Oregon State
GAME COMMISSION BULLETIN

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Stream and Lake Surveys

By R. C. HOLLOWAY, Chief Biologist

The need for factual information about our streams and lakes as a basis for proper management of the fishery resources has long been recognized. With the tremendous increase in the number of fishermen coincident with a decrease in suitable fishing waters because of land use developments, the demand upon our remaining fishing waters is becoming increasingly severe. Natural reproduction, aided by artificial propagation in the hatcheries, in most cases has not been able to counterbalance the decimating factors; and as a result, the good old days that many have known and others have heard about are a thing of the past. In many cases environmental conditions have changed so completely to the detriment of fish life that little, if anything, can be done to improve the fishing. However, in the majority of our waters, given the necessary information, we can apply management procedures which will not only sustain fishing at its present level, but will improve it.

To obtain these necessary facts upon which correct management policies can be based is the objective of stream and lake surveys. What are these facts? What kind of information is necessary to determine why one stream or lake is a good producer and another is not? They can best be identified by dividing them into physical, chemical, and biological categories.

Physical factors include such things as the length, width, and average depth of a stream; temperature, amount of shelter, pools, and riffles; fluctuation in water level; type of stream or lake bottom; velocity; and abundance of spawning areas. Any or all of these influence the ability of a stream or lake to produce fish. Just as it is possible for the farmer or the stockman to figure the optimum production of his land, so it is possible to determine the fish

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Western Game and Fish Commissions To Meet

The annual meeting of the Western Association of State Game and Fish Commissioners will be held in Twin Falls, Idaho, on July 15, 16 and 17. The membership is composed of the fish and game departments of the eleven western states and the present president is J. O. Beck, director of the Idaho Fish and Game Department. The meeting will be devoted to discussion of problems of common interest to the western states from the standpoint of fish and game management. Several representatives of the Oregon Game Commission will be in attendance and will take an active part in the program. F. B. Wire, state game supervisor, is chairman of the migratory waterfowl committee, and there also will be the following papers presented from Oregon: "Fish Screens" by C. A. Lockwood; "Big Game Management in Oregon" by John McKean; and "History of Sage Grouse Habitat Development in Oregon" by A. V. Meyers.

MULE DEER IN THE VELVET

Program for Game Management

By P. W. SCHNEIDER, Coordinator

In January of 1946 the Oregon State Game Commission approved and put into action a new program for the management of the state's game resources which established a district plan of management. The initiation of this program was not a spontaneous and sudden reorganization. Numerous factors such as continuity of basic principles of management, efficiency of operation from both the administrative and biological aspect, establishment of a permanent and adequately trained staff and geographical features had been considered. Considerable experience dictated that adequate knowledge and proper concept of the manifold facets of sound management required that capable personnel be constantly in the field. Seasonal evaluations, while at times satisfactory, frequently do not give sufficient information from a biological standpoint to complete the picture for a given species of game. In addition, seasonal study, because of the time element, precludes the possibility of gathering information on all game species within a given area. Fundamentally, the plan of district or unit management was established as the most efficient and comprehensive means of obtaining facts.

The initial step involved establishment of eleven geographical units encompassing the state. Each of these units represent a game management area in which a management program is being initiated. The units are, in general, divided by main drainages. A complete study will be set up for big game, upland game, fur-bearers, waterfowl and land development. The principal objectives are:

1. Procurement of basic biological facts regarding each game species throughout the year.

2. Determination of maximum numbers of game species which can be economically produced on each land area.

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The Supervisor's Column

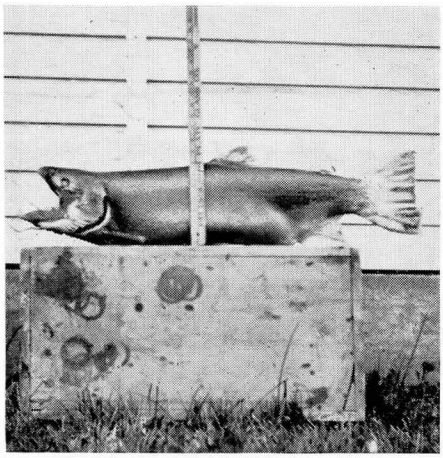
All duck and goose hunters are interested in speculating as to what the coming season and other federal regulations might be. There have been numerous articles in the press on the subject and now a news release just issued by the U. S. Fish and Wildlife Service paints a picture that is not very rosy. Our Oregun hunters had a very poor duck season last year, and while we do not believe it was all attributive to the decreased number of ducks, that must have been a factor also. The federal release recites that the peak of 125,350,000 birds was reached in 1944. The downward trend started in 1945 when the bird population went down to 105,500,000 while the sales of duck stamps to hunters jumped to 1,487,029. In 1946, the duck population dropped to 80,000,000 and the duck stamp sales increased to 1,686,368. With these figures staring us in the face, we can look forward to a shorter season and perhaps a cut in the bag limit this fall.

