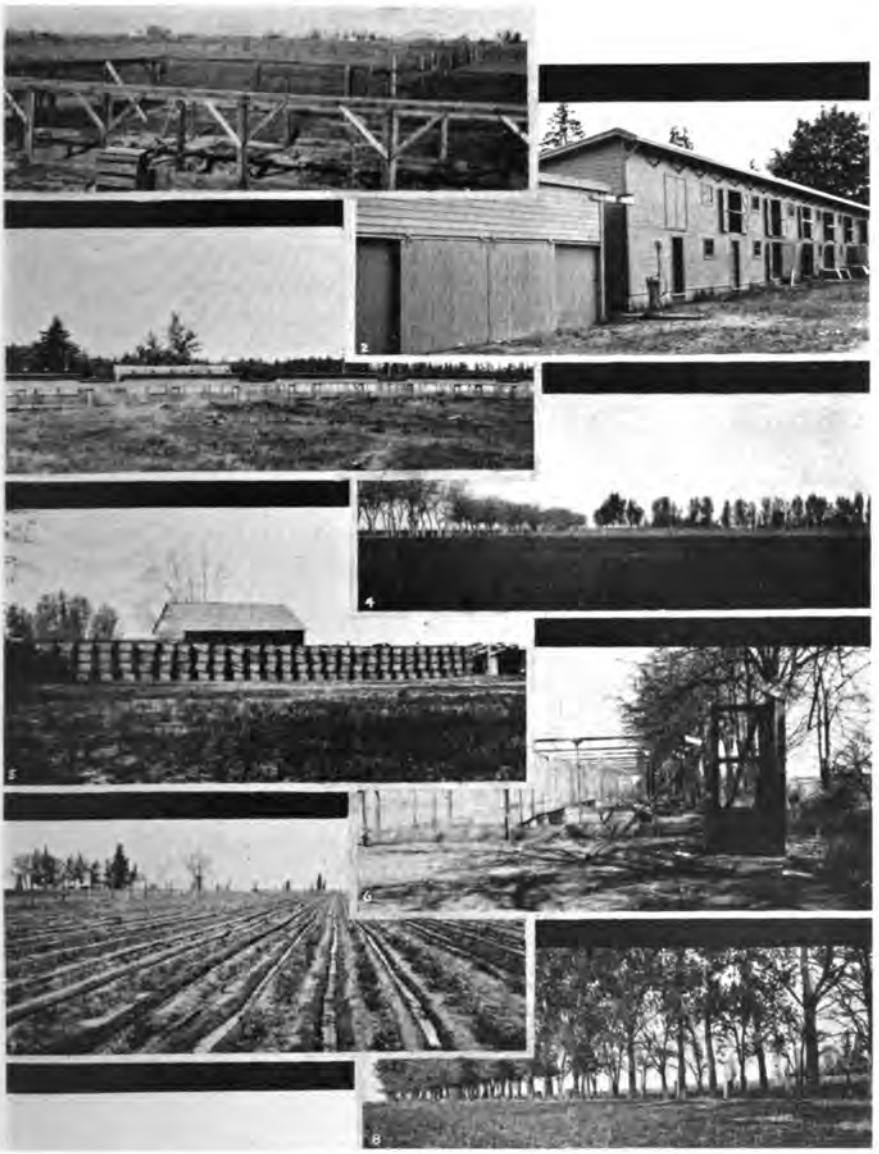
Yakima Game Farm: The entire plant was moved from the Yakima fair grounds site to the 30-acre tract near Ashue, 15 miles from Yakima. All fencing, consisting of 1¾ miles, was installed—3 ft. of 1-inch mesh, 20-gauge wire was buried 12 inches in the ground and 5 ft. of 2-inch mesh, 20-gauge wire completing the 7-ft. wall. All outside fences have a 2-ft. overhang. This acreage was later increased to 50 acres.

Kennewick State Game Farm: One of the newest additions to the Department of Game's group of farms, the Kennewick unit, was completely installed and constructed during the biennium. Fencing, consisting of 2½ miles, was installed. Area is cross-fenced, 14 pens with 2-ft. overhang on outside fence, 7-ft. walls.

Walla Walla Game Farm: Improvements consist of installation of a 4,500-egg capacity Jamesway incubator, building of four brooder units with capacity of 2,400 birds, building of ten semi-portable brooder units with a total output of 2,000 birds, construction of five outdoor portable brooders with a combined capacity of 500 birds.

Spokane Game Farm: New construction and installations include: a 3,500-egg capacity incubator hatcher, building of ten semi-portable brooder houses with a total capacity of 2,000, building of ten outdoor portable brooders with a total capacity of 1,000 birds.

Colville Game Farm: This unit was converted from a covered pen type to an open pen farm. All materials from pens were utilized to install fences of the 7-ft. wall type with an overhang of 2 ft. around 25 acres of ground.



(1) Trap and holding pen in foreground, Yakima Game Farm. (2) Storage house for surplus equipment for hatcheries and game farms located at Auburn State Game Farm. (3) Brooder houses and runs, capacity 3,600 birds, South Tacoma. (4) Alfalfa field for rearing young pheasants. (5) Field coop equipment. (6) Setting yards, capacity 550 hens one setting. (7) Irrigation scene on Kennewick bird rearing field. (8) All outside fencing have two foot overhang. (Figs. 4-5-6-7-8) Photos taken at Kennewick Game Farm.

Specifications of State Farms

Yakima State Game Farm, Rt. 1, Wapato. Area is 50 acres, irrigated and all suitable for bird rearing. Rented land at cost of $6.25 per acre, net, 3-year lease. Estimated population, 5,000 birds, open pen field rearing system. Buildings: one dwelling, 14' x 29', one feed house, one garage. Cross-fenced into 8 pens with 2-ft. overhang on outside fence, 7-ft. walls: 2 ft. of 1-inch mesh, 5 ft. of 2-inch mesh. Four pens 30' x 50' covered for trapping up birds.

Colville State Game Farm, Colville. Area, 40 acres; 25 acres are suitable for bird rearing. It is owned by the Department of Game and is one of the old established farms. Estimated production output is 5,000 birds. Field rearing, open pen system used. Buildings include one small dwelling, one feed house and storeroom, one garage. There is one acre of covered pen, rearing field cross-fenced into 7 fields with a 7-ft. fence: 2 ft. of 1-inch mesh and 5 ft. of 2-inch mesh. Two feet overhang on outside fence.

Kennewick State Game Farm, Kennewick. Area is 40 acres, irrigated and all suitable for bird rearing. Rented land at $10.00 per acre net, 3-year lease. Estimated production, 7,000 birds raised from open pen field rearing system. Buildings include a 3-room house, one feed house, one garage, one cellar, one barn or storeroom. Area is cross-fenced, 14 pens with 2-ft. overhang on outside fence, 7-ft. walls. This farm will hold 2,500 hens for egg production in 1936. Four pens, 30' x 50', used in trapping up birds.

Spokane State Game Farm, Mead. Area is 80 acres, 15 of which are suitable for bird rearing. Owned by the Department of Game. This farm is one of the old established game farm units. The estimated output is 5,000 birds, field reared, covered pens and incubator-brooder system. Buildings include: one dwelling of 8 rooms, one feed house, one barn and storeroom, one setting yard, 30' x 96', one incubator room, ten brooder houses, ten outdoor portable brooders, one Jamesway 3,600-egg capacity incubator. There are 5 acres of covered pens. About 60% of birds at this farm are to be reared under the hen and field system, 40% in brooders.

South Tacoma State Game Farm, South Tacoma. Area is 100 acres, 40 of which are suitable for field rearing. Owned by the Department of game. This unit is the oldest game farm in the state. Estimated production is 8,000 birds—field rearing, covered pen and incubator brooder system. Buildings include: one dwelling of 6 rooms, one feed house, one setting yard, 60' x 190', one incubator room, seven brooder houses—total capacity, 3,600 birds—one garage, one chicken house, 30' x 60'. There are 12 acres of covered pens. Ratio of production is 60% of birds to be reared under the hen and field system and 40% in brooders. Equipment includes one Jamesway incubator of 6,000 egg capacity.

Walla Walla State Game Farm, Walla Walla. Area of 40 acres, all of which are suitable for bird rearing. Farm is owned by the Department of Game and is one of the old established farms. The estimated production is 5,000 birds, raised under the field rearing, incubator-brooder system. Buildings include: one dwelling of 7 rooms, one feed house and incubator room, one cook and bunk house, one garage, one chicken house, 30' x 120', four brooder houses, 12' x 50' each, ten brooder houses,

10′ x 10′, five outdoor portable brooders. Brooder capacity is 3,700 birds. There are 10 acres of covered pens. Farm is equipped with one Jamesway incubator of 4,500 egg capacity. Ratio of propagation is 75% reared on brooder system and 25% produced under the field and hen system. Five hundred broodstock hens will be held. The Walla Walla farm is the oldest in point of service of all state game farm units.

(1) Kennewick Game Farm (open pen). (2) Walla Walla Game Farm (covered pen). (3) Ellensburg Game Farm (open pen). (4) Spokane Game Farm (covered pen).

Ellensburg State Game Farm, Ellensburg. Area covers 40 acres, irrigated and all suitable for bird rearing. Rented land at cost of $10.00 per acre net, 3-year lease. The estimated production figure yearly is 7,000 birds, reared under open pen field system. Buildings include: a 4-room house, feed house, garage, storage room, 12′ x 18′, cross-fenced into 14 pens with 2-ft. overhang on outside fence, 7-ft. walls. This farm will hold 2,500 hens for egg production in 1936. There are four pens, 30′ x 50′, covered, used in trapping birds.

Auburn State Game Farm, Auburn. Area covers 160-acre tract, 40 acres of which are suitable for bird rearing, owned by the Department of Game. This unit is one of the old established farms. The estimated production figure is 5,000 birds—field reared and covered pen, incubator-brooder system. Buildings include: two dwellings of 4 rooms each, one

New brooders and runs. (Upper) State Game Farm, Spokane. (Lower) Walla Walla.

(Upper) Large incubator used in hatching birds, Walla Walla state game farm.
(Lower) Young pheasant chicks in hatchery brooder.

feed house, one incubator room, three brooder houses, one 30′ x 90′ storeroom, one garage, one 3,500-egg "Atlas" incubator. There are 6 acres of covered pens. The ratio of production is 80% of the birds to be reared under the hen and field system and 20% in brooders.

Facts About State Game Birds

Mountain Quail: This bird is very scarce. They are to be found in small numbers in eight counties. With a closed hunting season year after

Panorama view of state game farm, South Tacoma. Hatchery and rearing ponds in center foreground.

year, these birds show little indication of increasing in sufficient quantity to permit placing them back on the hunter's calling list.

Blue Grouse: Blue Grouse are becoming alarmingly few in numbers in recent years, but five counties have this bird in good numbers, twenty-seven list them as scarce and seven counties have none.

Ruffed Grouse: Two counties in Washington have this wonderful game bird in considerable numbers, eighteen counties have very few and nineteen have none. Hopes that these birds will ever become plentiful again are becoming farther from realization. Continued closed seasons have caused no appreciable gain in the population of the ruffed grouse.

Sharptail Grouse: Very scarce—only four counties have these birds.

Sage Hen: Listed as very scarce with but four counties having only a small number of these birds.

Quail (Valley or California): The Valley Quail is abundant in eight counties, plentiful in three counties, scarce in seventeen, and eleven counties have only a few quail. Okanogan county has the largest stock of this specie of quail. The Department of Game trapped several thousand in this county during the winter of 1935, liberating them in other counties and thus introducing new blood. There is good reason to believe this farmers' little friend will always be plentiful in suitable districts.

Bob White Quail: Survey reports show this specie of quail is in low numbers in this state. There are three counties with a fair number of this bird. A closer study of these birds may disclose the factor responsible for their steady decline in numbers in comparison to the steady increase registered by the valley quail.

Hungarian Partridge: This state has Hungarian partridges in abundance in thirteen of its thirty-nine counties, plentiful in five and scarce in fifteen counties and are practically extinct in six counties. It is encour-

(Right) Game Farm, covered pens and field brooders at picturesque South Tacoma site.

aging, however, to report that this fine game bird is holding its own the past few years. In some counties more adapted to the traits of Hungarian partridge they are considered one of the state's finest sporting birds.

Chukor Partridge: Propagation of this bird at state farms is in the experimental stage. There are hopes of producing these birds in larger number each year in open pen farms where they will have plenty of range and cover. Some chukor partridges were liberated in Grant county, and while the increase has not been great, there are hopes of their becoming established and reproducing in good numbers in ensuing years.

Chinese Pheasants: This prolific bird is the prize trophy of the upland bird hunter. The instinctive cunning and wariness of the Chinese pheasant makes it the most sought after Washington game bird. It is still the greatest and most plentiful upland bird hunted in this state.

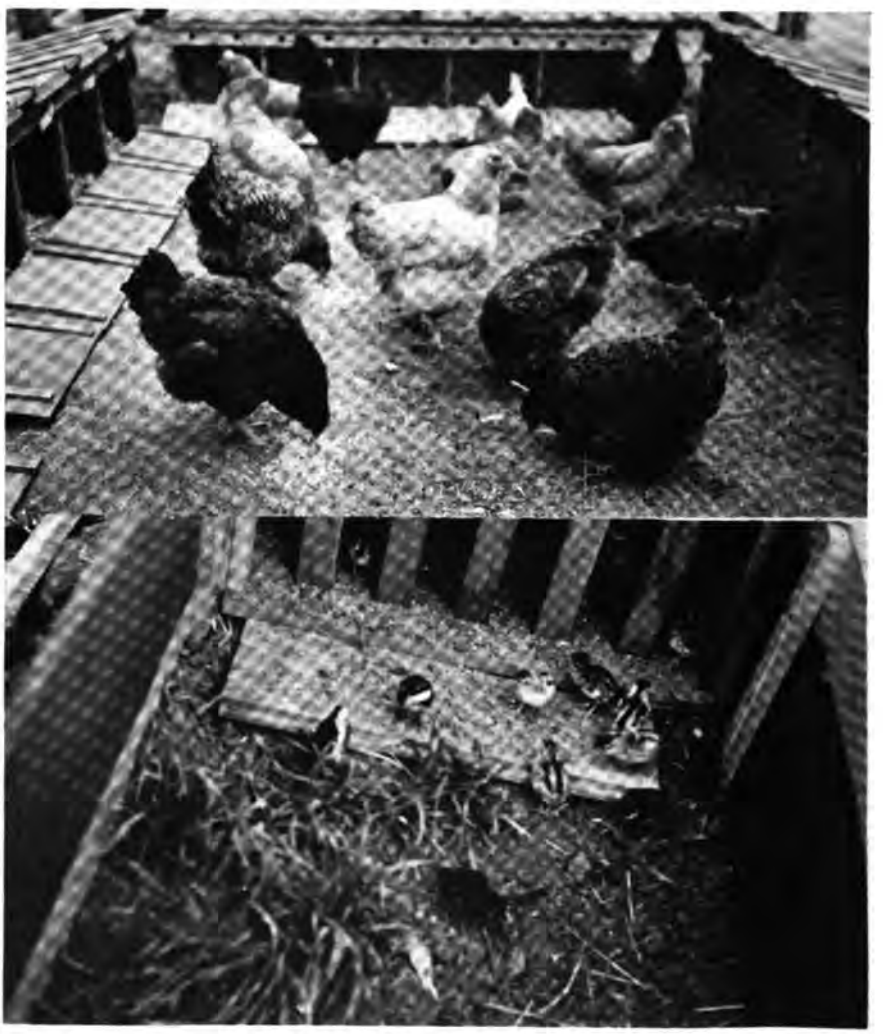
Here are a few interesting facts about this beautiful bird. The China pheasant was first introduced to the western regions of the United States in 1881 by Judge O. N. Denny. On a test experiment, 30 ringnecked pheasants were liberated in the Willamette Valley in Oregon. They became readily acclimated to the Pacific Northwest, soon spreading to Washington state where they continued to show a hardy and prolific growth. The extraordinary vitality and "bird sense" of the pheasant is a cardinal point in insuring a plentiful supply of birds produced under natural conditions to supplement the regular pheasant propagation carried on by the Department of Game.

