

# Oregon State GAME COMMISSION BULLETIN

Vol. I

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No. 9

## The Umpqua River Study

By HUGH ROSS NEWCOMB and LEONARD M. MATHISEN, Fishery Biologists

Of the many wonderful recreational opportunities offered residents and visitors in Oregon, the most popular is its fine fishing. In a determined effort to alter the pattern of a diminishing sport fishery which has followed industrial and agricultural development in other sections of the country, the State Game Commission has been taking steps to obtain the necessary before-hand information which will indicate the most advisable steps to protect this rich heritage. One of the most recently inaugurated biological investigations of the waters of Oregon is a study of the Umpqua River. Construction by the Game Commission of a salmon and steelhead counting station was started in September, 1945 at Winchester Dam on the North Umpqua near Roseburg, and in February, 1946 a joint program of study by the Game Commission and the Fish Commission was initiated on the lower Umpqua with headquarters at Reedsport.

The Umpqua River is one of three snow-fed Oregon rivers which flow directly into the sea and are famous for their spring chinook salmon runs. The Columbia and Rogue Rivers are the other two. The Umpqua has runs of spring and fall chinook salmon, silver salmon, cut-throat trout, and winter and summer steelhead trout. The fighting qualities of the latter draw fly fishing enthusiasts to the North Umpqua River, while the other-mentioned runs provide year around fishing for salmon or trout during the remaining seasons.

With headwaters in the high Cascades and watershed of some 4000 square miles, the Umpqua River flows through forest and fertile valley to enter the Pacific Ocean about 200 miles south of the Columbia River. The progressive onslaughts of civilization against natural conditions have worked to the detriment of the Umpqua salmon runs, and during the last ten years a disastrous decline has resulted not only to the spring chinook salmon, but also the fall chinook and silver runs.

### OBJECTIVE OF STUDY

The objective of the Umpqua River Study, in widest sense, is to obtain a basic understanding of the biological, physical, and economic aspects of the fishery resources of the Umpqua River drainage. More specifically, it is an attempt to evaluate the size, composition and distribution of the fish populations. It is an effort to learn precisely where, when, and in what number the various migratory species move upstream and downstream as well as to discover the extent and

availability of the spawning areas. Estimates of the sport and commercial catches and of the escapement to spawning areas are of extreme importance to proper fisheries management.

While some sportsmen fail to realize the value of the word "inventory" as applied to fisheries management, as business men or farmers on the other hand,

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## Big Game Hunting Seasons

### DEER SEASON

The buck deer season which extended from September 28 through October 25 provided recreation for thousands of hunters. Hunter success was high during the first few days of the season and during the last week of the season in many areas.

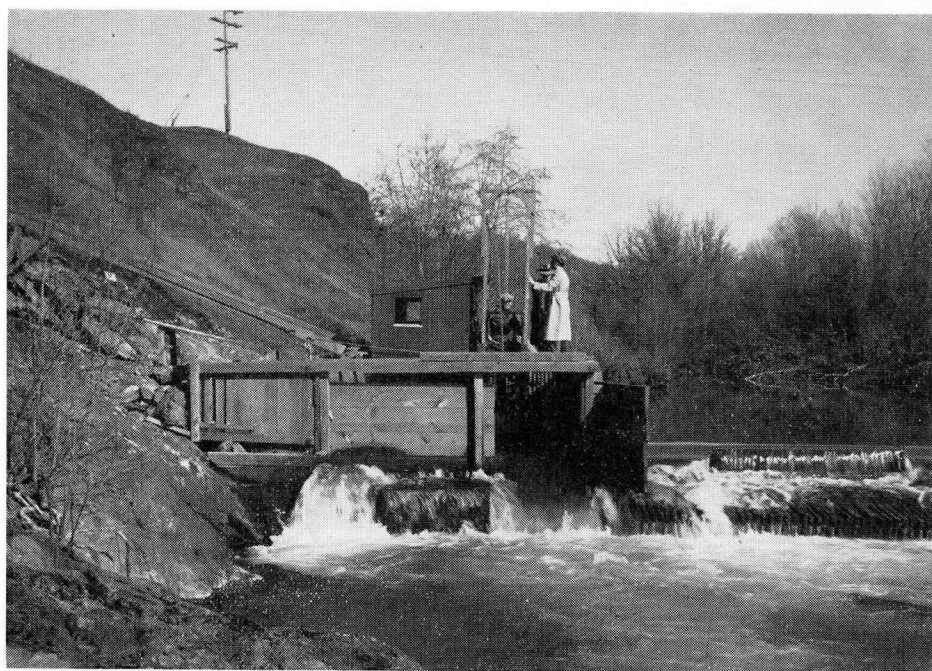
It is unfortunate that Oregon does not have an accurate means of measuring the annual deer kill. An effort has been made to determine the kill through contacting hunters in the field but estimates so derived are not believed to be accurate. On the basis of the information available, it is estimated that over 30,000 deer were legally taken during the 1946 hunting season.