* * *

During the early days of June a rainbow trout weighing 16 pounds and measuring 32 inches in length was taken at the Wallowa lake weir built in connection with the Commission's biological study of the lake under Dr. Rayner's supervision. The fish is being mounted by the Enterprise Lions Club.

Another large trout reported recently was the loch leven weighing 13 pounds taken by hook and line from Crescent lake. Older records of large trout include several from Diamond lake such as the 22¼ pounder taken on a troutoreno in 1941 and another weighing 23½ pounds taken some years previously. Also we personally observed the landing of a rainbow weighing 13 pounds, 14 ounces, on light fly tackle in 1942 at Diamond.

While we are on the subject of big fish, if any of you have records of other big fish caught in Oregon, send them in so we can add them to our files. Give us the length and weight, species, when, where, how and by whom caught.



Rainbow trout from Wallowa Lake

At The Game Farms

All the eggs required for this year's production at the game farms have been set and the pheasant breeders were released the latter part of May and early June. From the four game farms 6800 birds were turned loose, most of which will still raise one more brood of birds in the wild.

As a result of a new feed formula of dry pellets for laying pheasants tried out at the western game farms this year, the layers produced more eggs per hen than ever before. Also the attendant's time for the care of the layers was cut from 8 to 5 hours per day.

About 750 eggs were distributed to 4-H club members who will raise the birds and receive 75 cents for each bird turned over to the game department. This is a continuation of a program started before the war but is not being carried out on an extensive scale this season as the members of the clubs are finding it difficult to obtain the necessary materials and feed.

The goal for this year's production has been set at 60,000 pheasants, evenly divided between western and eastern Oregon. The acute feed and grain situation makes it inadvisable to attempt to raise a greater number this season.

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Here And There In The Field

Fancy outfits are not required to land the big fish in Lake county at least. One angler fishing for catfish in Dog Lake with nothing more than a bamboo pole on the end of which was tied an ordinary line hooked and landed a 17-pound trout according to local story tellers.

* * *

Far from its usual habitat, an antelope was observed May 27 in the timbered area six miles from Lapine on the Lakeview highway by one of the game biologists.

* * *

Also somewhat out of its usual environment was the magpie seen recently in the vicinity of Roseburg, Douglas county.

* * *

Mistakes in game identification occur every once in a while. A short time ago the Game Commission office received a report to the effect that numbers of young pheasants were dying in a certain section of the Willamette Valley. Investigation by the district game biologist revealed that the birds in question were young turkeys.

In another instance, a fisherman who had been along the Nestucca river notified the game department that the remains of ten deer had been buried recently on a sand bar at the mouth of one of the tributary streams. The state police officer sent to look into the matter found 16 feet belonging to day old calves that had been bought by a local mink farmer for mink feed.

June Meeting of the Commission

The meeting of the Game Commission on June 8 in Portland was devoted to routine business.

Although it has not been the practice in the past to furnish fish for stocking private fish ponds or lakes, the Commission adopted a definite policy in this regard in view of the many applications being received for game fish. It was the opinion of the Commission that all the fish raised with the sportsmen's money should be released in waters open to the general public instead of being utilized for private purposes.

The matter of weed control at Blue Lake was brought up for further consideration. However, it was decided that until a satisfactory showing can be made that the general public has free access to the lake for fishing purposes at any time, the Commission has no authority to appropriate the sportsmen's funds for such a purpose. The property owners adjoining Blue Lake were advised, however, that the Commission would have no objection to the use by them of recognized methods of weed control and that the advice and assistance of the Commission's technical staff would be made available in such experiments.

It was moved that the fee for hunting at the Summer Lake waterfowl area be $1 as in past seasons.

The bid of Charles D. Withers in the amount of $5,688 for construction of 2,000 feet of pipeline at the Wallowa hatchery was accepted.

A report was given in regard to fish salvaging in the coast area during the past month. The fisheries department was instructed to do whatever preliminary investigations necessary to determine areas where game fish are likely to be stranded so that the rescue work could be done promptly when the need arose.