Being a polygamous bird, individual matings are unnecessary. This is a strong point in favor of artificial propagation of this bird. Pheasants reared on game farms instinctively guard themselves against vermin and humans when liberated. The climate of Washington state is admirably suited to the natural production of pheasants, particularly in eastern Washington where the fertile meadows and wheat lands, together with

absence of cold spring rains, benefit the growing bird. Western Washington with its mild winters is, of course, suitable for natural pheasant propagation. However, the dense country and urban population are hindrances. Each is directly instrumental to curtailment of the natural production.

Considerable interest is being manifested in pheasant rearing by 4-H clubs, while private individuals are showing increased activity in propagation of young pheasants as a hobby.

Melanistic Mutant Pheasant: This game bird was introduced into the state of Washington about six years ago, and is probably one of the least known of upland birds. The mutant is easily distinguishable by



(Upper) Broody hens are still used extensively by the Department in hatching young birds. (Lower) Day old pheasant chicks in field brooder.

its dull coloring. Breast is metallic green; throat, dark blue; face, skin red; eyes, very dark; back, green; underbody, blue, shading into a deep brown; tail feathers, 18 inches in length, are slate grey barred with brown. Mutant hens are dark brown barred with buff and are known for their sporting qualities. Melanistic mutants are somewhat larger than the Chinese ringnecked pheasant.

Unlike the Chinese pheasant, the mutant does not run when alarmed, but lies close to covert until forced into the air. It rises upwards to clear all obstacles and then flies off at great speed. This trait of flying close to covert is his greatest claim to popularity among sportsmen. However, it should be pointed out that the margin of success registered by this bird in Washington state has not been entirely satisfactory. Due to this trait, increase in the wild is very small. A heavy toll is taken by the coyote, bobcat and other predators.

The mutant, like the Chinese pheasant, is a polygamous bird and can be propagated with good success by artificial means.

GAME FARM DIVISION ADMINISTRATION AND GENERAL EXPENDITURES

April 1, 1934, to March 31, 1935—April 1, 1935, to March 31, 1936

	Fiscal Year April 1, 1934, to March 31, 1935		Fiscal Year April 1, 1935, to March 31, 1936	
	Total	Salaries and Wages	Operations	
Salaries and Wages	$26,843 49	$23,369 75		
Private Car Mileage	1,029 20	.....	$577 30	
State Car Expense	1,825 59	.....	1,926 89	
Purchase New Cars	719 45	.....	1,870 34	
Fares Paid—R. R., Boat and Stage	64 85	.....	55 05	
Meals and Rooms	287 50	.....	668 94	
Telephone and Telegraph	361 94	.....	296 12	
Postage, Freight and Express	214 66	.....	114 77	
Light, Heat and Water	1,647 01	.....	1,494 38	
*Groceries and Kitchen Supplies	388 83	.....	446 84	
Repairs to Pens and Buildings	2,599 11	.....	3,880 90	
Ammunition for Vermin Control	65 31	.....	74 27	
Feed	12,604 48	.....	12,742 81	
Purchase Game Birds	62 50	.....	278 00	
Purchase Game Eggs	167 00	.....	400 00	
Purchase Hens	2,677 20	.....	3,518 85	
Seeds, Chemicals, Small Tools and Plowing	1,647 34	.....	1,573 91	
Medical Aid	706 85	.....	803 50	
Brails, Pheasant Tags and Signs	339 42	.....	433 74	
Grand Totals	.....	$54,251 73	.....	$54,526 36
Less Credit for Broody Hens sold at Close of Rearing Season	.....	$1,481 12	.....	$2,045 34
Purchase of Game Birds Planted direct to Counties	$911 50	.....	$1,953 15	
Live Trapping Expense	.....	$807 77	320 11	
Construction Expense	8,920 22	834 97	939 98	
New Equipment	1,782 01	.....	161 00	
Rent of Land	982 60	.....	825 00	
Planting Expense by Game Farms	.....	355 55	323 74	

* Covers groceries and meat furnished Walla Walla Farm in exchange for services of trusties.

RECAPITULATION—OUTPUT OF STATE GAME FARMS

April 1, 1934, to March 31, 1935

TOTAL GAME FARMS	Total	Chinese Pheasant	Melan. Mutant	Mongol. Pheasant	Silver Pheasant	Golden Pheasant	Lady Amherst Pheasant	Black Neck Pheasant	Reeves Pheasant	Eastern Ring Neck	Golden Amherst	Bobwhite Quail	Valley Quail
EGGS—													
On hand—April 1, 1934	258	112	77	4	.....	.....	.....	5	.....	.....	.....	.....	.....
Laid	82,298	52,264	21,828	3,757	124	212	167	244	430	1,348	621	263	424
Received	36,213	27,785	7,050	578	.....	.....	.....	.....	.....	770	.....	.....	.....
Total receipts	118,769	80,161	28,955	4,339	124	212	167	249	430	2,118	621	263	424
Distributed for hatching	39,937	31,035	7,995	608	.....	.....	.....	.....	.....	229	.....	.....	.....
Broken, culled, etc.	4,364	2,529	786	200	28	100	71	6	42	30	386	.....	6
On hand—March 31, 1935	24	17	7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Used	20	.....	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Set	74,424	46,580	20,147	3,531	96	112	96	243	388	1,849	225	263	418
Infertile, broken, etc.	(28,560)	(16,324)	(9,207)	(1,398)	(86)	(49)	(62)	(107)	(246)	(511)	(134)	(125)	(129)
Hatched	(45,864)	(30,256)	(10,940)	(2,133)	(10)	(63)	(34)	(136)	(142)	(1,338)	(91)	(138)	(289)
Total disposals	118,769	80,161	28,955	4,339	124	212	167	249	430	2,118	621	263	424
BIRDS—													
Hatched	46,005	30,334	11,003	2,133	10	63	34	136	142	1,338	91	138	289
Purchased and received	2,655	1,930	528	4	8	13	17	16	4	.....	.....	34	17
Trans. from brood stock	2,936	2,119	687	.....	1	40	10	.....	16	.....	.....	28	22
On hand—March 31, 1934	3,282	1,737	820	132	28	52	48	.....	45	50	.....	27	40
Recount	747	392	304	7	.....	30	.....	.....	11	1	.....	2	.....
Trapped	17	16	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total receipts	55,642	36,548	13,342	2,276	47	198	109	152	218	1,389	91	229	368
Distributed and exchanged	26,575	19,232	5,760	721	16	102	44	40	46	191	19	74	195
Trans. from brood stock	2,948	1,726	687	206	1	40	10	.....	16	199	.....	28	22
Recount	2,801	1,708	450	296	.....	.....	21	12	25	186	6	50	21
Died and lost in pens	19,172	10,416	5,977	1,050	11	44	16	97	119	813	66	77	130
Total disposals	51,496	33,082	12,874	2,273	28	186	91	149	206	1,389	91	229	368
Balance on hand (March 31, 1935)	4,146	3,466	468	3	19	12	18	3	12	.....	.....	.....	.....
Grand total	55,642	36,548	13,342	2,276	47	198	109	152	218	1,389	91	229	368

RECAPITULATION—OUTPUT OF STATE GAME FARMS—Continued
April 1, 1934, to March 31, 1935

TOTAL GAME FARMS	Hybrid Pheasant	Quail	Hungar. Partri'ge	Chukor Partri'ge	Bamboo Partri'ge	Mallard Duck	Pintail Duck	Can'dian Geese	White Front. Geese	Snow Goose	Geese	Pea Fowl	Turkey
EGGS—													
On hand—April 1, 1934	.....	.....	.....	.....	.....	60	.....	.....	.....	.....	.....	.....	.....
Laid	.....	16	.....	401	.....	158	.....	.....	.....	.....	.....	5	36
Received	.....	20	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total receipts	.....	36	10	401	.....	218	.....	.....	.....	.....	.....	5	36
Distributed for hatching	.....	.....	.....	.....	.....	60	.....	.....	.....	.....	.....	.....	.....
Broken, culled, etc.	.....	.....	.....	12	.....	158	.....	.....	.....	.....	.....	.....	.....
On hand—March 31, 1935	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Used	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Set	.....	36	10	389	.....	.....	.....	.....	.....	.....	.....	5	36
Infertile, broken, etc.			(29) (10)	(124)								(2)	(17)
Hatched			(7)	(265)								(3)	(19)
Total disposals	.....	36	10	401	.....	218	.....	.....	.....	.....	.....	5	36
BIRDS—													
Hatched	.....	7	.....	265	.....	.....	.....	.....	.....	.....	.....	3	19
Purchased and received	.....	24	24	21	.....	3	3	.....	.....	1	2	6	.....
Trans. from brood stock	.....	.....	.....	11	.....	.....	.....	.....	.....	.....	.....	2	.....
On hand—March 31, 1934	5	10	32	56	2	139	8	15	2	.....	19	12	3
Recount	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Trapped	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
Total receipts	5	41	56	333	2	142	11	15	2	2	21	23	22
Distributed and exchanged	.....	13	18	20	.....	70	4	.....	.....	1	2	7	.....
Trans. from brood stock	.....	.....	.....	11	.....	.....	.....	.....	.....	.....	.....	2	.....
Recount	.....	.....	4	19	.....	.....	.....	3	.....	.....	.....	.....	.....
Died and lost in pens	2	5	34	265	2	27	.....	1	.....	.....	1	5	14
Total disposals	2	18	56	315	2	97	4	4	.....	1	3	14	14
Balance on hand (March 31, 1935)	3	23	.....	18	.....	45	7	11	2	1	18	9	8
Grand total	5	41	56	333	2	142	11	15	2	2	21	23	22

RECAPITULATION—OUTPUT OF STATE GAME FARMS—Continued
April 1, 1935, to March 31, 1936

TOTAL GAME FARMS	Totals	Chinese Pheasant	Melan. Mutant	Black-neck Pheasant	Golden Pheasant	Hybrid Pheasant	Lady Amherst	Mongol. Pheasant	Reeve Pheasant	Silver Pheasant	Mallard Ducks
EGGS—											
On hand April 1, 1935	24	7	17	.....	.....	.....	.....	.....	.....	.....	.....
Received from other farms	36,133	34,574	1,540	.....	.....	.....	.....	.....	.....	.....	.....
Received from other sources	88	88	.....	.....	.....	.....	.....	.....	.....	.....	.....
Purchased	2,000	2,000	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gift	145	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Laid	88,066	77,145	10,676	.....	26	.....	30	.....	.....	65	.....
Total receipts	126,456	113,814	12,233	.....	26	.....	30	.....	.....	65	.....
Broken	709	651	49	.....	.....	.....	.....	.....	.....	.....	.....
Shipped to other farms	36,133	34,574	1,540	.....	.....	.....	.....	.....	.....	.....	.....
Shipped to other sources	6,386	5,382	1,004	.....	.....	.....	.....	.....	.....	.....	.....
Culled	2,512	2,244	268	.....	.....	.....	.....	.....	.....	.....	.....
Used	126	.....	.....	.....	26	.....	30	.....	.....	65	.....
Set	80,597	70,963	9,372	.....	.....	.....	.....	.....	.....	.....	.....
Infertile, killed in nest, etc.	(25,961)	(21,702)	(3,862)								
Hatched	(54,636)	(49,261)	(5,510)								
Total disposals	126,456	113,814	12,233	.....	26	.....	30	.....	.....	65	.....
BIRDS—											
On hand April 1, 1935	4,146	3,466	468	3	12	3	18	3	12	19	45
Received from other farms	11,436	10,646	781	.....	.....	.....	.....	.....	.....	.....	.....
Received from other sources	23	.....	.....	.....	.....	.....	.....	.....	3	.....	2
Gift	348	348	.....	.....	.....	.....	.....	.....	.....	.....	.....
Purchased	69	28	.....	.....	.....	.....	.....	.....	.....	.....	.....
Trapped	767	738	.....	.....	.....	.....	.....	.....	.....	.....	29
Exchange	28	28	.....	.....	.....	.....	.....	.....	.....	.....	.....
Trans. from Chinese	35	.....	35	.....	.....	.....	.....	.....	.....	.....	.....
Recount	215	187	22	.....	3	.....	1	.....	1	1	.....
Hatched	54,936	49,261	5,510	.....	.....	.....	.....	.....	.....	.....	.....
(wild eggs)	11	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Total receipts	72,014	64,672	6,816	3	15	3	19	3	16	20	76
Died	18,084	17,297	1,548	.....	.....	1	6	.....	2	2	1
Shipped to other farms	11,436	10,646	781	.....	.....	.....	.....	.....	.....	.....	.....
Shipped to other sources	30	24	2	.....	.....	.....	.....	.....	3	2	.....
Recount	6,153	5,548	605	.....	.....	.....	.....	.....	.....	.....	.....
Trans. to mutants	35	35	.....	.....	.....	.....	.....	.....	.....	.....	.....
Escaped	5	5	.....	.....	.....	.....	.....	.....	.....	.....	.....
Planted	27,803	24,063	3,565	.....	3	.....	5	.....	.....	2	55
Total disposals	64,475	57,618	6,501	.....	3	1	11	.....	5	6	56
Balance on hand March 31, 1936	7,539	7,054	315	3	12	2	8	3	11	14	20
GRAND TOTAL	72,014	64,672	6,816	3	15	3	19	3	16	20	76

RECAPITULATION—OUTPUT OF STATE GAME FARMS
April 1, 1935, to March 31, 1936

TOTAL GAME FARMS	Geese	Can'dian Geese	Snow Geese	White-front. Geese	Chukor Partrid'ge	Hungar. Partrid'ge	Quail	Pea Fowl	Turkey	Pintail Ducks
EGGS—										
On hand April 1, 1935										
Received from other farms					19					
Received from other sources										
Purchased										
Gift						145				
Laid					76		48			
Total receipts					95	145	48			
Broken										
Shipped to other farms					19					
Shipped to other sources										
Culled										
Used					7					
Set					69	145	48			
Infertile, killed in nest, etc					(37)	(25)	(35)			
Hatched					(32)	(120)	(13)			
Total disposals					95	145	48			
BIRDS—										
On hand April 1, 1935	18	11	1	2	18		23	9	8	7
Received from other farms					8			1		
Received from other sources	16				2					
Gift	30									
Purchased					5	36				
Trapped										
Exchange										
Trans. from Chinese										
Recount										
Hatched					32	120	13			
(wild eggs)							11			
Total receipts	64	11	1	2	65	156	47	10	8	7
Died	9	3			43	52	13	3	1	3
Shipped to other farms					8			1		
Shipped to other sources	24	1			2			1		
Recount										
Trans. to mutants										
Escaped										
Planted	1					68	34		7	
Total disposals	34	4			53	120	47	5	8	3
Balance on hand March 31, 1936	30	7	1	2	12	36		5		4
GRAND TOTAL	64	11	1	2	65	156	47	10	8	7

FULL BIENNIAL REPORT OF BIRDS LIBERATED BY DEPARTMENT OF GAME

April 1, 1934, to March 31, 1935—April 1, 1935, to March 31, 1936

Birds Liberated April 1, 1934, to March 31, 1935	Totals in Eastern Washington	Totals in Western Washington	To Individuals	Grand Totals in State
Chinese Pheasants	11,992	6,420*	67	18,479
Melanistic Mutants	5,119	2,215	47	5,381
Mongolian Pheasants	62	653	6	721
Reeves Pheasants	3	4	35	42
Eastern Ring Neck	.....	187	4	191
Golden Pheasant	67	.....	28	95
Amherst Pheasant	8	.....	26	34
Black Neck	1	35	4	40
Golden and Amherst Cross	19	.....	.....	19
Silver Pheasant	.....	.....	15	15
Quail	432	450	19	901
Chukor Partridge	.....	.....	2	2
Hungarian Partridge	5	2	6	13
Peafowl	.....	.....	6	6
Pintail Duck	.....	.....	4	4
Mallard Duck	.....	.....	70	70
Totals	15,708	9,966	339	(1934) 26,013
Birds Liberated April 1, 1935, to March 31, 1936				
Chinese Pheasants	12,923	13,441	24	26,388
Melanistic Mutants	2,002	1,573	2	3,637
Golden Pheasant	3	.....	.....	3
Lady Amherst	5	.....	.....	5
Reeves Pheasant	.....	.....	3	3
Silver Pheasant	2	.....	2	4
Mallard Duck	55	.....	.....	55
Geese	1	.....	25	26
Chukor Partridge	.....	.....	2	2
Hungarian Partridge	68	122	.....	190
California Quail	256	3,365	.....	3,621
Bobwhite Quail	8	12	.....	20
Turkey	7	.....	.....	7
Valley Quail	76	.....	.....	76
Peafowl	.....	.....	1	1
	15,406	18,513	59	(1935) 34,038

* NOTE—Includes 12 birds to Buckley Spts. Assn. for holding pens.