### ELK SEASON

All elk hunters are required to report the results of their hunting trip on the check-out card which accompanies their license. This card must be returned whether the holder hunts or not.

The present incomplete card return provides little information; however, field

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Salmon and steelhead counting station on North Umpqua River.

## The Supervisor's Column

An autographed copy of a new book by Arthur H. Carhart entitled, "Hunting North American Deer", was received recently.

Mr. Carhart is well qualified to write such a book as he is not only an experienced hunter but formerly was connected with the Colorado Fish & Game Department and made studies of the habits of the different types of deer, their terrain and food habits.

A chapter on "Yesterday's Deer" is an interesting one. He points out that the early settlers depended on wildlife, especially deer, for their meat and also calls attention to the cycles or ups and downs of the deer population in a great many areas of our country. Quoting from the journal of the Lewis & Clark party on the Columbia river in September 1805, he relates that party found so little game that they slaughtered colts and ate horse flesh. On September 21 at a place they called Hungry creek they ate the first "Oregon Mulligan" consisting of pheasants, colt meat and a prairie wolf. On October 10 they bought a few dogs from the Indians but did not relish them after a diet of horseflesh. Scarcity of deer near the headwaters of the Arkansas river, was recorded also by Zeb Pike in 1807. That is a good deer country now. Other records show the same pattern, and the author of the book brings out the point that in early days there was not always a plentiful game supply.

In 1940 he states that the Fish & Wildlife Service census showed 4,373,000 deer in the United States, and, this being the case, the normal harvestable crop would be 1,000,000 animals. In 1942 the crop harvested showed 400,000 animals taken legally. "You can readily see that there is a general surplus of new stock going into the herds." In the statement, "The threat lies in not taking this surplus" he stresses the fact that proper game management is essential.

His chapters on methods and means of hunting are good but he has to deal more or less in generalities as hunting conditions vary with different localities.

He condemns the use of small bore rifles and says, "My experience is that deer are fairly hard to kill."

The chapter on deer diets is exceptionally good. He brings in the winter feed problem, and in closing this review I wish to quote verbatim.

"Before leaving the question of what deer eat, I must stress again, for it cannot have too much emphasis, that good-intentional feeding of deer herds with hay, or stock foods, or ground feeds to tide them over the winter is disastrous. Time after time in many places, states have gone into feeding programs for wintering deer. And time after time, on

this feed which they cannot assimilate without a high proportion of browse to offset the effects of domestic stock feeds, tens of thousands of deer have died around these feeding grounds.

"The carrying capacity of a deer range depends squarely on the natural foods, the limited group of browse plants which the deer must have to make a go of it.

"No matter how we may ache at seeing deer without feed, and feel that hay or some ground feed should be given these herds, we should steer away from this artificial feeding. It is killing deer by kindness."