It was decided to hold the next meeting for taking care of routine business on Friday, July 12, as the following day, Saturday, July 13, would be taken up with the hearing on the 1946 hunting regulations.

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Stream And Lake Surveys

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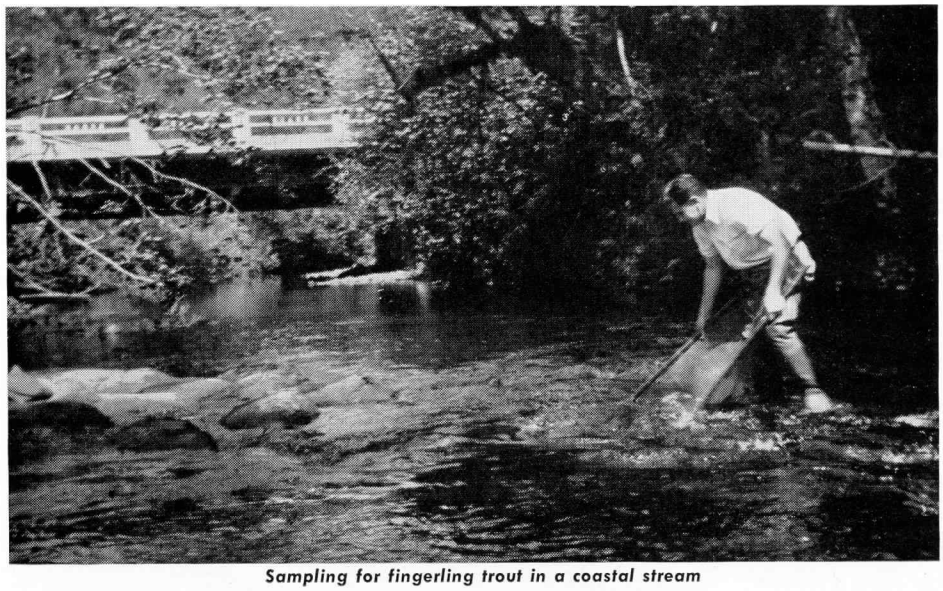
producing capacity of a body of water. Very often there is very little possibility of changing existing physical characteristics to the betterment of fish life. For example, some formerly good trout streams that have been reduced to mere trickles by forestation or forest fires are not readily adaptable to improvement. On the other hand stream improvement devices have been developed that create shelter, pools, and riffles and definitely add to the productivity of the stream. It is also feasible at times to improve spawning beds and thus insure better natural propagation.

Chemical factors that often must be determined include the amount of dissolved oxygen and carbon dioxide in the water, the degree of acidity or alkalinity, and the amount of dissolved minerals. Trout cannot live in water where the dissolved oxygen reaches a point below 3 to 4 parts per million. This has been amply demonstrated in the Willamette river where the decomposition or organic material during low water periods reduces the oxygen content in the polluted areas far below the critical point for trout and salmon. Where pollution occurs and can be remedied, improved chemical conditions will result. There is a close relationship between the mineral content of the water and the amount of natural fish food; the higher the mineral content, the more abundant the food organisms on which the trout feed. It is possible to regulate this mineral content by the addition of fertilizers and thus increase the food supply. Small farm ponds are quite adaptable to this procedure.

STUDY OF FISH IMPORTANT

Biological factors that influence the fish productivity of a lake or stream include, first of all, the fish populations themselves — are they reproducing, are they making a satisfactory growth, are they diseased or infested with parasites, are there too many of one size class, is one species preying on another or are they competing for the food supply? These and many other important questions must be answered before the true fish population picture can be obtained. Very often an intensive fish population study will disclose the underlying causes for problems that may exist. Aquatic vegetation affects the productivity of a lake or stream by furnishing shelter for the fish and harbor for fish food organisms. However, in many instances it may become more of a nuisance than an asset where it grows so rankly that fishing, swimming and even boating are all but prohibited. The amount of fish food organisms can be used as an index to how many pounds of fish a body of water will produce. Another biological factor influencing production is predation by other animals than fish. Many species of birds are primarily fish eaters and must be reckoned with where they are prevalent.

One extremely important influence, not mentioned as yet, is the fisherman. The effect that fishing has on the fishery resources must be measured. It is not enough to know what is produced; we must determine the harvest as well. There is no question but that many of our streams and lakes have suffered severely by a heavy fishing load and that fishing load is increasing all of the time. Where heavy fishing intensity is the limiting factor, regulations reducing bag limits and seasons, combined with adequate stocking, are a necessity.