Blue grouse hen with nest and eggs.

Portal to game fish propagation—Tokul Creek Hatchery.

Game Hatchery Division

THERE'S an old axiom that reads, "You can't improve on nature." Be that as it may, it can be said that the Department of Game can work hand in glove with the prodigality of Mother Nature. In the field of fish culture, the Department's hatchery division has not only replenished depleted lakes and streams with healthy trout, but has actually improved upon nature's progeny of game fish. As food for thought along with the sizzling fry of silvers flipped in the frying pan of Mr. Average Sportsman. it is well to spice an introduction to the game fish division with some behind the scene notes on the arduous work necessary to stock Washington's fishing lanes.

Planting and Stocking of Streams, Lakes

Stocking streams with game fish is a slow, tedious task with weeks and months required for taking of spawn, rearing fry and planting. High in the mountain country at the headwaters of streams, the egg-taking crews toil through the ice and snow of winter so that sportsmen may have good fishing. The wind never whistles too sharply and the winter's cold is never too frigid for these hardy workmen. Before casting fly, it might be well to lend a cheer for the men who work behind the scenes.

TREK TO HEADWATERS

Pack on back, he treks into the headwaters to build his traps. Topography of the country is often such that eggs must also be back-packed down to nearest transportation connections. Following, in order, are the periods of hatching and rearing, with the final work accomplished when fingerlings

are packed once again back to the headwaters where they are put on their own.

Maintaining a Plentiful Supply of Fish

As it is with game birds, there is a strong doubt in the minds of the Commission whether artificial propagation of game fish can ever maintain a par reading with the number of fish caught by sportsmen annually. Several plausible reasons can be stated to base this assumption. The demand for better roads is bearing fruit in shimmering strips of paved highway, and byways and trails are threading primitive areas. If a poll of men and women anglers and nimrods were taken today it would show a greatly enlarged population of sportsmen geared to a rod and gun tempo. In the face of these developments and others which directly influence conditions—the effect of the five-day week and improvements in tackle and gear—has given people more play hours. The unemployed spend much more time today in the outdoors—probably 50 per cent more than five years ago. One encouraging angle is that the increase in salt water fishing has relieved the traffic of game fishermen.

Important Phases of Fish Culture

When the eggs are collected at the eyeing stations and eyed they are then transported to the permanent hatcheries throughout the state to be hatched and reared. From the time they arrive at the hatchery they are held from 45 to 60 days and fed in the hatcheries and then transferred to the rearing pond. There they are reared to the length required for certain plantings. The size varies from two to seven inches. While fish are in the hatcheries, they are known as fry and their principal food is liver. When they are transferred to the rearing pond at fingerling stage, they are tapered off to a mixture of liver, canned salmon, smelt and beef spleen.

FEED EXPERIMENTS

During the fingerling period they are fed a mixture of 40% liver and 60% raw ground-up smelt and at some of the hatcheries fish are being fed 40% liver and 60% canned salmon. The canned salmon contains one pound of flour and five pounds of salmon per can. Another mixture of food that is used is 20% beef spleen, 60% canned salmon and 20% liver. The Department has a biological expert now working on methods of dry feed to be manufactured from fish carcasses—dogfish, carp, suckers, chubs and squawfish. These foods will be put up in dried meal form. This meal will be packed in airtight paper sacks and be shipped to the different hatcheries for the rearing of fish fingerlings. This will cut down rearing expense 40% to 50% over the old method.

New Ponds Increase Fingerling Output

Happier days for anglers with promises of bumper catches are in store. The Commission has expended considerable money for the enlargement of rearing pond facilities in order to give sport fishermen better strikes. Construction of new rearing ponds and building of new troughs has given the Department of Game one of the best fish production systems in the United States. Modern improvements have been installed throughout. Hatchery improvements have been made in nearly all egg-production units.

(1) Hatchery. (2) Fish troughs. (3-4-5-6) Fish in various stages of growth. (7) One of the standard 40-foot rearing ponds in Tokul Creek Hatchery, Snoqualmie. (8) Battery of 40-foot diameter concrete rearing ponds at South Tacoma Hatchery.

DOUBLE FINGERLING PLANTING

In round figures, the addition of 68 new rearing ponds—40 feet in diameter completed to date and under construction—will double the 1935 planting figure. Biennial improvements also include construction of 274 additional fish troughs with hatchery houses to round out a two-year span of progressive building up in this division of the Department of Game.

Scientific Tests Favor Fingerling Rearing

It has been reliably proven that fish raised to fingerling size fare better after planting than fish raised to the fry stage of planting. The batteries of new rearing ponds added to the Department of Game's hatchery equipment will make possible liberation of more fish of catchable size. Dr. Embody of the U. S. Bureau of Fisheries has carried on extensive experimentations which tend to substantiate this theory. His experiments show that only a five per cent return in catchable fish is obtained from fish planted in the fry stage in natural waters. Therefore, to reap a silvery harvest of 100,000 trout, two million fry must be planted. The mortality on six-inch fish—or fingerlings—the experiment indicated, would yield a return of catchable fish of from 95% to 98%, which qualifies the desirability of raising fish up to larger size.

Study Establishment of Broodstock

Interesting and practical experiments are reported from the laboratories of the University of Washington School of Fisheries in the field of artificial propagation and establishment of broodstock. The primary motive behind these studies is to relieve the strain of natural reproduction and keep pace with the sport fishermen's demand for well-stocked lakes and streams.

TESTED AT U. OF W.

Experiments were carried on by Prof. Lauren Donaldson, who took the native cutthroat as a project study. The major factors vital to the brooding of fish are: (1) fast growing fish, (2) fish that are less susceptible to disease, (3) fish that mature at an early age, (4) females that produce a large number of eggs.

Panorama view of new Spokane hatchery construction. (Left) Hatchery building. Seventeen standard 40-foot concrete rearing pools are now in operation here.

RESULTS WATCHED CLOSELY

Successful outcome of these experiments has opened the way for the establishment of broodstock in the future propagation plans of the Department hatchery division. By culling the undesirable fish and spawning only those of highest quality, a superior stock of fish may be obtained.

BUILDING UP BROODSTOCK

From the best available sources, the Department biologist has outlined a plan to govern the handling of broodstock and the domestication of fish. In building up the broodstock, selection should be made of a large spawning female for spawning with a large male. Eggs from this female should be kept separate. After the eggs have hatched and the largest fry have reached about three inches in length, culling of runts and weak fish should be done. This culling should again be practiced when the largest fish reach four inches long, and so on.

ADVISE CAREFUL CULLING

After young fish have reached six to seven inches long they should no longer be culled, for then there is danger of separating sexes. When the fish are ready to spawn, the spawn from the largest females and males should be kept separate and the runts should be discarded. Continuance of this procedure is necessary if a high standard of fish is to be obtained. Careful culling is essential to production of superior stock.

Hatcheries Have Modern Features

When considering sites for the four modern hatcheries constructed during 1934 and 1935, five requirements were specified and kept uppermost throughout the building project: (1) Water temperatures uniform, and varying but a few degrees during all seasons, (2) an abundance of pure water, eliminating chance of draughts, (3) locations well above and away from flood waters, (4) normal winter weather conditions permitting transportation to and from the hatchery, (5) scenic surroundings. Each of these points is included in the present hatchery building program.

(Right) Caretaker's cottage and rearing ponds, Spokane hatchery. This unit is one of the newest and largest of state hatcheries.

(1) Battery of standard concrete rearing ponds. (2) U. S. Bureau of Fisheries ponds. (3) Hatchery and garage, (foreground) section of standard 40-foot rearing ponds. (4) Water intake at new Spokane Hatchery.

Here's a quick once-over of the four new hatcheries:

Bellingham Hatchery: Building contains 48 fish troughs; site is located on 5-acre tract; source of water, Whatcom Creek; amount of water available is 25 second feet. This hatchery is classed generally as one of the most efficient and beautifully landscaped of American hatcheries.

Aberdeen Hatchery: Building contains 48 troughs; site is located on 3-acre tract; source of water, Lake Aberdeen. This fine hatchery, now nearing completion, located amidst forest surroundings, will attract thousands of visitors yearly. Driveways are being built around the rearing ponds permitting motor cars to pass through and around the fish ponds.

Spokane Hatchery: This hatchery, now near completion, will be the largest of state trout hatchery units. There will be 96 troughs; site is located on a scenic 54.40-acre tract near Spokane; source of water is Spokane Springs flowing 10,000 gallons per minute.

Chelan Hatchery: Building contains 48 troughs; site is located on a 3-acre tract; source of water is Beebe Springs, flowing 3,500 gallons per minute.

In addition to four complete new hatcheries, the Department modernized and enlarged the facilities of the South Tacoma hatchery. The source of water is Steilacoom Springs, water flow, 6,000 gallons per minute.

Spawning or Egg Collecting Stations

Walupt Lake Eyeing Station, where the Department takes rainbow trout eggs, is situated 42 miles up the Cispus River from the town of Randle, Lewis county. Thirty-five miles of this distance is traveled over forest service road which runs through the old Cispus burn. Walupt Lake was stocked seven years ago with eyed rainbow eggs being planted in a small stream at the head of Cispus Creek.

Here is a description of some of the problems encountered by egg-collecting parties.

SUPPLIES BACK-PACKED

The first year this station was built all supplies and material, such as a 14-foot boat, stove, nails, tools and other supplies, had to be back-packed from the end of the road and all eyed eggs had to be packed out from the lower end of the lake to the end of the road by man power, as pack horses are not available in this locality. A road was built by the Department in 1935 connecting the lake with the main Cispus road. This is a practical improvement as it gains one day in time in transporting the eggs out to shipping points. The Department last year also reared 50,000 rainbow fry at this station and planted them in barren lakes about the state. The Department also reared and planted 60,000 fry in the tributaries of Walupt Lake.

STOCK HIGHER LAKES

During 1936 the Department will raise and stock several of the higher lakes within Yakima, Lewis, Klickitat and Skamania counties from this station. All of these fish will be back-packed to the different lakes and streams within these counties. Walupt Lake is two miles long, one mile wide and very deep, with only a reasonable amount of fish food in the lake.

Walupt Lake is closed to all fishing on account of being located in what is known as a primitive area where no trespassing is permitted after June 1st until October 1st. The reason for this is that the lake is situated in the Cispus burn.

Fish planting party climbing to mountain headwaters with pack train of fry.

EYEING STATIONS OPERATED

The Department of Game operates the following eyeing stations in the state: RAINBOW—Dumpka Lake, Chelan county; Packwood Lake, Lewis county; Curlew Lake, Ferry county; CUTTHROAT—Twin Lakes, Chelan county; EASTERN BROOK—Owhi Lake, Okanogan county; Twin Lakes, Ferry county; Skookum Lakes, Pend Oreille county; SILVER—Loon Lake, Stevens county; Bear Creek, King county; Brannian Creek, Whatcom county; STEELHEAD—owned and operated by the Department of Game—Green River at Headworks, Griffin Creek, Patterson Creek, King county; Woods Creek, Pilchuck, Snohomish county. Traps owned by State Food Fisheries Department, and eggs collected under an agreement between the two departments; Samish River, Skagit county; Satsop River, Mason county; Willapa River, Pacific county; Humptulips River, Grays Harbor county; Green River, King county; Puyallup River, Pierce county; Dungeness River, Clallam county; Skykomish River, Snohomish county, and Lewis River, Cowlitz county.

FISH WILL BE LARGER

The hatchery program during the last three years ranks with the best in the country. The Department is not planting as many fish today but with the new equipment installed within the past three years will be able to produce a larger and greater number of fish.

PLANTING COSTS

While sportsmen will welcome the announcement of greater fingerling plantings, the cost of the new Department fish planning program will increase, it is estimated, approximately five-fold over the former cost of fry plantings. With the present planting equipment suitable for fry distribution, the Department will be handicapped in the first year until facilities for handling the output of fingerlings are purchased and put in operation.

Mobile game fish tank carrier, 400 gallon capacity. In normal weather it is hoped that this new unit of the game fish planting division will be able to carry 150,000 small fry or 6,000 4-inch fish. Aeration is by water circulation.

(1) Storage basin for Bellingham Hatchery. (2) Dam for Bellingham Hatchery and rearing ponds. (3) Hatchery. (4) Superintendent's dwelling. (5) Dwelling, storehouse and rearing pools. (6) Brood cutthroat trout held in rearing ponds at Bellingham Hatchery. (7) Reverse views of rearing pond system.

Proposed Fish Planting Program

Planting of upland birds and fish is the backbone of game propagation and therefore receives the cooperative interest of the entire Department of Game. Planting of fish, as attested by the well-stocked state streams, has been carried on with a practiced hand under state control. With the problems of fish planting mounting in significance each year, the Department has stressed research and scientific analysis of conditions incidental to planting. Studied planting of fish, in a word, keynotes a new projected fish planting program for the next biennial period. Efforts will be made to determine suitability of water and the specie of fish best adapted for planting in each lake or stream. Value of science in the propagation of game is becoming recognized by the Commission and through biologic surveys of habitat, a hardier, bigger and more plentiful fish may be expected.

Dams and Fishways

Game fish conservationists point out that loss of fish yearly because of inability to ascend over the heights of dams to move on to their natural spawning grounds totals a figure considerably greater than the annual catch of Washington sport fishermen.

Prior to state control many rivers of the state were closed as fish spawning grounds due to erection of dams without proper ladder facilities and fishways. For example, a score of years ago, the Washington Water Power Company of Spokane was permitted to erect five dams, one of which is 200 feet in height, all without fish ladders. The rights were ceded to the power interests together with permission to build future dams in the Spokane River, in consideration of the power company's constructing a hatchery in Spokane which cost approximately $10,000.

On the matter of maintaining alert vigilance on all newly constructed dams, as well as working for satisfactory compliance of fish ladder regulations by old offenders, the Commission has exercised keen interest. It is cognizant of the many obstacles incidental to the construction of permanent dams, which size up as a difficult problem where fishways and ladders are considered impracticable to construct by dam owners, which would permit fish to reach spawning waters. This Commission is in favor of exerting the full resources of the Department of Game in speeding settlement of all pending fish ladder controversies, clearing the way for an equitable solution of future problems.