Your time will be well spent in a careful reading of Mr. Carhart's book.

## Summer Lake Waterfowl Hunting

The 1946 waterfowl hunting at Summer Lake shows a heavy increase of both hunters and kill for the first 18 days of the open season.

A total of 3,883 hunting permits have been sold. Hunters have checked out 6,615 ducks and 2,833 geese through November 12. Thus far, 1946 is better than the 1945 season. A success ratio of 1.73 ducks and .74 geese per man day of hunting has been attained.

The heavier hunting pressure this year must be considered when making comparisons with previous years. An unexpectedly large number of hunters checked in the opening day, with 1347 the grand total. A higher success ratio probably would have been achieved had fewer hunters been on the area.

The following table gives comparative data for the past three seasons.

Year	Number of Hunters	Birds Per Man Day
1944 .....	2201	3.34
1945 .....	4102	2.22
1946 (first 18 days)...	3883	2.47

## Oregon State Game Commission Bulletin

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Secretary and Editor

## November Meeting of the Game Commission

The regular monthly meeting of the Game Commission was held in the Portland office on November 8 and 9.

Mr. Arthur Salyer, in charge of the federal refuges for the U. S. Fish & Wildlife Service, gave a brief resume of the objectives of the federal program and discussed the possibilities of waterfowl development work in Oregon. He stated that the chief problem in Oregon was to hold more birds in the state and that this could be done mainly by the development of more nesting and resting areas. He pointed out the possibility of development work at sites like Fern Ridge reservoir. The Commission moved that the Fish and Wildlife Service be requested to go ahead and make an investigation at Fern Ridge with the view of possible development of a waterfowl management area.

Purchase was authorized for the library of three copies of Ben Hur Lampman's book, "The Coming of the Pond Fishes."

The following individuals were added to the recommended list of applicants for membership in the game division of the State Police: Lloyd V. Johnson, Clatskanie; Delbert P. LeGore, La Grande; and Jack D. Lassley, La Grande.

The Supervisor reported that a request had been received to rescind the special deer season in the Devils Garden area from November 30 to December 4. An opinion from the Attorney General advised that since no emergency existed the Commission did not have the authority to cancel the season.

The Commission, in response to an inquiry from the Klamath Falls Baptist Church, decided it would not have any objection to the construction of a youth camp along Spencer Creek provided no dam was built and provided that the operations of the camp did not interfere with the game department's egg-taking activities on the creek.

With reference to inquiry from license dealers as to whether or not their advertising stamp could be placed on copies of the Commission's bulletin sent to them for distribution, it was decided that this would not be in accordance with the policy of the Commission, which does not permit any advertising.

To protect the weir on the inlet of Wallowa lake, an expenditure of \$400 was authorized for bulldozing the banks of the creek.

An estimated expense of \$150 was approved for out-of-state speakers invited to attend the fisheries conference to be held in December.

To see what effect the removal of brown trout from Paulina Lake would have on the rest of the fish population, the fisheries department was authorized to trap alive as many as possible of the

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## Malheur Pheasant Season

The Malheur county upland game season extended from October 19 through November 3, with a bag limit of 4 cock pheasants per day and a possession limit of 8. The season for Hungarian partridge and quail remained closed. An unprecedented number of transient hunters took advantage of the good hunting available. Hunter success was high during the first few days of the season but dropped rapidly as the season progressed. The average for the season per hunter was 6.09 pheasants.

### TAGGING RECORDS

The Game Commission operated eight tagging stations in the district to accommodate transient hunters desiring to transport pheasants from the county. A total of 17,376 Malheur county pheasants were tagged during the season; 51 per cent of which were tagged during the first three days.

These stations were operated at a cost of approximately \$2,000.00 and tag receipts equalled \$876.90.

### EFFECTS OF THE SEASON

The upland game population of Malheur county has been measured three times this fall — twice before the season and once immediately after the season.