Sampling for fingerling trout in a coastal stream

It is up to the survey to evaluate the degree of fishing intensity and to determine numbers, kinds, and sizes of fish being taken from the waters studied. This is not an easy thing to do and requires the whole hearted cooperation of every fisherman. On the spot creel censuses offer the most satisfactory means of obtaining this information. Voluntary catch record returns have rarely furnished sufficiently accurate or complete data to be of real value.

ANALYSIS OF DATA ESSENTIAL

After the pertinent physical, chemical, and biological facts have been assimilated, they must be properly analiyzed. Without proper analysis the majority of data obtained is valueless. A great number of factors may influence the final decisions as to management. The importance of each must be measured against the others, and all must be considered in formulating the correct management policy. The recommended policy will include, in general, fish stocking recommendations, regulatory measures and improvements, all of these to be based upon thorough study of the facts obtained.

It must be admitted that stream and lake surveys as such are not the "cure-all" for our sport fishery. A survey on a stream or lake does not necessarily mean that the fishing will be good from then on. Sometimes immediate steps may be undertaken that will give quick results, but most often the process is slow. The main purpose is to develop a management program based on facts rather than suppositions.

A considerable amount of stream and lake survey work has already been done in this state; but a lot of water remains to be surveyed, and resurveys must be made from time to time in areas where changes are known to or are likely to have occurred. Resurveys are concerned mainly with studying the fish populations, as the primary physical and chemical conditions do not change to any degree in the majority of our waters. The United States Forest Service has done a great deal of work in Oregon surveying lakes and streams within the national forest boundaries. Through their cooperation this information has been made available to the Game Commission and has been used as a basis for much of the fish stocking within the forest areas.

The Oregon State Game Commission began their program of stream and lake surveys in 1940, a program which had to be discontinued in 1942 because of the war. In 1940 initial surveys were made on approximately 40 lakes in the Deschutes National Forest. The following year the program was enlarged to embrace a survey of all coastal streams from Columbia county to the California border, a survey of the Rogue River and its tributaries, the upper Clackamas River and its tributaries, and a number of lakes and reservoirs in south central and eastern Oregon. The Commission has been using the information provided by these biological investigations as a basis for proper stocking and regulatory measures. Some of these original surveys were developed into special research projects to further study problems uncovered by the survey

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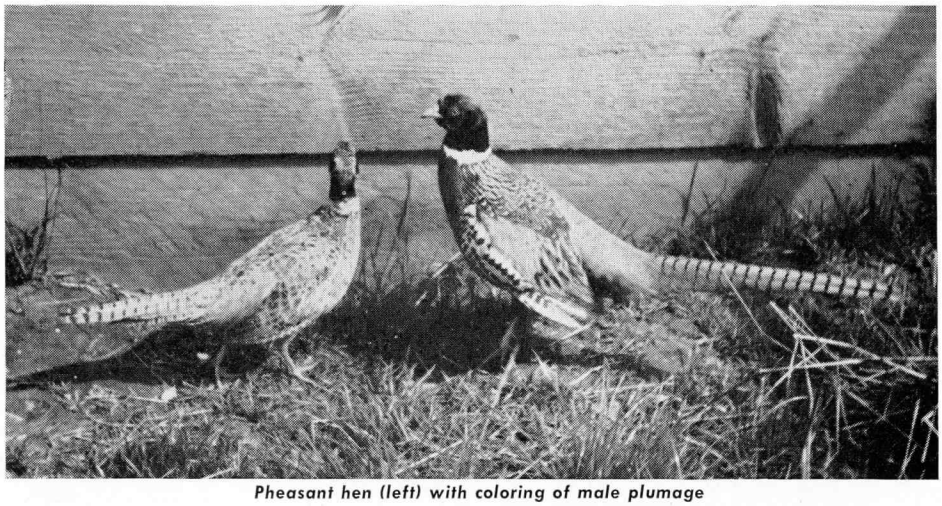
Pheasants Change Plumage

Two pheasant hens held at the Corvallis game farm for ten years have suddenly colored up like cocks and so far this season have laid no eggs. While not as brilliant as the ordinary male plumage, the coloring is complete even to the white ring on the neck, Ben Synder, superintendent of the western Oregon game farms reports.