Strong laws should be enacted and enforced to regulate the building of dams providing for adequate fishways and ladders. An appeal to all conservationists, sportsmen and laymen is made by the Commission and a warning signal is sounded calling attention to the imminent danger to natural fish propagation from uncontrolled dams. It is well to give thought to the equation that a hatchery of super-capacity could not measure in propagated fish the fish losses accruing from uncontrolled dams.

In several instances the Department of Game has cooperated with the State Department of Fisheries and the U. S. Bureau of Fisheries in working for the solution of fish ladder problems. These agencies are warmly commended for the part they have played in assisting this Department.

Newest of state game hatchery units is under construction at Aberdeen where a modern hatchery and a battery of ten 40-foot concrete circular rearing ponds is nearing completion. (1) The hatchery floor plan. (2) Beautiful Lake Aberdeen supplies ample water for hatchery purposes. (3-5) Building ponds for larger fish. (4) The last link on the piping system. (6) Closeup of rearing ponds. (7) Intake valve checking flow of water from Lake Aberdeen.

Specifications—Standard 40-Foot Rearing Pond

These ponds are 40-foot circular ponds 2 feet deep, 6-inch walls, 6-inch bottoms, with a slope of 3 inches to center drain. The center drain has a 3-foot square wire mesh screen, or, in other words, 12 feet of screen capacity, 2 feet high. The water supply for the ponds is a 12-inch wooden main pipe with 2-inch galvanized iron feed pipes to each pond. This pipe has twelve spigots or outlets which can be adjusted for the amount of water

needed for the specie of fish in each pond. These spigots are placed in the 2-inch feed pipe 18 inches apart, six on right-hand side of pond, six on left side of pond. This pipe is adjusted to give the required circulation of water. This is adjusted suitable to the size of fish carried in the pond. These are cleaned daily by pulling the center drain, the circulation of water in the pond causing all dirt and debris, which collects on the bottom, to quickly pass in the center drain. All dirt works immediately to the center, leaving outside rim of pond clean.

MANY NEW FEATURES

This center drain construction is a great improvement over the old system of oval dirt ponds with a side drain. One of the biggest features of this construction is the labor saved in cleaning ponds. Also a greater number of fish can be run in this type of unit with less water. Ponds installed on the basis of the foregoing specifications have given excellent service to date.

A view of the ten circular rearing ponds in Seward Park, Seattle park system, now operated by the Department of Game on subsidy from the Seattle Park Board. These ten ponds are fine examples of what cooperation can do. Seattle Outdoor Sports Council raised the initial moneys through a huge dance honoring the mayor-elect. These funds, augmented by the park board, brought WPA moneys and labor into action. Operation of the completed plant was started in 1935. Department of Game biologist is conducting food experiments in these ponds. Steelhead, rainbow and cutthroat are being reared here for liberation in Lake Washington and neighboring streams.

STATE GAME FISH HATCHERIES

Pond Facilities

Includes listing of new equipment and work now under construction.

Hatchery	Ponds
1. Tokul Creek	Two—40', three—10' x 25' concrete, two—60' x 20' ovals.
2. Kittitas	One—10' x 30' concrete.
3. Naches	Four—4' x 22', four—30' x 100' dirt ponds.
*4. Walla Walla	**New—three 32' concrete.** one—30' x 135' concrete.
**5. Spokane	**New—seven 40' concrete. Building nine additional.**
***6. Chelan	**New—ten 40' concrete standard ponds.**
†7. South Tacoma	**New—ten 40' concrete**—built previously, six—6' x 24' concrete and two—40' concrete.
8. Chiwaukum	One—40' concrete.
††9. Bellingham	**New—ten 40'** concrete circular.
10. Lake Whatcom	One—16' x 40' concrete.
11. San Poil	Two—6' x 14' concrete, one—8' x 18' concrete.
12. Colville	Two—4' x 18' concrete, one—10' x 10' concrete.
13. Pend Oreille	Four—4' x 24' concrete, three—30' x 50' dirt.
14. Skamania	Two—30' dirt, one 4' x 8' concrete.
15. Lake Crescent	Two—40' concrete.
16. Vancouver	One—30' x 100' dirt, twelve—5' x 5' concrete.
†††17. Aberdeen	**Now under construction: ten—40' standard concrete ponds.**

SUMMARY: * Walla Walla remodeled in 1935; ** Spokane, all new ponds, 1935; *** Chelan, all new, 1935; † South Tacoma, 10 new, 1935; †† Bellingham, all new, completed spring of 1936; ††† Aberdeen, 10 ponds now under construction.

NOTE: All new ponds are circular, concrete, 40 ft. in diameter.

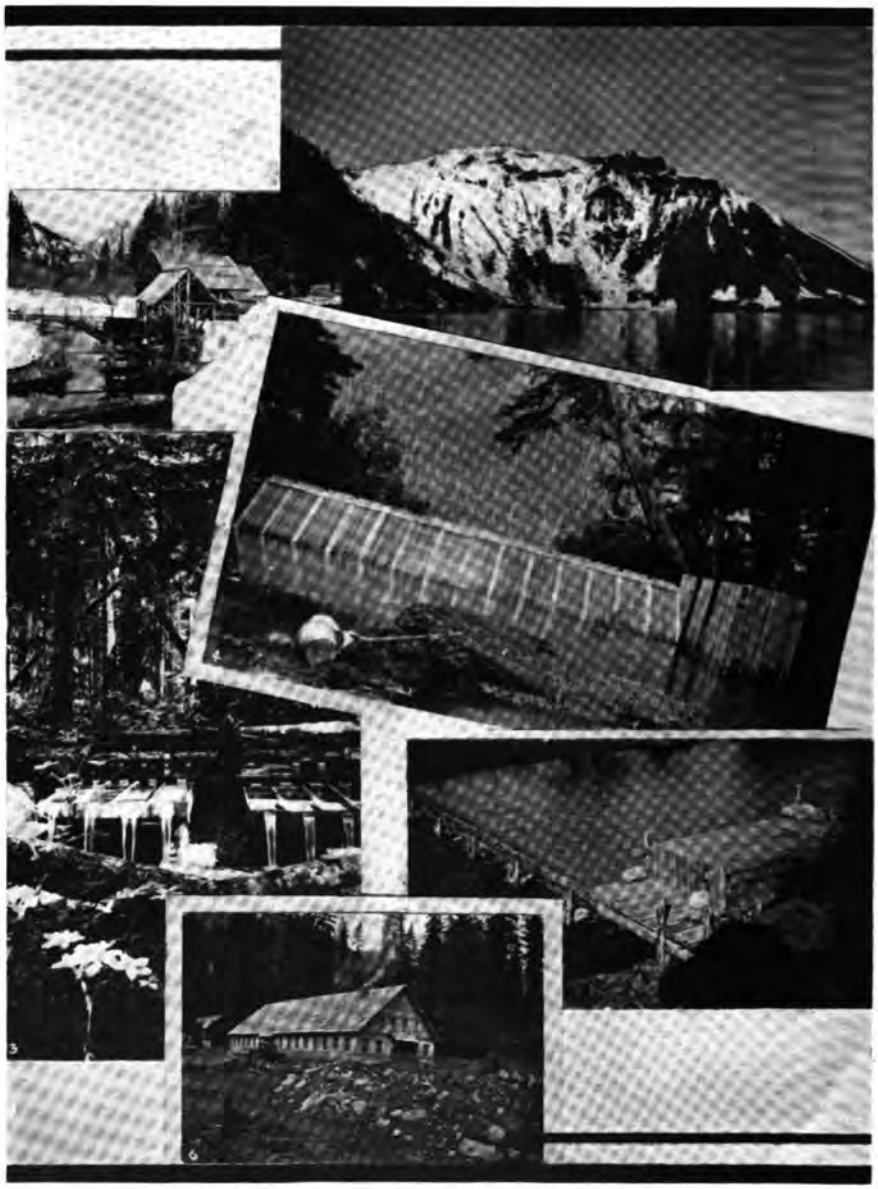
Game Hatchery Division Development and Activity

Number state hatcheries	17
New hatcheries built during 1934-35—Chelan, Aberdeen, Bellingham and Spokane	4
Number new 40-foot circular concrete rearing ponds	68
Number new fish troughs built	274
Number fingerling planted, April 1, 1935-March 31, 1936	5,992,205
Number fry planted, April 1, 1935-March 31, 1936	*29,510,696
Number fry and fingerlings received from outside sources and planted	553,015
Total game fish planted, 1935	36,055,916

Fingerling output will be increased in 1936.

Work will be started in 1936 on new modern hatchery and rearing ponds at Yakima.

* Figure includes fish raised to size ranging from 1 to 2½".



(1) Twin Lakes Eyeing Station, Chelan county. (2) Walupt Lake, Lewis county, used for egg-collecting. (3) Walupt Lake trap where fish are caught for spawning. (4) Walupt Lake trap and rack. (5) Woods Creek steelhead trap, Snohomish county. (6) Chiwaukum Hatchery, Chelan county.

Facts About Game Fish

"The greatest game fish of the angling world," is the high tribute paid the steelhead or rainbow by Washington sportsmen. Contrary to common opinion, the steelhead is not a specie of salmon, but in reality is a rainbow trout which migrates to salt water at certain periods of the year. Fame of Washington's steelhead has spread to the far corners of the United States and to foreign countries as well. Anglers come yearly from many states to fish in the well-stocked lakes and streams where this favorite fish abound. The Commission, through its hatchery division, is doing everything possible to restock the higher lakes and streams with steelhead. Sportsmen will aid materially the Department's conservation movement by individually and collectively giving the state every cooperation in keeping public fish marts free of illegally caught steelhead. There are innumerable cases on record where this fish is passed along to the buyer as salmon by unscrupulous dealers. These cases are being prosecuted as rapidly as discovered by the Department.

Cutthroat—There was a low take of cutthroat during the last few seasons and the best gauge of the cutthroat situation today may be summed up as "steadily decreasing." It is indeed an unpleasant notice to sportsmen that this fish has ceased to be plentiful in Washington streams, but the influences of nature and civilization upon this specie have not aided its propagation. Entry of industry into its natural habitat has contributed most to its decline. Logging of higher mountain areas and deforestation have taken away the cutthroat's habitat and he is leaving the fresh water to migrate to salt water. He is being caught in salt waters in greater number each year. In attempting to replenish Washington waters with cutthroat and return this specie to production normalcy, it may be necessary for the Department to resort to cutthroat brood ponds. In order to replace the cover which is essential to fish life, reforestation of burned over and logged-off land is recommended.

Silver Trout—A most economical fish to raise and a specie which gives good early spring fishing for the bait or spoon fisherman, the silver trout is still plentiful in this state. This specie of fish makes a great filler-in and ranges in size at four years from 8 inches to as high as 4½ pounds

planted in different localities in lakes in eastern Washington. The silver trout thrives and seems best suited to eastern Washington waters because of food conditions. Silvers are about the only fish that can stand an even break with the spiney-rayed fish.

Eastern Brook Trout—This specie is reported by the Department of Game's hatchery division as "holding its own." It ranges in size from 10 inches to 10 pounds and furnishes excellent fishing for eastern Washington anglers. It is also quite plentiful in the higher lakes of western Washington.

Rainbow Trout—Good news for sportsmen is reflected in the announcement by the hatchery division that the rainbow is still in good numbers with no immediate indication of decrease in production. During the last three years under state control, the hatchery division has planted this specie rather extensively throughout the state. This year, there will be planted in the neighborhood of 2,000,000 fingerling rainbows in every section of the state. Rainbow, thus planted, ranges in size from 1½ to 7 inches. It is a spanking fly-taker and lively sport for the fly-fisherman.

Lochleven Trout—The Department has planted a limited number of lochleven in one lake in eastern Washington and one in western Washington. Records show that this specie is doing well, but the game fish division is keeping the lochleven in landlocked lakes as far as possible.

Lake Trout (Mackinaw)—Planting of a limited number of lake trout is recorded. This specie is principally confined to eastern Washington lakes, where it does very well. The mackinaw ranges in size from 2½ to 30 pounds.

BIENNIAL SUMMARY OF GAME FISH LIBERATED

April 1, 1934, to March 31, 1935—April 1, 1935, to March 31, 1936

Trout Liberated April 1, 1934, to March 31, 1935	Totals in Eastern Wash'gton	Totals in Western Wash'gton	To Individuals		Grand Total in State
Trout	.....	3,000	.....		3,000
Black Spotted	356,770	255,900	.....		612,670
Cutthroat	1,569,390	532,762	.....		2,102,152
Eastern Brook	8,432,435	3,055,470	.....		11,487,905
Kamloops	.....	42,900	.....		42,900
Lochleven	448,000	53,220	.....		501,220
Rainbow	4,193,621	2,365,390	5,000		6,564,011
Silver	6,986,528	11,131,945	.....		18,118,473
Steelhead	486,450	7,125,327	.....		7,611,777
Total	22,473,194	24,565,914	5,000	(1934)	47,044,108
Trout Liberated April 1, 1935, to March 31, 1936					
Black Spotted	197,434	130,422	.....		327,856
Crescentii	.....	21,047	.....		21,047
Cutthroat	437,775	131,600	.....		569,375
Eastern Brook	6,096,421	2,101,483	2,500		8,200,404
Kamloops	25,000	66,950	5,000		96,950
Lochleven	104,800	137,500	.....		242,300
Mackinaw	184,070	.....	.....		184,070
Rainbow	1,821,120	1,306,153	246,015		3,367,288
Silver	6,006,745	11,060,360	.....		17,127,105
Steelhead	132,565	5,786,966	.....		5,919,521
Total	15,005,920	20,736,481	253,515	(1935)	36,055,916
Salmon Liberated April 1, 1934, to March 31, 1935					
Silver	.....	75,650	.....	(1934)	75,650
Salmon Liberated April 1, 1935, to March 31, 1936					
Chinook	83,050	.....	.....		83,050
Silver	119,420	1,021,250	.....		1,140,670
Total	202,470	1,021,250	.....	(1935)	1,223,720

Rainbow fishing, Snohomish county.

(Right) Nature's invitation to anglers.

BIENNIAL SUMMARY OF OUTPUT OF STATE GAME FISH HATCHERIES

April 1, 1934, to March 31, 1935—April 1, 1935, to March 31, 1936

	April 1, 1934, to March 31, 1935			April 1, 1935, to March 31, 1936		
	Total Trout	Total Salmon	Grand Total	Total Trout	Total Salmon	Grand Total
Number eggs taken	48,496,830	381,300	48,878,130	38,846,800	1,130,000	39,976,800
Number eggs received by transfer from state hatcheries	31,584,700	150,000	31,734,700	23,484,005	.....	23,484,005
Received from outside sources	4,649,980	.....	4,649,980	2,124,240	133,000	2,257,240
Number eggs on hand March 31	(1934) 4,438,307	.....	4,438,307	(1935) 5,190,384	.....	5,190,384
Number eggs lost	4,577,935	18,880	4,596,815	4,334,801	111,284	4,446,115
Number eggs shipped other state hatcheries	31,584,700	150,000	31,734,700	23,484,005	.....	23,484,005
Number eggs shipped outside sources	3,775,000	140,000	3,915,000	1,511,000	.....	1,511,000
Number eggs planted	.....	.....	.....	440,000	.....	440,000
Number eggs on hand March 31	(1935) 5,190,384	.....	5,190,384	(1936) 8,233,818	.....	8,233,818
Number fry hatched	44,041,808	222,420	44,264,228	31,041,775	1,151,716	32,193,491
Number fry on hand March 31	(1934) 21,531,648	.....	21,531,648	(1935) 19,599,371	141,120	19,731,491
Fry received from state hatcheries	1,449,000	.....	1,449,000	1,246,329‡	.....	1,246,329
Fry received from outside sources	112,000	.....	112,000	.....	.....	.....
Number fry lost	1,321,180	5,650	1,326,836	1,647,091	32,645	1,679,736
Number fry planted	36,001,755	75,650	36,077,405	29,510,686	1,021,250	30,531,946
Fry shipped other state hatcheries	1,449,000	.....	1,449,000	1,486,329‡	.....	1,486,329
Fry shipped outside sources	105,000	.....	105,000	253,500	.....	253,500
Number fry on hand March 31	(1935) 19,613,301	141,120	19,754,421	(1936) 10,511,567	.....	10,511,567
Fry transferred to fingerling	8,644,214	.....	8,644,214	9,060,262	258,941	9,308,203
Number fingerling on hand March 31	(1934) 4,164,404	.....	4,164,404	(1935) 1,377,870	.....	1,377,870
Fingerling received from state hatcheries	330,400	.....	330,400	300,000‡	.....	300,000
Number fingerling lost	927,025	.....	927,025	589,766	36,471	626,237
Number fingerling planted	10,526,653	.....	10,526,653	5,992,205	202,470	6,194,675
Number fingerling shipped to state hatcheries	330,400	.....	330,400	60,000‡	.....	60,000
Number fingerling on hand in ponds March 31	(1935) 1,354,940	.....	1,354,940	(1936) 4,105,176	.....	4,105,176
Fingerling shipped outside sources	.....	.....	.....	15	.....	15

Received from Outside Sources and Planted:

1934 Black spotted Cutthroat, 110,200; Cutthroat, 35,000; Rainbow, 82,500; Steelhead, 50,000. Salvaged—130,000 Steelhead.
1935 Black spotted Cutthroat, 20,080; Cutthroat, 1,000; Eastern Brook, 87,400; Lochleven, 50,000; Rainbow, 141,100.
‡ Transfer from Fry to Fingerling in shipments from Seward Park, Skamania and Stellacoom Hatcheries.