The October census, which was taken just before hunting season, indicated a pheasant density of 45 pheasants per 100 acres, which is approximately the same as that found at a similar time in 1945.

The post season census, which was taken immediately after the hunting season, indicated a pheasant density of 14 birds per 100 acres, or a loss of 69 per cent of the pheasants. Density of Hungarian partridge, which were protected, remained constant.

The sex ratio of pheasants was 1 cock to 1.3 hens before the season and had dropped to 1 cock to 5 hens at the close of the season.

The accuracy of the post season census is questionable for the reason that many birds had taken refuge on adjacent sage brush hills and the birds present were not easily flushed. It is probable that a later census will indicate a higher pheasant density.

### PHEASANTS HARVESTED

The total of 17,376 pheasants tagged were nearly all bagged by transient hunters. It is believed that many outside hunters did not comply with the tagging regulations, and few local people had their birds tagged. It, therefore, does not appear probable that over one-third of the pheasants taken were tagged. This would indicate a total kill of over 50,000 birds.

### CRIPPLING LOSS

The wanton waste and illegal harvest of hen pheasants and other protected species is very difficult to measure; however, it is known that such occur. Remnants of six hen pheasants and three Hungarian partridge were found while taking the post season census, which included 85 miles of foot travel.



Trapping for release pheasants raised under open field system at state game farm.

Although the pheasant kill in Malheur county was exceptionally high during current season and recent census data indicates a sharp reduction in the pheasant population, it is believed that the birds remaining will provide adequate breeding stock for the 1947 season if weather conditions are favorable during the nesting and brooding season.

## Raw Fur Market Quotations

The present raw fur market situation does not offer an encouraging financial picture for the 1946-47 trapping season. Fur prices last year were exceptionally high and a drop was expected, but not the severe price cuts that have occurred and may continue.

It is too early in the season to give any definite quotations but certain price trends are evident. Otter, alone, seem to be holding up comparable to last season. Since Oregon is one of the leading otter producing states, this offers the only encouraging aspect of the market situation.

Mink and marten are off about 20%.

Muskrats are off about 30% but since the ceiling price on muskrats has been removed, most of the drop will probably be absorbed by the fur dealers and the prices paid to trappers may nearly equal last year's returns.

The long furs—coyote, bobcat, fox, raccoon and skunk—are going to be a problem to sell at any price. Fur storage facilities are jammed with these furs and it is expected that only those buyers who have or can locate storage space will be in the market and then only for the better quality goods as they are not anxious to waste space with cheap furs.

Fur garment manufacturers, wholesalers and retailers are reported to have the lowest supply of materials on hand they have had for years. It is supposed that they have reduced their inventory as a safety margin against an expected price reduction. They show little indication of replenishing their stock although the exchanges are offering volumes of good fur.

The annual take of fur does not vary much from year to year. There are no birth control programs among the fur-bearing animals. During the war years, fur garments found a ready market as other luxuries were scarce and money plentiful. Now that radios, automobiles, refrigerators, new furniture, etc., are coming back on the market, many of the extra dollars are being used to purchase these commodities instead of fur garments. At the same time fur production remains steady and points towards an eventual surplus. There are numerous unpredictable circumstances that can effect the fur market materially. The amount of fur imported and exported, the changes in the foreign monetary rate of exchange, and last, but not least, the moods and fancies of "fickle dame fashions," all directly affect the raw fur market.

### NOTICE OF HEARING

The annual hearing of the Oregon State Game Commission in regard to angling regulations will be held on January 11, 1947, in the Commission offices at 1634 S. W. Alder Street, Portland. At that time seasons, bag limits and methods of taking game fish will be considered.

## Hunters Do The Darndest Things

By DUKE LAMSTER

### In South Dakota Conservation Digest

Hunters are a sub-species of the two-legged mammals which inhabit this earth and are called men. They come in assorted sizes and colors. Their range is from the South to the North Pole and back again. They are good and bad, big and little, thin and fat, rich and poor and their skins are red, white, black and yellow. In certain respects they resemble ordinary human beings, but don't let that throw you, there is a difference, a big difference.