Ten years ago, twelve pheasants, (10 hens and 2 cocks) were saved from the 1936 hatch at the Corvallis game farm to gather data on the livability of pheasants, their egg production from year to year and hatchability of eggs produced by pheasants of different age classes. Of this group there now are left two hens and one cock. The hens have produced eggs for nine years, and 80 percent average of the total eggs set have hatched.

The following chart shows the data on losses and egg production for the ten-year period:

Year	Loss	Cause	No. Hens Remaining	Total Eggs Laid	Eggs per Hen
1937	0		10	764	76.4
1938	0		10	774	77.4
1939	0		10	755	75.5
1940	1	Broken neck	9	621	69.0
1941	1	Broken neck	8	552	69.0
1942	2	1 cock escaped			
		1 hen gape	7	235	33.6
1943	1	Split beak (couldn't eat)	6	123	20.5
1944	2	1 cause unknown			
		1 broken neck	4	49	12.25
1945	1	Lung hemorrhage	3	12	4.0
1946	1	Cause unknown	2	No eggs to date	



Pheasant hen (left) with coloring of male plumage

Program For Game Management

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3. Determination of trends of game numbers and condition of habitat from year to year and from season to season.

The technical staff is essentially a fact-finding body whose duties are to acquire information for use in sound management. All effort will be devoted to field study with continuous, intensive evaluation of game conditions being maintained.

The program is under the direct supervision of the State Game Supervisor who will have available at all times current information regarding all game species throughout the state. Brief weekly reports will be dispatched to the Portland office followed by monthly detailed records of game status. In this manner the Supervisor will maintain cognizance of conditions and trends in each District. In June of each year an annual report will be prepared in each District setting forth an analysis of game conditions and indicated management for the consideration of the Supervisor and Commission previous to the setting of game regulations in July.

The chart at the end shows the disposition of personnel from an administrative standpoint.

Each of the districts listed differ from the others in some way so far as the game species are concerned, but the basic techniques and principles of management will remain the same. For example, the Malheur district will emphasize work on upland game birds and antelope while the Coastal district will devote more time to work on big game and furbearers. Each district must consider not only the game species present but also land use trends,

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Stream and Lake Surveys

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findings. The Commission has undertaken improvement work where trash fish have been found in competition with trout populations. In South Twin Lake the survey discovered that a formerly good trout fishing lake had been completely ruined by trash fish. Complete removal of these fish and subsequent planting of rainbow trout have resulted in once again establishing this lake as good trout fishing water. In other lakes such as Crescent in Klamath County and East in Deschutes County, the survey found an abundance of trash fish and measures have been taken to control them. Many closures and changes in seasons and creel limits have been recommended as a result of survey findings. Our fish stocking program has been altered considerably in the light of facts determined by the survey crews. Some lakes formerly planted to eastern brook were found to be better suited to rainbow and vice versa.

PROGRAM FOR 1946

The Game Commission is planning to operate two lake and stream survey crews this season. One of these crews will make resurveys on important problem lakes in the Cascades and will make initial surveys on some of the less accessible lakes. They will also be engaged in improvement work where such work is necessary.

The other crew will concentrate on the major coastal streams and lakes and will direct their efforts mainly towards fish population studies. They will also do as much fish salvaging as possible and will establish the locations of unscreened diversion ditches and impassable barriers to migration so that improvement work can be undertaken at those points. Many of our coastal lakes, such as Ten Mile and Siltcoos, are now inhabited by both spiny-rays and trout. This situation will be investigated in order that scientific management policies can be applied where these different species exist in the same waters.

The Commission has been forced to curtail its intended post war stream and lake survey program because of the critical shortage of materials and transportation facilities. It is hoped that conditions will permit the full program to be undertaken next year. A sincere effort is being made to solve the problems which confront us in the proper management of sport fishing in this state. Lake and stream surveys are one means of solving these problems and providing better fishing for all the anglers.