STATE TROUT HATCHERIES ADMINISTRATION AND GENERAL EXPENDITURES

April 1, 1934, to March 31, 1935—April 1, 1935, to March 31, 1936

	Fiscal Year April 1, 1934, to March 31, 1935		Fiscal Year April 1, 1935, to March 31, 1936		
	Total		Salaries and Wages	Operations	
Salaries and wages	$29,516 36		$32,771 10		
Private autos—mileage	122 25		.....	$362 56	
State cars and trucks	4,010 58		.....	3,571 46	
Purchase new cars and trucks	1,817 75		.....	2,021 85	
Fares—railroad, boat and stage	65 14		.....	82 64	
Meals and rooms	411 70		.....	451 06	
Telephone and telegraph	274 67		.....	237 73	
Postage paid by employees	16 02		.....	4 30	
Freight and express	467 62		.....	345 35	
Rent	21 00		.....	11 00	
Light, heat and water	1,710 33		.....	1,181 11	
Boots, slicker coats and pants	87 04		.....	58 11	
Repair troughs, buildings, small tools	1,887 91		.....	724 86	
Boat hire	1 22		.....	50	
Operating state boats	22 92		.....	6 13	
Feed	10,717 06		.....	14,225 06	
Purchase trout eggs	3,783 99		.....	1,560 25	
Brooms, riffle plates, ice, salt	517 89		.....	601 91	
Seeds and lawn expense	30 67		.....	9 05	
New equipment	450 18		.....	261 80	
Medical aid	300 81		.....	250 99	
Totals	$56,293 09		$32,771 10	$25,368 62	
Canned salmon on hand March 31, 1935, at various hatcheries	.....		786 36	1,338 91	
Liver purchased and stored	.....		.....	743 56	
Construction	3,589 71		.....	.....	
Totals	.....		$33,557 46	$28,051 09	
Grand Totals	.....	$59,882 80	.....	.....	$61,608 55

EGG-TAKING STATIONS AND REARING PONDS ADMINISTRATION AND GENERAL EXPENDITURES

April 1, 1934, to March 31, 1935—April 1, 1935, to March 31, 1936

	Fiscal Year April 1, 1934, to March 31, 1935		Fiscal Year April 1, 1935, to March 31, 1936		
	Total		Salaries and Wages	Operations	
Salaries and wages	$5,403 54		$6,152 52		
Private autos—mileage	162 30		.....	$205 90	
State trucks and cars—expense	33 16		.....	161 37	
Fares—railroad, boat and stage	17 93		.....	25 09	
Meals and rooms	25 10		.....	32 90	
Telephone and telegraph	60		.....	15	
Freight and express	184 97		.....	9 81	
Expense—Light, heat and water	93 25		.....	117 00	
Boots, slicker coats and pants	25 34		.....	27 60	
Repairs racks, traps	51 36		.....	31 67	
Operating state boats	37 85		.....	10 72	
Feed	229 61		27 83	694 85	
Brooms, riffle plates, ice, salt	7 11		.....	18 06	
Rent	.....		.....	142 00	
Pack horses	.....		.....	87 50	
Totals	.....		$6,180 35	$1,474 62	
Grand Totals	.....	$6,272 12	.....	.....	$7,654 97

Two western Washington scenic gems, Sunset Falls and Mount Index. Tourists and vacationists find, in Washington's beauty spots, rest and recreation as well as sport in field and stream.

License Division

WHEN the statement of licenses and income is explained these items show significantly the major source of financial revenue in the Department of Game. Doing nearly a million dollar biennial business, the license division offers an interesting study. These thoughts should be kept uppermost in any analysis of the Department: that the Department is entirely self-supporting and receives no legislative grants or state governmental subsidies to carry on its ramified wild life program. The license division with its state-wide task of merchandising game licenses is a beehive of activity the year around. Peak months occur during the period prior to hunting and fishing season openings.

Changes in Administration

Since publication of the last biennial report a decided change in the handling of departmental funds has been effected. Prior to the meeting of the 1935 legislature, game moneys were sent by county auditors direct to the state treasurer and the Department had no control over its revenue. The system caused frequent conflicts in tracing expenditures and collection of license fees and was wholly inexpedient and inadequate to care for the needs of the Department.

Licenses previously issued had been sold by county auditors who named agents to assist in the sale. Auditors received no compensation from the state for this service and annually, in many cases, drew upon county funds for the handling of licenses. From the standpoint of the sportsman—the license buyer—the scattered number of agents named by auditors in each county was not sufficient to accommodate and serve all sportsmen to best advantage. The new system, although costing more, is to the advantage of sportsmen.

STATE HANDLES LICENSES

By act of the 1935 legislature, the regulating and issuance of game licenses and the powers and duties of the game director in connection therewith was amended as follows:

That section 38 of chapter 178 of the Laws of the Extraordinary Session of 1925 as amended by section 6, of chapter 258 of the Laws of 1927 as amended by section 38 of chapter 3, Laws of 1933 (initiative number 62), be amended to read as follows:

To quote section 38, in part, of the new enactment passed during this biennial period: "all licenses provided for or issued under the authority of this act shall be issued by or under the authority of the director of game, who shall have the power and authority to deputize and invest with authority game protectors, the county auditor of any county in the state, and any reputable citizen designated by him to issue such license and collect the fees therefor.

"All persons so deputized or designated by the director of game shall, on demand, on or before the 31st of December of each year, pay to the director of game and all fees so collected and shall make and/or furnish any and all reports required by the director of game. And the director of game is hereby vested with authority to make all necessary rules and regulations regarding the issuance of such licenses, the collection and payment of fees collected and the making/or furnishing of reports in connection therewith."

INSTALL TIME SAVER

For the distribution of game licenses and collection thereof, the Department has devised a plan which has proven an efficient time saver during a nine months trial period. The plan is briefly described. Soon after legislative enactment of the regulation on state game finances, the Department moved to place the entire responsibility of licenses on the shoulders of protectors, who would in turn name qualified agents in their respective districts. About 37 protectors are thus engaged. Protectors are given full authority to select dealers and merchants and are charged with the supervision of license agents. All agents and protectors are bonded by the Department. Agents selling licenses without bond must pay in advance for licenses issued to them.

WORK FOR EFFICIENCY

With a total of 744 license agents now serving sportsmen in Washington, the license buyer receives at least fifty per cent more service than under the county auditor plan. Collectively the auditors formerly had less than half the present number of dealers in the field. Not only is the Department working for efficiency in the management of its license division, but it is endeavoring, moreover, to accommodate sportsmen by giving them a maximum of license service. Today, fishing and hunting license dealers are convenient to rural as well as city communities.

An index system which has proved uniformly successful in tracing and substantiating lost licenses has been installed by the department license clerk in the Lloyd Building, Seattle headquarters offices.

The system installed early in 1936 meets a pressing demand for a foolproof system. The license clerk has a card file of each license holder, filed both by number and name. This plan permits a double check in running down applications for duplicates. A fee of 50 cents is assessed for lost license service.

CODE SYSTEM PROTECTS

The second clerical innovation installed by this division of a practical trend is a code system for protectors and agents engaged in the handling of licenses. Each county in the state has been assigned a number, starting with Adams county and following alphabetically down to Yakima, through the entire 39 counties. For example: the Adams county game protector in issuing licenses to his bonded and unbonded dealers will be given No. 1. If he, therefore, is issuing licenses to say 15 dealers in his county these would be numbered consecutively as 1-1, 1-2, 1-3, etc. In cases where the name is not distinguishable the license clerk can easily identify stubs by the code number.

MINIMIZED EFFORT

It can be readily seen that the difficult task of handling licenses is greatly facilitated with this system in operation. Protectors, in addition to their routine field duties, must become expert as auditors and collectors. Shortcuts and time-saving practices are constantly being tested in this division with the ultimate aim of accommodating the license buyer as well as minimizing effort in handling various types of licenses.

License Sales and Revenue

Inasmuch as the Washington Department of Game is almost wholly dependent on revenue from license fees, the rise and fall of the sales barometer is watched closely by the Commission. Fishing and hunting as hobbies and sports are made more attractive to anglers and nimrods through replenishment of depleted stocks and launching of a practical conservation program. Business trends have swung steadily upward from the depression low of 1931 and a study of license statistics for the biennium years reveals a gradual but unquestionable return to normalcy.

NUMBER OF AGENTS HANDLING GAME LICENSES APRIL 13, 1936

WESTERN COUNTIES	No.	EASTERN COUNTIES	No.
Clallam	21	Adams	7
Clark	38	Asotin	5
Cowlitz	20	Benton	6
Grays Harbor	21	Chelan	18
Island	9	Douglas	6
Jefferson	7	Columbia	6
King	74	Ferry	5
Kitsap	13	Franklin	10
Lewis	19	Garfield	3
Mason	19	Grant	22
Pacific	16	Kittitas	8
Pierce	51	Klickitat	13
San Juan	6	Lincoln	18
Skagit	16	Okanogan	33
Skamania	12	Pend Orielle	12
Snohomish	33	Spokane	53
Thurston	11	Stevens	26
Wahkiakum	7	Walla Walla	11
Whatcom	30	Yakima	51
	423	Whitman	19
			321

LICENSES ISSUED AND REVENUE RECEIVED

For Years 1933, 1934 and 1935

Year	Licenses Issued	Revenue
1935	164,385	$392,647.75
1934	157,951	377,206.00
1933	129,622	312,544.50

At the behest of sportsmen's organizations, the 1933 legislature reduced state resident hunting and fishing licenses from $7.50 to $3.00 in order to make hunting and angling for the sportsmen less costly during the depression years. The fee for county resident hunting and fishing licenses remained the same.

Under the pre-state control era, fewer license holders, in proportion to the number of license permits and revenue received today, brought in a larger revenue because of much higher fees.

With the general plane of business increasing to a higher level, it is possible that state and county resident hunting and fishing fees will be raised to their former scale. The increase in the state game fund which would come from an increase in license fees would enable the Department to

broaden and further develop its fish and bird propagation program, filling field and stream with fish and game in greater numbers.

Additional funds could be used to advantage in widening the scope and service of all departmental divisions.

Big Game Seal Revenue Pays Bounties

A sweeping change in the financing of predatory bounties whereby big game tags were supplied for payment for predatory control was enacted at the 1935 session of the state legislature. The Department of Game now has a fund expressly set aside for the payment of bounties, which is not contingent with, or dependent upon, the game fund supported from regular hunting and fishing license sales. Hunters bent on big game expeditions purchased their first metal tags in the fall of 1935. There was a total of 47,253 big game seals bought by hunters during the initial period of issuance. Receipts from the metal tags totalled $23,626.50. Cost of production of seals—manufacture of metal tags and printing of big game seal forms was $639.64. Expenses incidental to the distribution of supplies (seals and license forms) to protectors and mailing costs must be added to this figure.

Types of Licenses Issued

TYPES OF LICENSES SOLD STATE CONTROL ERA

State resident citizen hunting and fishing	$3.00
State non-resident citizen hunting and fishing	25.00
State alien hunting and fishing	25.00
State non-resident citizen (game birds)	15.00
State non-resident citizen fishing	5.00
State fur dealer	10.00
State taxidermist	5.00
State resident supplemental elk	5.00
State non-resident supplemental elk	25.00
State alien supplemental elk	50.00
County resident citizen hunting and fishing	1.50
County non-resident citizen fishing	3.00
County alien fishing	5.00
County resident citizen trapping	5.00
County professional guide	10.00
Duplicate licenses	.50
Metal tags, big game—deer	.50
Metal tags, big game—bear	.50
Metal tags, big game—elk	.50

PRICE OF LICENSES ISSUED UNDER THE PRE-STATE CONTROL ERA

State resident citizen hunting and fishing	$7.50
State non-resident citizen hunting and fishing	25.00
State alien hunting and fishing	25.00
State resident or non-resident fishing	5.00
State non-resident citizen (game birds)	15.00
State taxidermist	5.00
State fur dealer	10.00
County resident citizen hunting and fishing	1.50
County non-resident citizen fishing	3.00
County alien fishing	5.00
County resident citizen trapping	5.00
County professional guide	10.00
County private migratory game preserve	10.00
County resident citizen supplemental elk	5.00
County non-resident supplemental elk	25.00

THREE-YEAR RECAPITULATION OF GAME LICENSES

For the Calendar Years 1933, 1934, 1935

TYPE OF GAME LICENSE SOLD	Price	1933		1934		1935	
		Number Licenses Sold	Total Amount of Revenue	Number Licenses Sold	Total Amount of Revenue	Number Licenses Sold	Total Amount of Revenue
State resident citizen hunting and fishing	$3 00	69,587	$208,761 00	81,841	$244,023 00	85,569	$256,707 00
State non-resident citizen hunting and fishing	25 00	4	60 00*	7	133 00*	5	103 00†
State alien hunting and fishing	25 00	17	425 00	19	475 00	18	450 00
State non-resident citizen (game birds)	15 00	42	630 00	41	615 00	44	660 00
State non-resident citizen, fishing	5 00	998	4,990 00	1,125	5,625 00	1,312	6,560 00
State fur dealer	10 00	69	690 00	89	890 00	108	1,080 00
State taxidermist	5 00	25	125 00	31	155 00	34	170 00
State resident supplemental elk	5 00	1,114	5,570 00	724	3,620 00	878	4,390 00
State alien supplemental elk	50 00	.....	.....	.....	.....	.....	.....
State non-resident elk	25 00	.....	.....	.....	.....	1	25 00
County non-resident fishing	3 00	907	2,721 00	996	2,988 00	1,157	3,471 00
County resident citizen hunting and fishing	1 50	55,925	83,887 50	71,208	106,812 00	72,680	109,020 00
County alien fishing	5 00	92	460 00	130	650 00	119	595 00
County resident citizen trapping	5 00	839	4,195 00	2,236	11,180 00	1,815	9,075 00
County professional guide	10 00	3	30 00	4	40 00	2	20 00
County duplicate licenses	50	.....	.....	.....	.....	643	321 75
Totals		129,622	$312,544 50	157,951	$377,206 00	164,385	$392,647 75

* See Reciprocity Agreement.

† One license at $15.00; one at $10.00 and three at $25.00.