When a man grumbles and mumbles at buying a car license, but happily digs down in his jeans and deposits a fistful of greenbacks on the counter for a hunting license, he is a hunter. His dress suit may be a little tight and somewhat frayed and threadbare here and there, but his hunting clothes? Ah, they are the best, the very best. Five dollars for a white dress shirt is downright robbery, but ten bucks for a hunting shirt? Well, that is different, that's all, just different.

Getting up at 6 o'clock in the morning to mow the lawn or hoe in the garden is ridiculous. Didn't Lincoln free the slaves? But rolling out at 4 a.m. on a frosty morning to go duck hunting, now there is some sense to that.

He picks up a little sparrow with a broken wing and tenderly nurses it back to health. Florence Nightingale had nothing on him. Then he grabs his terrible instrument of destruction, the 12 gauge shotgun, and goes utterly beserk, murdering pheasants, ducks and geese and what-have-you that is unlucky enough to get within range of his weapon. It isn't Dr. Jerkyll and Mr. Hyde, it is just Mr. Hunter.

The little woman's washing machine is in pretty bad shape. Should have a new one by all means. However a little welding here and there and a new part or two puts it in fairly good shape again. At least she can use it for a while yet. But when the old shotgun begins to go haywire, plunking down \$75.00 for a new one is just a matter of course. A fellow has to have a gun doesn't he?

Mr. Hunter, you rave and tear your hair at the sight of the meat bill. Those butchers should carry blackjacks and wear masks. Just think of the saving on the meat bill when you bring home game birds to eat! Beefsteak at the local market is fifty cents a pound, but, brother, those ducks cost you at least five dollars a pound and you know it!

The little wife has to beg you on bended knees to go down to the corner grocery store, it is only four blocks, and get a loaf of bread. Yet you tramp through a jungle of weeds, in mud and snow, rain or shine, out hunting and think nothing of it. In fact it was great sport, and you had a swell time. Why? Because you're a hunter.

Fixing a flat tire on the highway in the rain is a swell way to catch double pneumonia and you mutter a lot of things you didn't learn in Sunday school while doing it. Yet you sit for hours on end in a cold, damp duck blind with a raw north-west wind blowing down your neck and call it sport.

Your better half brings home a silly little hat with a five dollar price tag on it and you voice your disapproval in no uncertain terms. Something about people who go around throwing away hard earned money for such doodads. But when you return from a two day hunting trip that set you back twenty-five dollars and proudly lay two little wet, bedraggled Blue Winged Teal at her feet, you expect her blue eyes to open wide and words of praise and flattery to pour forth upon your waiting ears.

The children really have a job on their hands when they try to get you out of your easy chair for a walk through the park on a nice sunny Sunday afternoon. But you yell with delight and skip madly over a couple dozen mountains hunting for deer. Shucks, nothing to it!

See what I mean? Hunters do the darndest things. God bless 'em!

## December Hunting and Fishing Calendar

Species	Season
Elk (Special area in Baker Co.)	....Closes December 22
Devils Garden	
Deer hunt	.....Closes December 4
Waterfowl	.....Closes December 9
Pheasants—Summer	
Lake Basin	.....Closes December 31
Cottontail and	
Brush Rabbits	....Open until Feb. 15
Mink, Muskrat, Otter,	
Marten, Raccoon	....Open until Feb. 15
Salmon and Steelhead	
over 20"	.....Open entire year
Jack salmon	
under 20"	.....Open entire year
Spiny-rayed Fish	....Open entire year
Rogue River —	
Trout over 15"	...Nov. 1 to Jan. 15
North Umpqua below	
the narrows —	
Trout over 10"	...Open entire year
South Umpqua below	
Jackson Creek —	
Trout over 10"	...Open entire year

The musk ox is NOT an ox. It does NOT secrete musk. It has the tail of a sheep, kidneys of a goat, spleen of a donkey, bones of an ox, ribs of a bison, hoofs of a caribou. And it has hair on the BOTTOM of its feet!