FUR CATCH REPORT

1945-46 TRAPPING SEASON

COUNTY AND NO. TRAPPERS' REPORTS		OTTER Av. Price $24.15		MINK Av. Price $21.24		MUSKRAT Av. Price $2.08		WILDCAT Av. Price $3.08		FOX Av. Price $1.55		SKUNK Av. Price $1.18		WEASEL Av. Price $.94		RACCOON Av. Price $1.65		MARTEN Av. Price $33.88		CIVET CAT Av. Price $.84		TOTAL AMOUNT
		No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	No.	Amount	
Baker	59		$	180	$ 3,823.20	2743	$ 5,705.44	39	$ 179.40		$	7	$ 8.26	10	$ 9.40	47	$ 77.55	3	$ 101.64		$	$ 10,251.77
Benton	57			162	3,440.88	397	825.76	8	36.80	78	120.90	114	134.52	7	6.58	287	473.55			16	13.44	5,055.51
Clackamas	64	31	748.65	243	5,161.32	586	1,218.88	17	78.20	11	17.05	162	191.16	13	12.22	215	354.75			21	17.64	7,849.15
Clatsop	127	38	917.70	751	15,951.24	2206	4,588.48	129	593.40			25	29.50	16	15.04	103	169.95	1	33.88	10	8.40	22,367.01
Columbia	88	41	990.15	284	6,032.16	1370	2,849.60	43	197.80			47	55.46	21	19.74	77	127.05			22	18.48	10,339.72
Coos	135	10	241.50	606	12,871.44	691	1,437.28	71	326.60			11	12.98	24	22.56	639	1,054.35	75	2,541.00	71	59.64	18,829.76
Crook	13			20	424.80	164	341.12	9	41.40							2	3.30					1,100.14
Curry	42	3	72.45	94	1,996.56	189	393.12	14	64.40	1	3.10	15	17.70	3	2.82	227	374.55	40	1,355.20	80	67.20	4,524.72
Deschutes	47	3	72.45	49	1,040.76	1113	2,315.04	53	243.80	3	4.65			8	7.52	4	6.60	222	7,521.36			12,203.70
Douglas	116	20	483.00	633	13,444.92	247	513.76	68	312.80	1	1.55	269	317.42	11	10.34	49	80.85	56	1,897.28	93	78.12	17,916.63
Gilliam	1			11	233.64	53	110.24	1	4.60							5	8.25					362.89
Grant	33			80	1,699.20	226	470.08	10	46.00							45	74.25	30	1,016.40			3,737.13
Harney	17			15	318.60	10132	21,074.56							1	.94	4	6.60					21,514.66
Hood River	20	2	48.30	73	1,550.52	187	388.96	10	46.00			15	17.70	2	1.88	40	66.00					2,159.10
Jackson	136			31	658.44	5230	10,878.40	48	220.80	3	4.65	39	46.02	9	8.46	86	141.90	38	1,287.44	56	47.04	13,540.13
Jefferson	0																					
Josephine	48			85	1,805.40	1414	2,941.12	16	73.60			37	43.66	6	5.64	102	168.30			15	12.60	5,209.91
Klamath	64	5	120.75	11	233.64	10564	21,973.12	22	101.20	1	1.55			9	8.46	2	3.30	182	6,166.16			28,649.22
Lake	15			3	63.72	2515	5,231.20	33	151.80							1	1.65					5,771.69
Lane	150	18	434.70	809	17,183.16	2331	4,848.48	81	372.60	28	43.40	44	51.92	40	37.60	309	509.85	14	474.32	73	61.32	24,477.06
Lincoln	116	4	96.60	708	15,037.92	395	821.60	92	423.20	2	3.10	11	12.98	56	52.64	322	531.30	4	135.52	79	66.36	17,247.26
Linn	70	6	144.90	271	5,756.04	1071	2,227.68	27	124.20	52	80.60	97	114.46	27	25.38	258	425.70	9	304.92	34	28.56	9,730.92
Malheur	83	3	72.45	7	148.68	6862	14,272.96	66	303.60	1	1.55	23	27.14	8	7.52	18	29.70	6	203.28			16,780.28
Marion	78	2	48.30	218	4,630.32	916	1,905.28	8	36.80	69	106.95	350	413.00	6	5.64	247	407.55			4	3.36	7,566.44
Morrow	9			1	21.24	436	906.88									13	21.45					956.73
Multnomah	51	6	144.90	55	1,168.20	1163	2,419.04	12	55.20	2	3.10	41	48.38	2	1.88	45	74.25	1	33.88	1	.84	3,971.43
Polk	39			57	1,210.68	85	176.80	14	64.40	65	100.75	88	103.84	15	14.10	162	267.30			44	36.96	1,977.91
Sherman	1																					
Tillamook	93	20	483.00	430	9,133.20	738	1,535.04	121	556.60			29	34.22	28	26.32	217	358.05	1	33.88	74	62.16	12,290.23
Umatilla	72			138	2,931.12	3538	7,359.04	18	82.80			43	50.74	9	8.46	22	36.30	5	169.40			10,737.26
Union	34			240	5,097.60	1350	2,808.00	4	18.40			1	1.18	6	5.64	22	36.30	107	3,625.16			11,664.12
Wallowa	38			50	1,062.00	1568	3,261.44	16	73.60			14	16.52	15	14.10	80	132.00	78	2,642.64			8,027.61
Wasco	21	1	24.15	113	2,400.12	182	378.56	12	55.20					1	.94	58	95.70					3,271.83
Washington	37	2	48.30	81	1,720.44	364	757.12	2	9.20	24	37.20	121	142.78	12	11.28	141	232.65			44	36.96	3,002.09
Wheeler	4					11	22.88									3	4.95					155.11
Yamhill	31	1	24.15	58	1,231.92	358	744.64	3	13.80	153	237.15	243	286.74	17	15.98	175	288.75	1	33.88	19	15.96	2,902.21
TOTAL	2009	216	$5,216.40	6567	$139,483.08	61395	$127,701.60	1067	$4,908.20	495	$767.25	1846	$2,178.28	382	$359.08	4027	$6,644.55	873	$29,577.24	756	$635.04	*$326,141.33