REPORT OF BIG GAME SEALS SOLD

Period to April 1st, 1936

For Year 1935

TYPE OF LICENSE

Big Game Seal	Price	Net Sold	Revenue
Deer	.50	42,333	$21,166.50
Elk	.50	873	436.50
Bear	.50	4,047	2,023.50
		47,253	$23,626.50

FUND PROVIDED

In enacting the bounty act, the legislature appropriated for the biennium, April 1, 1935, to March 31, 1937, the sum of $50,000 or so much thereof as may be necessary for the payment of bounties. In no case, however, is this figure to exceed the amount received from issuance and sale of the metal tags as provided for in the act. Provided, however, that the state auditor may anticipate the receipts and issue warrants to cover the same to any amount not exceeding $15,000.

SUMMARY OF ACT

Here is a summary of the act as it relates to big game seals.

Quote: "It shall be unlawful for any person to hunt or kill any deer or elk or other big game animal without first having procured from the director of game a metal tag to be known as a 'Big Game Seal,' which metal tag shall be procured in addition to any other licenses to hunt such animals required by law. Such metal tag shall be in the possession of all persons while engaged in hunting deer or elk or other big game animals. Such metal tag shall be prepared by and under the supervision of the director of game and shall bear the name, 'Department of Game of the State of Washington' and the year for which it is issued, and any other distinguishing mark deemed necessary by the director of game and shall be void after the year stamped thereon. Such metal tag shall be attached to the carcass of any deer or elk or other big game animal killed by any licensee. The fee for issuing and procuring such metal tag shall be fifty cents and shall be paid in addition to all other license fees provided by law."

SUPPLEMENTAL LICENSES

Elk, deer and bear hunters require big game seals, assessed at fifty cents, to go with their county or state hunting licenses. Elk hunters, according to the statute, are required to have state hunting licenses and separate elk licenses.

Washington Fifth in License Revenue

The U. S. Bureau of Biological Survey of the Department of Agriculture, in its 1934 statistical analysis of game licenses issued and revenue received by states, listed the State of Washington in fifth position among the forty-eight states in total revenue received. However, if the computation was made on the basis of proportionate population, Washington would rank well out in front in total license revenue.

SIX HIGHEST

License revenue of the six highest states follows: first, Pennsylvania, $1,227,692.00d; second, New York, $995,670.94b; third, Michigan, $556,500.00; fourth, Ohio, $423,302.00; **fifth, Washington, $355,678.00b, first biennial year;** and sixth, California, $334,429.00.

Note: d—Returns incomplete.
b—Includes combined hunting and fishing or hunting and trapping.

Biological and Research Division

GRADUALLY, as game funds permit, the Commission is enlarging the scope of scientific research in the fields of game fish, upland birds and big game. Since earliest times man has, by observation and experience, learned of the propagatory, feeding and migratory habits of wild game. Special study of disease, production and the other important factors in the life of wild game received only secondary attention for many years in this state. Notwithstanding this abstract viewpoint, wild game is increasing in value to the state as the favorite outdoor pastime of sportsmen.

Emphasis Placed on Scientific Study

The Commission feels that conservation must be furthered, but it also advocates a comprehensive and practicable research program to study and correct natural enemies of game and also its arch foe, the game code violator. To this end, the Commission has paid an active interest in the research work of the Department of Game and has given every encouragement in this direction. We must not let our wild life sink into the status quo condition of many eastern states whose game resources have become sorely depleted from lack of ample conservation objectives and inattention to the scientific features of wild life. Many sportsmen organizations, the University of Washington fisheries department and the game management department of Washington State College have carried on experiments in fish foods, game diseases and other fields of scientific study. The Commission considers this work a definite contribution to the Department and the perpetuity of wild life for the rod and gun fraternity.

TRAINED BIOLOGIST

Actual research work within the Department is directed by a trained biologist who is assigned the task of solving specific scientific problems relating to fish, upland birds and big game. This service has been found of valuable assistance in throwing light on many troublesome wild life questions. Chief among these project studies may be mentioned: examinations of fish and streams, fish diseases, fish foods, pollution, erosion and scientific studies covering a wide field of application. Although fair progress has been made in the field of research, the Commission has in no way limited experimentation to the biologist alone and supervisors have been given a free hand in moving to increase the efficiency of their divisions.

Excellent work has been reported by both the game farm and fish hatchery units during the biennium.

University of Washington School of Fisheries

For the scientific study of fish life many states are depending more and more on the authoritative and timely research of colleges, offering courses in fisheries and allied subjects. In Seattle, the University of Washington offers the only complete course in fisheries. This institution is located adjacent to both fresh and salt waters—Puget Sound, Lake Washington and dozens of lakes and streams. The study of fish life in all its varied and intricate forms is available to students. Graduate students of this school are finding their place in the field of fisheries and are contributing in a large way to the conservation and restoration of both game and food fish.

VALUABLE ASSISTANCE

Most cooperative has been the relationship between the University of Washington school of fisheries and the Department of Game. The department biologist has assisted in experiments carried on at the University and has received valuable help from fisheries instructors. Friendly aid on all departmental game fish projects is enthusiastically reported. The Commission fully recognizes the value of this aid in the development and completion of practical game fish projects. In citing the cooperation of the State University, the Commission wishes to thank Prof. Lauren Donaldson, Dr. W. K. Thompson and members of the fisheries staff for their kindly interest in solving the difficult game fish problems arising in the Department from time to time.

RESULTS RECORDED

Good results are recorded by the departmental biologist working along game fish research. New experiments developed by Prof. Donaldson have been made available for the Department's use and study. For instance, experiments relating to temperature control, selection of brood trout and feeding experiments have proved beneficial to this Department.

Problems Relating to Fish Life

Interesting facts are revealed in recent surveys of the ecology of lakes. This scientific study extensively delves into the problems relating to fish life. Experiments carried on during 1935 in Lake Washington have brought to light potent findings on the population of game fish. A significant and astounding fact is registered about this great body of water that the total population of fish actually proved a high percentage of warm water or spiney-rayed fish. Next in percentage were the waste fish—suckers, carp and chubs. Third in percentage was the trout family. The fact that this lake has a super-abundance of spiney-rayed fish, bass, crappy and perch, totalling 50 per cent of the lake population, is the answer to why sportsmen are missing strikes in this lake.

MEET THREAT OF SPINEY-RAYED

From a departmental angle, the practical principles of the lake survey carried on by the University of Washington school of fisheries may be used to good advantage by the Department of Game in meeting the challenge of the spiney-rayed fish in other Washington lakes.

Progress of Lake and Stream Survey

Uncovering the minute and diversified properties which limit and impede the normal propagation of game fish in natural habitat is the work of department specialists engaged in the lake and stream survey. Always a troublesome wrinkle to planting and spawn-taking crews, such factors as the determination of suitable species of fish, information relative to food conditions, facts on spawning areas, temperature and chemical analysis of the water, must be answered before work can be done with a measure of success.

Too often large quantities of game fish are planted in depopulated lakes without consideration of the foregoing essentials. For purpose of example, a lake may be compared to a farmer's field. Ground is fertile and productive, but still nature has placed a limit on the amount of food which may be produced there. Animals inhabiting any given area will be in direct ratio to the food available. It follows, then, that if larger fish are desired there must naturally be fewer fish in the lake in order to permit a higher proportion of food. If more fish are wanted, research has proved fish will be of smaller size.

Study of Natural Fish Foods

The average sportsman who angles for fish very often has but a smattering of knowledge of fish life. Fish actually derive sixty per cent of their food from those types of organisms that spend most of their lives in the water depths. The remainder of fish foods consist of those terrestrial insects that fall in. Food of the smaller and younger fish consists of microscopic organisms called plankton. When fish increase in size their jaws take on strength and they are able to capture and devour increasingly larger fish, acquatic insects, frogs, crawfish and other water inhabitants. For illustration, the food of the fish may be classified thusly, (1) terrestrial or seasonable group, (2) water group, (3) bottom group.

RATIO OF NATURAL FISH FOOD

Quantity of food in lakes is tabulated quantitively. Small microscopic samples of plankton life are seined out by the use of a small silk net. The net weight of the organisms is taken and the quantity of water seined is known. Next is taken the bottom sample. This is taken with an Eckman dredge. The quantity of food is computed by wet weight. Multiplying this by the area of a given lake, it is possible to obtain to a close degree the productivity of the lake. It takes 3 ½ pounds of natural food to raise a pound of fish.

WATER TEMPERATURE AND OXYGEN

Other limiting factors in the production of fish in the lake area are water temperatures and oxygen. Water temperature is taken at five-foot intervals by use of a reversal thermometer. The oxygen content is taken by use of a deep water sampler which collects the known quantity of water from depth desired.

PRACTICAL SPAWNING

Further survey data taking in the practical features of spawning is accumulated. To aerate the eggs, a spawning area must be either a small stream or gravel bar with a flowing spring. This information is helpful in determining whether spawning is possible. If not, artificial planting will

be used in such lakes. This is very characteristic of our woodland lakes that have soft fluctuant bottoms, where it is impossible for the eggs to gain the necessary aeration.

Charting of River Obstructions, Barriers

Bulk of departmental survey service has been directed at lake problems. A limited amount of work has been carried on in river survey during this biennium. Work which has been accomplished includes charting of obstructions or barriers to migrations of fish in Washington rivers. These obstructions in many cases are man made. Vigorous efforts are being put forth by the Department of Game in urging industrial companies to build fish ladders wherever needed.

State Moves to Curb Pollution

In the heavily congested metropolitan centers of the east, pollution of fish streams in and near city centers has depleted game fish stocks and left sportsmen to vie for old tires and a homogeneous assortment of odds and ends. The game departments of eastern states, where game once was in abundance, have paid dearly for a lack of proper pollution protection. Many states have taken steps to correct pollution conditions with the ultimate intention of restocking streams again for anglers. However, it is an ineffectual and expensive experiment.

STATE-WIDE DRIVE

The Department of Game during the last three years has carried on a state-wide drive against pollution in all of its destructive forms. In many localities pollution actually destroys great numbers of fish and leaves thousands more in a weakened condition. Much good is expected to come from the Department's study of pollution. Steps will be taken to correct polluted streams, lakes and rivers and make such improvements as necessary.

Three Types of Water Pollution

Waters of the state are polluted by three types of pollution—individual, industrial and municipality.

INDIVIDUAL POLLUTION

Individual pollution is caused mostly by careless persons throwing debris into public waters. Very little actual harm is caused fish by this type of pollution, but, as a scenic and aesthetic liability, it mars the natural beauty of the sport fisherman's paradise.

INDUSTRIAL POLLUTION

Industrial pollution is that type of pollution coming from industrial plants which consist of washings from coal wastes, mine water, washings from canneries, sawmills and pulp mills. This type of pollution has three main effects on fish life: (1) That type of pollution of solid matter, such as washings of coal and sawdust, which fills up the channels of streams, has an abrasive action upon the rocks and boulders of streams, which are covered with microscopic plants upon which fish depend largely for their food. (2) The actions of fish are directly affected from gills which are covered with a protective mucus slime through which oxygen to the blood system is absorbed. Action of these abrasive particles tends to lay bare the gills by rubbing off the protective slime, thus giving fungus or water mold, which

Coal pollution in the Cedar River. (1) Shows a small coal mine near Landsberg, Wash., with coal waste in foreground. (2) Coal waste which emptied into the Cedar River. (3) Cedar River where coal wastes were deposited. This is only one of several samples of pollution which is threatening the existence of fish in many Washington streams and rivers. The Department is working to curb these conditions.

is ever present in water, a chance to gain a foothold. This covers the gill and hampers the passing of oxygen to the blood stream which causes suffocation of fish. (3) It silts over the spawning bed and suffocates the young embryo. Experiments carried on to determine the detrimental effect of coal washings upon fish life were made at Cedar River. Fish were put in wire baskets. One basket was placed in a polluted area and a second in an unpolluted area. Those fish in the polluted area in 1 hour and 15 minutes were in a very weakened condition. Their gill coverings were working very rapidly showing the fact that their absorption of oxygen was hindered, and in 3 hours the fish were dead. An autopsy performed upon the fish showed the gills were a mass of creosote and coal dust, their stomachs containing jagged particles of slate and coal. The cause of death was suffocation.

PROBLEMS SOLVED

Steps have been taken by the Department of Game to clear up these various types of pollution. At the present time two large mills, which have been emptying sawdust into public waters for many years, have built conveyors and are disposing of their sawdust by incineration. Two coal mines are settling out by filtration the washings of coal from their mines, thereby passing nothing but clear water into the fishable streams.

MUNICIPALITY POLLUTION

The emptying of raw sewage into our fishing waters is of the utmost importance to the sports fishermen of the state. This type pollution is in direct ratio to the population living on the banks of the waters, therefore the amount of raw sewage increases yearly as the population increases. The reason in the past that our fish population has not been unduly troubled by this type of pollution is because of the tremendous dilution. Depletion of oxygen is the effect of pollution, when it becomes concentrated in waters which are slow moving. An example of this is the Spokane River by the city of Spokane, which has caused the depopulation of this river of rainbow and cutthroat trout for which it was once famed. At the present time very few fish are caught in the Spokane River's polluted area.

CITIES CAN HELP

To remedy this evil, cities must take care of their raw sewage.

Objectives of New Fish Food Experiments

Two paramount objectives in the Department of Game's fish feeding plan are: (a) food values and (b) cost economy.

TROUT REARING COSTS HIGHER

With the introduction of artificial propagation of fish, fish culturists have constantly fought to raise fish on a more economical plan. For purpose of distinction consider the difference between salmon rearing and trout rearing. Salmon spending the greater portion of their life in marine habitat differ from most trout. Salmon proceed to salt water earlier in age than our sea-going forms of the trout family. For this reason food costs are lower than in the culture of trout.

RETURN OF CATCHABLE FISH

It has been found when barren waters are stocked for the first time that fish show a rapid growth due largely to the excess of food present and absence of predator fish. The mortality of fingerling planted in lakes where adult fish are present show a larger return in catchable fish than fish released at fry size. Increase in size of fish planted has a direct bearing on the ratio of fish that escape. For example, fish of six inches in length have very little loss.

Space and Feeding Problems

In carrying on the studies of fish foods the department biologist was confronted with two problems in rearing fish to fingerling size: (1) **Space**—This problem was solved by construction of large rearing ponds and oblong fish raceways. (2) **Feeding**—Fish feeding of yesteryear reflects a picture of obsolescence. In the days when spleen, liver and lungs were regarded as waste from the stockyards, the fish culturist had only to back his team up and—for the asking—load his cart with a cheap fish food that managed to keep fish alive and show a certain amount of growth. Following discovery by two eminent doctors of the value of liver in the human diet to bolster worn out blood cells, the demand for liver soon exceeded the supply and the price of liver soared.

MEALS ADDED TO FISH DIET

Experimentation by the U. S. Bureau of Fisheries revealed the value of using meals to supplement the diet of fish. Meals were prepared by a slow drying process. Most of the dietary work was on young salmonoid fish.

NEW POND FACILITIES

The Department of Game has built during this biennium a number of 40-foot circular rearing ponds and has more ponds of this type under construction. With these modern facilities it is believed the Department will be able to raise fish up to catchable size before liberation. Present diets used consist of straight liver and spleen or with a percentage of canned salmon.

A number of tests and experiments have been conducted by the Department in an effort to substantiate and improve, if possible, the studies carried on by the U. S. Bureau of Fisheries.