Government experts estimate the annual value of a single bull snake to be \$3.75 in rodent control.

The mountain beaver has no tail.

## This and That

During October there was trapped on the Ontario game farm a pheasant with a snow white head (making it look like a bald eagle), one white leg and several white flight feathers on the wings.

Twenty huns, several Oregon mountain quail and several antelope squirrels were seen by Art Neeley recently at Owyhee dam near Dead Man's canyon, which is in a very isolated portion of Malheur county. The antelope squirrel resembles the ordinary chipmunk except it has a bushy snow white tail.

The only game fish that may be legally angled for at night is the catfish.

A 54-pound male chinook salmon gave battle for an hour and a half before it was landed from the Nestucca river by Dave Hines of Forest Grove during October. The fish was reported to be 50 inches long and 14 inches deep. A 24-pound line with a No. 5 hammered spoon was used by Hines.

There have been many big deer stories this season. Some of the larger ones taken are: a 300-pound mule buck killed by Fred Wiley, Oregon City, on Burnt river near Hereford; a 258-pound buck with a spread of 32 inches killed by Frank Benear of Athena; a 5-point buck weighing 255 pounds dressed, killed by Dr. V. S. Howard near Madras; a 250-pound buck killed near Burns by Peter Hand of California; an 8-point buck weighing 249 pounds dressed and with an antler spread of 39 inches, killed by Erwin Thornton near Madars. In the blacktail division, Ernest Claussen reported taking a 212 pounder, 4-point buck near the Elsie area, while John Sarijarvi weighed in a 194 pounder.

Quarterly report for months of July, August and September, recently issued by the U. S. Fish and Wildlife Service shows a total of 3,479 predators taken, including 3,261 coyotes, 149 bobcats, 66 bear and 3 mountain lion. This work is done under the cooperative program financed by the State Department of Agriculture, Game Commission, counties and the federal government. The Game Commission's contribution is \$12,000 a year.

## Game Violation Arrests

More than 300 arrest reports on game law violations were received by the Game Commission office from the Department of State Police during a four week period the latter part of October and early November. Arrests were for illegal possession of game, hunting illegal methods and hours, hunting from motor vehicles and from public highways, and other miscellaneous violations. Fines paid varied in amounts up to \$271, which was assessed for illegal possession of elk.

## Fisheries Men Hold Staff Conference

Fish hatcherymen and fisheries biologists of the Game Commission were scheduled to convene for a four-day conference, December 2, 3, 4 and 5 at the Portland office to discuss various phases of fisheries management. The full program provided for talks by federal and out-of-state fisheries authorities as well as department personnel. The detailed program follows:

### Monday, December 2 — General Discussions:

Opening address — F. B. Wire, State Game Supervisor;

Fishway and Screens — C. A. Lockwood, Assistant Game Supervisor;

Office, Accounting, and Purchasing Procedures — F. C. Baker, Controller;

Game Activities — P. W. Schneider, Game Coordinator;

Commercial Fisheries — Arne Suomela, Master Fish Warden, Ore. State Fish Commission;

Fishery Protection Problems in Relation to Water Development Programs — F. J. Foster, U. S. Fish and Wildlife Service, Seattle;

Law Enforcement — Bert Walker, Oregon State Police;

Research Program of the Oregon Fish Commission — Don McKernan, Chief Biologist, Oregon Fish Commission;

Pollution — Professor Fred Merryfield, Oregon State College;

Discussion.