*This total also includes revenue received by trappers from the following pelts: 33 cougar, $1,980; 2045 coyotes, $6,198.60; 33 bear, $299.97; 40 badger, $40.00; 3 oppossum (Clatsop) $1.20; 31 nutria (Lincoln and Multnomah) $50.84.

Around Our Town And Elsewhere

By GWEN T. COFFIN

(From the Wallowa County Chieftain, Enterprise, May 16, 1946)

A great many requests have come in from sportsmen wanting to know where to go fishing. To accommodate these piscatorial artisans The Chieftain has conducted an elaborate survey of all the fishing streams of the county and has compiled a census showing the number of people who angle for trout and where they expect to operate. The results of this study are set forth in the following paragraphs.

Prairie Creek

All holes on Prairie creek have been booked up for Sunday. George Richards is fishing the hole below the flume crossing the creek above Raymond Johnson's place. Bob Chrisman and wife will work the hole below that where the creek makes a westerly bend. Nick Sandlin has spoken for the next hole. Two carloads of people from Walla Walla will camp just below the ripple where the creek runs into the bank at the next hole.

Raymond Johnson will work on a hole near home.

Bob Stivers will be at the junction of the north and east forks of the creek. Glen Zamzow will have the next hole and Jack Kreizenbeck will use the log which lies at the edge of the creek in the hole immediately below this.

A party of 15 people from Spokane will fish the next two holes and below them will be a group from La Grande. Doc Thompson will fish the Eggleson hole. He will be assisted by Drs. Merrill and Miller and five friends from College Place.

Bill Zurcher will fish the McCubbin hole; and just west of him Larry Bay and son will use the rock standing at the bend of the creek, fishing the hole there.

A carload of people from Yakima will fish the first Craig hole and a delegation from Roseburg will be at the next eddy. Garnet Best will set up below the next rapids, and Jim Best has arranged to spend the day at the Astwood hole. The West End kids will have 15 boys fishing through town to the junction of the Wallowa river.

The Mill Pond

Orville Adey will fish the east side of the pond. Mitch Heasty and Jon Skovlin will work from the north side and Walt Spear will try out some new equipment on the south side. Keller Stringham will be stationed on the west side.

Wallowa River

All holes booked up solid as far as the junction with the Minam river, except that there may be room for one boy or a small man on the tree across the river two miles above Wallowa.

Joseph Creek

No opening except one small hole three miles below the junction of Davis creek.

Other Streams

Information on other fishing waters will be furnished on request.

Oregon State Game Commission Bulletin
1634 S. W. ALDER STREET
P. O. BOX 4136
PORTLAND 8, OREGON