EQUIPMENT AND METHODS

Fish used in Department experiments were small fry of the species salmo irideus (rainbow) obtained from the South Tacoma Hatchery. Eyed eggs had in turn been obtained from the Department eyeing station at Walupt Lake, Lewis county. Fish were confined in equal numbers of four separate troughs, each supplied with its own head of water. Troughs used were small experimental troughs 5'3" x 1'2¼" x 6" in size. The number of fish in each trough numbered 800. Water temperatures varied from 37° to 45° F., the average being 42° F. Diets used were picked wholly at random at the start of the experiment—the main purpose being to obtain a reasonable comparison of cost and growth of fish. The following statistical items were recorded: mortality, quantity of food fed, weight and

growth. To tabulate lengths fifty fish samples were indiscriminately selected from each lot and measured. Three samples of one hundred fish were weighed and averaged from each lot to permit computation of weight curves.

Results of Fish Food Tests

The object of the tests was to compare the growth and cost rates with liver as the control. Combinations of liver and other ingredients were fed. Number one trough contained fifty per cent liver and fifty per cent dry milk. The dry milk used in this diet was the insoluble type, not soluble in water. Trough three was the control trough or one hundred per cent liver. Trough four was fed equal parts of canned salmon and liver. The salmon was obtained from the State Food Fisheries cannery at Auburn. To increase the quality of this canned salmon the canners had added to each seven-pound can one-half pound of low grade flour. Seventy per cent air-dried carp was fed in trough number two. Carp meal used was derived from the carcasses of spawning carp in Lake Washington.

PREPARATION OF MEAL

Carp meal was prepared by the method developed by Prof. Lauren Donaldson of the University of Washington fisheries school teaching staff. Quoting from the Donaldson process, "in preparation of the meal the fish is scalded by quickly dipping in hot water, then cut in pieces and once again dipped into the hot water until the flesh coagulates. The cooked flesh was next ground through a food grinder and the ground fish pulp dehydrated to dryness in a current of warm air 120° F. The time of drying was about eight to ten hours. The dry lumps of meal were then pulverized and sized through a screen." Diets of straight liver and diets of canned salmon and liver showed a tremendous leaching in the water when fed.

Discussion of Graph Weight Scale

The accompanying graph indicates the average increase in weight. The lines of growth are very close together and the decided breaks in the growth of curves are caused by extreme drops in temperatures. The most decided of these checks in the growth curves was recorded from trough two. The mixture of carp fed in conjunction with liver had been prepared several months before and the oxidation of the oil content had not been taken into consideration. The toxic effect on the fish is plainly visible in the graph by the check in growth and the listed mortality.

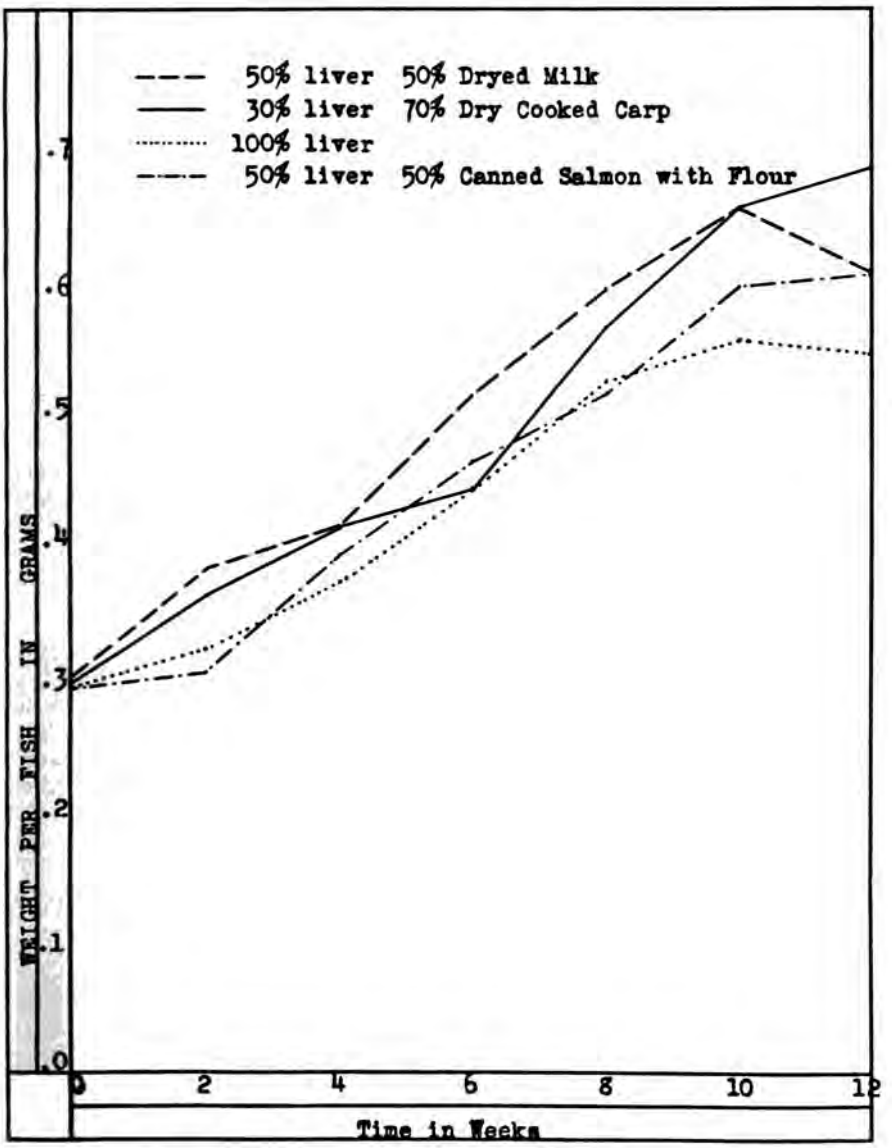
GROWTH CURVES SHOW GAIN

Fresh carp were purchased and a new meal made, the growth of the fish immediately increasing until the growth curve had superseded the growth curves of the other lots. The decided break in the last four weeks of the feeding experiments was caused by a continued cold spell with the water varying between 37° and 40° F. During this period the greatest percentage of food was consumed as a natural protection against the cold and not for growth. When the other lots lost weight, the carp meal and liver lot continued a small growth. When the fish in trough two began to break in weight and increase in mortality, the concentration of carp meal was

changed. Therefore, the total cost has been materially increased due to the extra amount of food fed.

The chart summarizes the experiment findings and establishes the cost per pound of fish.

COMPARATIVE WEIGHTS OF RAINBOW TROUT FED FOUR DIFFERENT DIETS FOR TWELVE WEEKS



State Game Fund

THE accompanying tabulated recapitulation of biennial receipts and disbursements indicates that the State Game Fund is in a considerably stronger position financially than in any previous year under state control and the last years of the pre-state control era. The initial year of state administration of game clearly demonstrated the greater economy, increased efficiency and advantages of the present system of control—an advantage which has been plainly established by other states.

Analysis of Game Fund

Efficient and economical administration is shown in the operation of all divisions of the Department of Game—**general office, licenses, protection, game farms** and **hatcheries.** Careful thought is given to minimizing maintenance and operating costs, giving sportsmen a good return in upland birds and game fish.

An analysis of the State Game Fund reflects stability and a firm condition. During the last five years of pre-state control the average annual income was $459,749.43. A six-year average of the years prior to state control show that the balance on hand was $139,970.22 and disbursements for this average period were $362,875.36.

License sales are steadily increasing and the State Game Fund, despite a reduction in license fees, has shown a marked upturn in revenue. Total receipts from all sources for the fiscal period April 1, 1935-March 31, 1936, reveal that $449,484.88—which includes $23,626.50 income from sale of big game seals which is used for payment of predatory bounties—was deposited to the credit of the State Game Fund. This figure compares favorably with the bumper years of the pre-state control era. Including the bumper prosperity years of 1928 and 1929, the five-year average receipts from all sources totalled $459,749.43. Receipts of the Department of Game therefore approach the peak years of the pre-state control era.

ERA OF PROGRESS

Disbursements for the current biennium year were $413,475.65, which compares with the six-year average before state control of game of $362,875.36. As pointed out in this report, the Department has entered upon one of the greatest eras of development and improvement schedules in the history of Washington wild life control. Included in the $413,475.65 for the last current fiscal year, 1935, and $353,019.67 for the 1934 fiscal term were the building of three new open pen game farms, four modern hatcheries, construction of 68 standard concrete circular rearing ponds, 274 fish troughs and general modernizing of property and equipment.

A gain in the balance on hand was registered for the close of the fiscal year, March 31, 1936, with $218,364.07 left in the Game fund. For the six-year period prior to state control, the average annual balance on hand was $139,970.22—a gain of $78,393.85. At the end of the last year of pre-state control there was in the Game fund $73,833.54. At the end of the first fiscal year of state control the balance on hand was $127,970.36.

It should be noted that $23,626.50 was received from the sale of 47,253 big game seals, which money is used to pay predatory bounty hunters ex-

clusively and is not used to defray other expenses. A sum of $20,000.00 was assessed the Game fund by the state legislature without the approval of the State Game Commission, for the use of the U. S. Biological Survey in the interests of predatory control.

Study of license sales indicate that state resident hunting and fishing licenses hold a slight lead over county resident hunting and fishing license sales.

RECAPITULATION OF BIENNIAL STATISTICS

April 1, 1934, to March 31, 1935—April 1, 1935, to March 31, 1936

	April 1, 1933, to March 31, 1934	April 1, 1934, to March 31, 1935	April 1, 1935, to March 31, 1936
Total licenses sold—State	71,856	83,377	87,969
Total licenses sold—County	57,766	74,574	75,773
Total licenses sold	129,622	157,951	163,742*
Total number big game seals	.....	.....	47,253
Total receipts—All sources	$350,827 15	$416,835 49	$449,484 88
Balance on hand March 31 (at close of fiscal year)	127,970 36	179,788 76	218,364 07
Total disbursements	351,304 35	353,019 67	413,475 65

* Does not include 643 duplicate licenses.

GAME COMMISSION

April 1, 1934, to March 31, 1935—April 1, 1935, to March 31, 1936

	Fiscal Year April 1, 1934, to March 31, 1935		Fiscal Year April 1, 1935, to March 31, 1936	
Per diem	$2,365 00		$2,380 00	
Stenographers	782 00		744 55	
Private autos—mileage	1,373 10		833 07	
Fares—Railroad, boat and stage	319 35		386 65	
Meals	448 95		322 10	
Rooms and berths	447 29		302 50	
Miscellaneous	415 96		350 07	
Totals	.....	$6,751 65	.....	$5,350 74

CAPITAL OUTLAY

Aberdeen hatchery	.....		$2,647 41	
Chelan hatchery	$6,311 76		1,508 99	
Spokane hatchery	3,593 22		13,732 66	
South Tacoma hatchery	1,451 09		6,011 34	
Bellingham hatchery	.....		9,512 38	
Shakes purchased on contract but not yet used as of March 31, 1935	184 62		.....	
Totals	.....	$11,540 69	.....	$33,408 78
SPOKANE HATCHERY— Paid by Washington Water Power Company for salaries and materials	.....	$3,585 85		
CHELAN HATCHERY— Paid by Chelan Copper Mining Company for salaries and materials	.....		.....	$4,999 77

RECAPITULATION OF DISBURSEMENTS
April 1, 1934, to March 31, 1935—April 1, 1935, to March 31, 1936

	Fiscal Year April 1, 1934, to March 31, 1935		Fiscal Year April 1, 1935, to March 31, 1936			
	Total		Salaries of Game Commissioners	Salaries and Wages	Operations	Total
State Game Director	$5,566 61		.....	$3,554 74	$1,278 12	$4,832 86
General office	23,253 15		.....	14,014 33	9,446 49	23,460 82
License Department	.....		.....	3,055 79	(3,826 76)	(6,882 55)
Deputy Game Clerk bonds	840 00		.....	.....	(1,649 75)	(1,649 75)
Biennial report	.....		.....	96 77	22 80	119 57
Game Commission	6,751 65		$2,380 00	744 55	2,226 19	5,350 74
Legal advertising	3,414 19		.....	.....	2,469 79	2,469 79
Educational and publicity	478 45		.....	1,371 22	1,468 88	2,840 10
Publishing game codes and hunting and fishing pamphlets	1,359 82		.....	.....	.....	.....
Game survey	.....		.....	1,447 18	847 38	2,294 56
Lake and stream survey	1,426 40		.....	1,584 70	1,058 37	2,643 07
Special seining and salvaging	2,821 98		.....	.....	.....	.....
Signs and tags	177 00		.....	.....	878 67	878 67
Blue prints	328 98		.....	.....	.....	.....
Protection division	151,119 31		.....	98,028 62	61,893 23	159,921 85
Special fur-bearing trapping	4,575 19		.....	3,880 74	123 48	4,004 22
Special predatory animal hunters	1,886 91		.....	1,031 74	648 15	1,679 89
Feed in the open	848 56		.....	.....	1,161 66	1,161 66
State game farms	54,251 73		.....	23,369 75	31,156 61	54,526 36
New equipment	1,782 01		.....	.....	161 00	161 00
Rent of land	982 60		.....	.....	825 00	825 00
Planting birds by farm	.....		.....	355 55	323 74	679 29
New construction	8,029 22		.....	834 97	939 98	1,774 95
Purchase birds	911 50		.....	.....	1,953 15	1,953 15
Trapping birds	.....		.....	807 77	320 11	1,127 88
State trout hatcheries	59,882 80		.....	33,557 46	28,051 09	61,608 55
Egg taking stations and rearing ponds	6,272 12		.....	6,180 35	1,474 62	7,654 97
Propagation truck	.....		.....	1,368 37	2,396 86	3,765 23
Grand totals		$337,831 18	$2,380 00	$195,284 60	$156,601 88	$354,266 48
Capital outlays	$11,540 69					$33,408 78
Predatory animal hunters in cooperation with United States Bureau Biological Survey	$3,647 80		Department of Agriculture from the Game Fund			$10,448 39
Reliefs by legislative act	.....					$196 00
Bounties	.....					$15,156 00
Spokane Hatchery— Paid by Washington Water Power Company for salaries and materials	$3,586 85		Chelan Hatchery— Paid by Chelan Copper Mining Co. for salaries and materials			$4,999 77

GENERAL ADMINISTRATION AND OFFICE EXPENDITURES

April 1, 1934, to March 31, 1935—April 1, 1935, to March 31, 1936

	Fiscal Year April 1, 1934, to March 31, 1935	Fiscal Year April 1, 1935, to March 31, 1936		
	General Office	General Office	License Dept.	Biennial Report
State Game Director—				
Salary	$4,315 78	$3,554 74	.....	.....
Car expense	$460 44	$594 61	.....	.....
Fares—Railroad, boat and stage	302 34	326 46	.....	.....
Meals, rooms and berths	488 95	347 95	.....	.....
Miscellaneous	.....	9 10	.....	.....
Total	$1,250 83	$1,278 12	.....	.....
Grand total, State Game Director	$5,566 61	$4,832 86	.....	.....
Office—				
Salaries and wages—Office	$11,200 96	$12,602 57	$3,055 79	.....
Salaries and wages State Examiners	1,342 87	1,411 76	.....	.....
Salaries and wages Biennial Report	.....	.....	.....	$96 77
Total—Office salaries and wages	$12,543 83	$14,014 33	$3,055 79	$96 77
Private mileage	.....	.....	$380 85	$6 45
New state car for director	$390 80	.....	.....	.....
Fares—Railroad, boat and stage	15 05	55	3 85	10 80
Meals and rooms	6 00	2 25	409 20	5 55
General office supplies	653 26	707 96*	53 34	.....
Telephone and telegraph	2,004 90	1,817 32*	5 35	.....
Postage and envelopes	2,376 15	3,022 14*	56 50	.....
Freight and express	48 65	48 78	188 77	.....
Printing	1,089 74	488 44	2,170 22	.....
Rent	1,955 00	2,350 00	.....	.....
Surety bonds—Office employees	88 75	87 25	17 50	.....
Deputy Game Clerk bonds	.....	.....	1,649 75	.....
Purchase books, subscriptions, dues, etc.	102 55	101 00	.....	.....
Towel service	49 95	46 80	.....	.....
Taxidermist	35 80	49 25	.....	.....
Repairs—Office furniture and equipment	200 06	73 88	40 69	.....
New equipment	1,324 84	515 64	379 50	.....
State audit books—Misc. expense	319 02	21 00	.....	.....
Press clippings	78 80	114 20	.....	.....
Deposit box rental	.....	.....	66 54	.....
Misc. fees, books, prot. license records	.....	.....	45 45	.....
Total office operations	$10,709 32	$9,446 49	$5,476 51	$22 80
Grand total—Office	$23,253 15	$23,460 82	$8,532 30	$119 57
Grand total	$28,819 76	$28,293 68	$8,532 30	$119 57

* General supplies, telephone, postage and envelopes used from regular office supply by license department.