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Program for Game Management

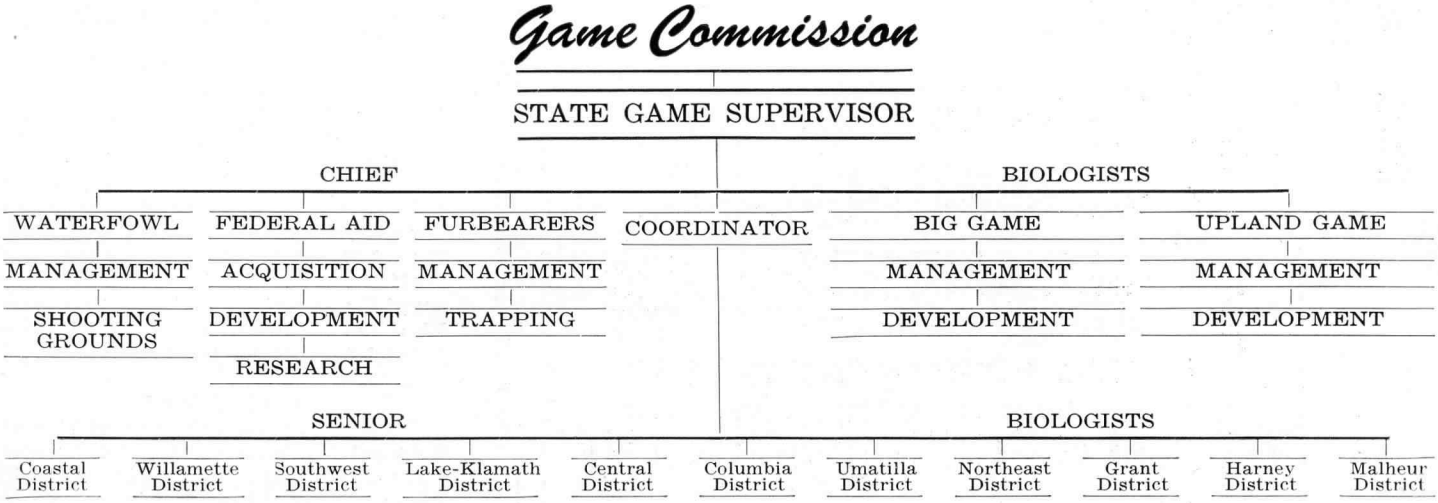
(Continued From Page 4)

climatic conditions and topography as these factors influence suitable game varieties for that area. All game species will be managed, basic research will be conducted over a long-time period and a systematic method of study and measurement established. Facts, as obtained in the field, will be the determining element of management. At the present time lack of transportation and equipment has prevented some districts from starting as rapidly as desired but it is hoped this situation will soon be improved.

Approximately two years will be necessary for each district to have established a basic program of management. During this time the biologist will have to establish permanent sample sites where habitat types can be measured. Intimate knowledge of topography, distribution and density of game species, land use practices and numerous other factors will have to be determined. The fact that biological phenomena occur usually only once in each year instead of several times precludes the possibility of speeding up this type of work. Measurements of forage trends, survival of each year's crop of birds or game, causes of losses and other factors pertinent to good husbandry will be systematically determined. An economic evaluation of furbearers will be made as well as elaborating management with the various furbearers species.

In addition to the eleven senior biologists assigned to the districts the plan provides for a chief biologist for each game resource. These men will be specialists whose duties will be to conduct research on problems in their respective fields, compile the information from the districts and develop various management techniques. J. W. McKean is chief biologist in charge of big game and upland game. A. V. Meyers is chief biologist in charge of furbearers, waterfowl and land development with two assistants, C. E. Kebbe and W. B. Morse working on furbearers and waterfowl respectively. One chief biologist is assigned to the task of coordinating all phases of this management program.

In view of the increased demand for Oregon's wildlife resources, it is essential that efficient utilization be made of all available habitat. At the present time many areas are carrying the maximum populations of game possible while other areas are producing little game. One of the objectives will be to attempt development or other means to increase the state-wide game crop. A method of determining annual kill must be devised in the immediate future. Over a period of years the Game Commission must know whether the game resources are on the increase or decline and regulate accordingly. Only by continuous study can this be achieved. Annual game regulations are set in July of each year and the district biologist will have data on nesting success of birds, fawn crop of deer and other information necessary for consideration when each year's regulations are set. The program is essentially one of "field keeping" for Oregon's wildlife resources.



HEADQUARTERS AND PERSONNEL ASSIGNED TO EACH DISTRICT WILL BE AS FOLLOWS:

DISTRICT	HEADQUARTERS	SENIOR BIOLOGIST IN CHARGE OF DISTRICT	JUNIOR BIOLOGIST
Coastal	Nehalem	Wesley Batterson	
Southwest	Grants Pass	Will Brown	
Willamette	Corvallis	Francis Schneider	G. Leyva
Columbia	The Dalles	Floyd Long	
Umatilla	Pendleton	Irving Hazeltine	
Central	Bend	Paul Bonn	
Lake-Klamath	Lakeview	W. C. Lightfoot	R. U. Mace
Harney	Burns	Ellis Mason	
Grant	John Day	Clifton Lemons	
Malheur	Ontario	Wayne Young	
Northeast	La Grande	Nils Nilsson	E. T. Laughlin