SUMMARY OF RECEIPTS, CALENDAR YEARS 1934-1935

	Number Licenses Issued		Total Amount Collected	
	1934	1935	1934	1935
COLLECTIONS BY DEPARTMENT OF GAME—LICENSE DEPARTMENT—				
State resident hunting and fishing licenses @ $3 00	81,311	85,569	$244,023 00	$256,707 00
State non-resident hunting and fishing licenses @ 25 00	7	5	133 00	103 00
State alien hunting and fishing licenses @ 25 00	19	18	475 00	450 00
State non-resident hunting licenses (Game birds only) @ 15 00	41	44	615 00	660 00
State resident or non-resident fishing licenses @ 5 00	1,125	1,312	5,625 00	6,560 00
State resident special elk licenses @ 5 00	724	878	3,620 00	4,390 00
State non-resident special elk licenses @ 25 00	.....	1	.....	25 00
State taxidermists licenses @ 5 00	31	34	155 00	170 00
State fur dealers licenses @ 10 00	89	108	890 00	1,080 00
County resident hunting and fishing licenses @ 1 50	71,208	72,680	106,812 00	109,020 00
County non-resident fishing licenses @ 3 00	996	1,157	2,988 00	3,471 00
County alien fishing licenses @ 5 00	130	119	650 00	595 00
County trappers licenses @ 5 00	2,236	1,815	11,180 00	9,075 00
County professional guides licenses @ 10 00	4	2	40 00	20 00
Duplicate hunting and fishing licenses @ 50	.....	643	.....	321 75
	157,951	164,385	$377,206 00*	$392,647 75*
Private migatory game preserve @ 10 00	213	.....	$2,130 00	.....
Private game farm licenses (new) @ 20 00	30	11	600 00	$220 00
Renewal game farm licenses @ 10 00	110	81	1,190 00	810 00
	158,313	164,477	$381,126 00	$393,677 75
Total receipts from sale of big game seal licenses @ 50	.....	47,253	.....	23,626 53
Total receipts from licenses	158,313	211,730	$381,126 00	$417,304 28*
Fines collected for violations of state game laws	.....	.....	*	*
Receipts from other sources and transfers	.....	.....	*	*
MISCELLANEOUS COLLECTIONS IN DEPARTMENT OF GAME OFFICE—				
Sale of poultry	.....	.....	$1,481 12	$2,045 34
Sale of property	.....	.....	25 00	.....
Sale of birds	.....	.....	20 00	.....
Aluminum bands	.....	.....	17 65	20 38
Game fish tags	.....	.....	73 15	60 43
Tagging	.....	.....	3,842 05	584 00
Sale of pelts and skins	.....	.....	2,864 84	19,754 45
Permits for possession of live game	.....	.....	.....	152 00
Miscellaneous	.....	.....	1,035 22	98 20
	158,313	164,477	$390,485 03*	$440,017 08*

* NOTE—The total number of hunting and fishing, etc., licenses are shown on this sheet, although some of the sales were reported after January 1, 1935, and 1936, respectively, which accounts for the difference between these totals and those shown by the state treasurer. As collections of fines are not reported to the Department of Game office, and this segregated information is not available from the state treasurer's office, this item is left blank. It is included in the state treasurer's reports under "County Collections."

SUMMARY OF RECEIPTS—Continued

	Calendar Year 1934	Calendar Year 1935
STATEMENT OF AMOUNT CREDITED TO STATE GAME FUND		
(From Report of State Treasurer)		
County collections (includes fines)	$16,744 09*	$14,978 11*
Department of Game—(hunting and fishing licenses)	.....	398,784 53
County Auditor collections	377,914 05	.....
Deposit interest	1,931 13	2,033 51
Miscellaneous	30 00	750 00
Transfers	145 00	346 78
Department of Game collections	11,654 68	23,452 16
Sale of property	1,506 12	2,045 34
	$409,925 07*	$442,390 43*
Balance on hand December 31, 1933	165,067 05	.....
Balance on hand December 31, 1934	.....	200,227 81
	$574,992 12	$642,618 24
Warrants paid	374,729 31	384,491 89
Transfers	35 00	40 00
Balance on hand December 31, 1934	$200,227 81	.....
Balance on hand December 31, 1935	.....	$258,086 35

	Fiscal Year 1934	Fiscal Year 1935
STATEMENT OF AMOUNT CREDITED TO STATE GAME FUND		
(From Report of State Treasurer)		
County collections (includes fines)	$17,721 19*	$13,578 46*
Department of Game—(hunting and fishing licenses)	.....	415,120 28
County Auditor collections	375,093 25	.....
Deposit interest	2,033 51	1,750 04
Miscellaneous	.....	750 00
Transfers	195 00	391 78
Department of Game collections	19,686 42	15,896 53
Sale of property	1,506 12	2,087 79
	$416,835 49*	$449,484 88*
Balance on hand March 31, 1934	127,970 36	.....
Balance on hand March 31, 1935	.....	179,788 76
	$544,805 85	$629,273 64
Warrants paid	394,967 09	410,904 07
Transfers	50 00	5 50
Balance on hand March 31, 1935	$179,788 76	.....
Balance on hand March 31, 1936	.....	$218,364 07

*NOTE—The total number of hunting and fishing, etc., licenses are shown on this sheet, although some of the sales were reported after January 1, 1935, and 1936, respectively, which accounts for the difference between these totals and those shown by the state treasurer. As collections of fines are not reported to the Department of Game office, and this segregated information is not available from the state treasurer's office, this item is left blank. It is included in the state treasurer's reports under "County Collections."

EMPLOYEES

April 1, 1936

Office	Address	Occupation
McCauley, B. T.	7720 E. Green Lake Way, Seattle	Director
Brewer, Grace C.	3718 11th N. E., Seattle	Chief Clerk
Faulds, Marian H.	505 E. Denny Way, Seattle	Accountant
Martens, Bertha M.	2021 4th Avenue, Seattle	File Clerk
Huffman, Evelyn	1523 Summit Ave., Seattle	Stenographer
Hubbard, Iola	203 Belmont No., Seattle	Stenographer
Hammond, May P.	2832 No. Broadway, Seattle	Stenographer
Phillips, Gwenn	409 10th Ave. No., Seattle	Stenographer
Mitchell, Luella	2204 North 59th, Seattle	Bookkeeper
Franich, Cora	3241 15th W., Seattle	Bookkeeper
Brown, L. May	2700 4th Ave., Seattle	Bookkeeper
Glennon, J. A.	317 West 80th, Seattle	License Clerk
Petty, C. F.	510 Myrtle St., Bellingham	License Auditor
Gollaher, Opal A.	5037 Prince St., Seattle	License Steno.
Boddy, Herbert R. N.	3928 Bagley Ave., Seattle	Statistician
Mitchell, Geo. E.	410 No. 59th St., Seattle	Spvr. Plantings
Pautzke, Clarence F.	310 C Street, N. W., Auburn	Biologist
Walsh, Thos. F.	1514 Bellevue Ave., Seattle	Education & Pub.
Zaring, Edward L.	Route 4, Walla Walla	Biologist
Protection		
Loughary, Harold E.	257 E. 45th, Seattle	Chief Patrol
Shields, C. H.	E. 630 Sharp Ave., Spokane	Asst. Chief Patrol
Allen, Joshua J.	Oso	Protector
Banta, Floyd	128 W. 82nd, Seattle	Protector
Bennett, Chas. E.	515 First Ave., Kennewick	Protector
Bercot, Henry F.	Freeland	Protector
Beringer, R. E.	Box 21, Ritzville	Protector
Beusch, Otto J.	Box 51, Silver Creek	Protector
Biggs, John A.	304 W. 27th St., Vancouver	Protector
Binkie, Fred W.	332 E. First St., Port Angeles	Protector
Bolke, V. W.	Box 175, Cathlamet	Protector
Boone, M. E.	1603 No. Puget St., Olympia	Protector
Brender, John S.	510 Burke Ave., Leavenworth	Protector
Brown, A. W.	503 Cherry Ave., Yakima	Protector
Caudle, John C.	2007 G Street, Bellingham	Protector
Douglas, John W.	Friday Harbor	Protector
Drain, H. D.	324 No. 46th St., Seattle	Protector
Drolet, Jos. O.	910 E. Yakima, Yakima	Protector
Duggan, Hugh J.	Deer Park	Protector
Eide, Ole	Box 102, Stanwood	Protector
Erickson, A. R.	R. F. D. 4, Box 178, Olympia	Protector
Fennimore, Gene	Colfax	Protector
Fruit, M. M.	5513 Wetmore Ave., Everett	Protector
Goodman, Herman O.	Box 545, Blaine	Protector
Haley, C. H.	811 South 25th St., Tacoma	Protector
Hall, Wm. O.	103 N. 6th St., W., Kelso	Protector
Hammer, Joe	Silverdale	Protector
Handron, Sherman J.	702 Spruce St., Hoquiam	Protector
Heslin, Clarence F.	1350 Porter St., Enumclaw	Protector
Hoff, C. D.	Soap Lake	Protector
Hoggatt, Carl	Eatonville	Protector
Holcomb, Ransom C.	1134 Alice Ave., Walla Walla	Protector
Horn, Thomas C.	901 North M Street, Tacoma	Protector
Hughey, Paul	Box 72, Shelton	Protector
Hynes, J. M.	1102 Cedar Street, Raymond	Protector
Johnson, Ralph	Box 625, Newport	Protector
Jones, Evan	Winthrop	Protector

Protection	Address	Occupation
Kanz, John R.	Pomeroy	Protector
Keightley, T. E.	1133 17th Ave., Seattle	Protector
Klinger, Gar R.	Stevenson	Protector
Little, Wm. J.	Morton	Protector
Long, Chas. B.	1419 16th St., Anacortes	Protector
Louden, J. M.	1020 W. Main, Centralia	Protector
Lyttaker, Ralph	314 W. 45th, Seattle	Protector
Lundgren, A. H.	Quinault Lake	Protector
Moe, H. E.	R. F. D. 2, Washougal	Protector
Moon, H. C.	Republic	Protector
Neil, Lloyd J.	Colville	Protector
Norton, Clyde	602 E. Front St., Port Angeles	Protector
Palmer, N. E.	Prosser	Protector
Resner, O. L.	Waterville	Protector
Rice, Fred	R. F. D. 2, Port Angeles	Protector
Robins, Edw. J.	W. 2224 Maxwell Ave., Spokane	Protector
Ronhaar, Wm. F.	Cle Elum	Protector
Roundy, Fred L.	Entiat	Protector
Seabury, Laurence	11th & Section, Mt. Vernon	Protector
Shager, Grant H.	Weaver Apts., Sumner	Protector
Splane, Maurice E.	821 Ferry, Sedro Woolley	Protector
Stark, Harry E.	Okanogan	Protector
Stevens, John L.	Ellensburg	Protector
Van Arsdol, Fred W.	Clarkston	Protector
Vanhook, M. F.	Davenport	Protector
Webster, Wm. D.	1006 Taft St., Port Townsend	Protector
Winters, C. L.	Box 553, Goldendale	Protector
Woodward, A. N.	3673 W. Othello, Seattle	Protector
Wooten, W. T.	205 Spring St., Dayton	Protector
Game Farms		
Faudree, J. W.	414 Boren Ave., Seattle	Supt. Farms
Morrell, Wm.	Route 3, Auburn	Auburn Supt.
Harper, Ross	Colville	Colville Supt.
Ford, Thos. D.	Route 3, Ellensburg	Ellensburg Supt.
McDaniel, Geo. A.	Route 3, Ellensburg	Ellensburg Asst.
Hedstrom, Elerth	Route 1, Kennewick	Kennewick Supt.
Witham, Harold	Route 1, Kennewick	Kennewick Asst.
Johnson, Ernest	Route 1, Kennewick	Kennewick Asst.
Morrell, Chas.	R. F. D. 5, Box 618, So. Tacoma	South Tacoma Supt.
Ford, Bill G.	R. F. D. 5, Box 618, So. Tacoma	South Tacoma Asst.
Gady, Ralph	Mead	Spokane Supt.
Wadkins, Wm. W.	Mead	Spokane Asst.
Ditlevsen, B. E.	Mead	Spokane Asst.
Flett, Clifford R.	Mead	Spokane Asst.
Harman, Chas.	Walla Walla	Walla Walla Supt.
Hoelscher, George	Walla Walla	Walla Walla Asst.
Johnson, J. A.	Star Route, Wapato	Yakima Supt.
Miller, Leonard	Star Route, Wapato	Yakima Asst.
Wood, Frank E.	Star Route, Wapato	Yakima Asst.
Fink, Chas.	Route 3, Auburn	Truck Driver
Hatcheries		
Dunstan, William	Bothell	Supt. Hatcheries
Underwood, Wm.	Chelan	Chelan Supt.
DeHart, W. B.	Chelan	Chelan Asst.
Loveridge, G. W.	Bellingham	Bellingham Supt.
Johnston, Virgil	Winton	Chiwaukum Supt.
Krick, H. F.	Colville	Colville Supt.
Youmans, F. A.	Box 334, Cle Elum	Kittitas Supt.
Hodgeboom, K. D.	Port Angeles	Lake Crescent Supt.

Hatcheries	Address	Occupation
MacKenzie, Daniel	R. 2, Sedro-Woolley	Lk. Whatcom Supt.
Hilsinger, L. E.	R. 2, Sedro-Woolley	Lk. Whatcom Asst.
Welshons, C. A.	R. 1, Naches	Naches Supt.
Esveldt, Geo. H.	Usk	Pend Oreille Supt.
Smith, F. A.	Usk	Pend Oreille Asst.
Lytle, Geo.	Republic	San Poil Supt.
Jones, C. A.	Stevenson	Skamania Supt.
Hancock, W. R.	Route 7, Spokane	Spokane Supt.
Lattish, Wm.	Route 7, Spokane	Spokane Asst.
Ashby, W. H.	R. 5, Box 615, So. Tacoma	South Tacoma Supt.
Luzader, G. P.	R. 5, Box 615, So. Tacoma	South Tacoma Asst.
West, B. J.	R. 5, Box 615, So. Tacoma	South Tacoma Asst.
Dunstan, L. A.	R. 1, North Bend	Tokul Creek Supt.
Atleson, John	R. 1, North Bend	Tokul Creek Asst.
Partee, L. R.	R. 1, North Bend	Tokul Creek Asst.
Ivarson, Tom	R. 1, North Bend	Tokul Creek Asst.
Immenroth, A. F.	R. 5, Box 28A, Vancouver	Vancouver Supt.
Dunstan, Wilmer E.	Box 850, Walla Walla	Walla Walla Supt.
Daly, Geo.	4726 8th N. W., Seattle	Truck Driver
Construction		
Dederick, F. H.	Bothell	Foreman
Kurth, Wm.	Route 1, Montesano	Job Foreman
Mortensen, Wm.	R. 5, Box 615, So. Tacoma	Job Foreman