### Tuesday, December 3 — Feeds and Feeding Problems in Hatcheries:

Vitamin substitutes for fresh meat in hatchery diets — Dr. L. A. Donaldson, School of Fisheries, Seattle, Wash.;

Experimental Feeding Program in Washington — Bud Ellis and Norman Riddell, Washington State Dept. of Game, Seattle;

Fish Foods Problems in Federal Hatcheries — Wm. Hagen, U. S. Fish and Wildlife Service, Portland;

Discussion;

### Brood Stock Problems

Spawning methods in relation to trout anatomy — L. A. Donaldson;

Care of eggs and yolk sac fry — Dr. H. S. Davis;

Discussion;

Hatchery Accounting; Henry Mangold, Asst. Director of Fisheries.

### Wednesday, December 4 — Biological Investigations:

Objectives of Fisheries Research Program under the Game Commission — R. C. Holloway, Chief Biologist, Oregon Game Commission;

Reports from individual project leaders; The Cutthroat Trout of Oregon — R. E. Dimick, Oregon State College;

Lake Management — Dr. C. J. D. Brown and Dr. L. E. Perry, Aquatic Biologists, U. S. Fish and Wildlife Service;

Fish Liberations — C. A. Lockwood;

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## Winter Angling Regulations

Angling at this period of year is confined, with certain exceptions, to the taking of salmon and steelhead 20 inches and over in length, jack salmon under 20 inches, and spiny-rayed fish such as bass, catfish, perch, crappies and sunfish. The season is closed entirely to the taking of trout, including trout over 10 inches in coastal waters. The closure in the coast area is for the purpose of protecting the spawning cutthroats as they go upstream which is a necessary measure for maintenance of the runs which are largely dependent upon natural propagation since the supply of eggs for hatchery propagation still is limited. Exceptions to the foregoing are the North and South Umpqua rivers and the Rogue river, which have special regulations. The North Umpqua below the narrows and the South Umpqua below Jackson creek are open to fishing for trout 10 inches or more in length, while the Rogue river is open until January 15 for the taking of trout not less than 15 inches in length.

## Big Game Hunting Seasons

(Continued From Page 1)

reports indicate a phenomenal increase in the number of elk hunters and a heavy kill of elk in many areas. Many hunters have taken advantage of the either sex season in a large part of eastern Oregon and the success ratio appears high in that area. Deep snows early in the season forced hunters out of the higher eastern Oregon elk ranges but the elk also were forced down so that hunting conditions were excellent during the first week of the season. Reports from Clatsop county indicate a heavy kill of bulls with forked antlers in that area.

Elk hunters are urged to file their reports promptly after completion of their hunt so that the needed information will be available immediately after the close of the season.

Persons holding an unused elk license will be entitled to hunt in the described Baker county area from November 21 through December 22, provided that they must check in and out at designated checking stations at North Powder, Baker and Sumpter Valley. Special permits will be required for hunting in the Ukiah area, December 16-22, and all hunters must check in and out of the area.

Thousands of sportsmen, both resident and non-resident, have taken advantage



Examining a two-way trap used in study of coast cutthroat trout in small tributaries of Oregon's coastal streams.

of the big game seasons throughout Oregon this year. This unprecedented demand for big game hunting has resulted in an exceptionally heavy kill, and although the hunter success ratio may run lower than in some past years, the total kill of both elk and deer appears to be much higher than normal.

### SPECIAL BIG GAME SEASONS

Nearly all of the special big game seasons were designed to alleviate damage to private lands by selectively removing offending animals on small tracts. Many participants had the preconceived idea that in order for substantial damage to occur deer or elk must be abundant, and, therefore, were disappointed in the outcome of some of the earlier seasons. The fact remains that in some instances the selective removal of habitual offenders is the most practical and efficient means of damage control and it is believed that citizens of the state should have the opportunity of harvesting these animals.

Special deer seasons at Cove in Union county and the Devils Garden in northern Lake county; and the elk seasons in the vicinity of Baker and Ukiah have not been completed.

Results of the special big-game seasons completed are indicated as follows:

### SPECIAL SEASONS

Season	Date	Number of Hunters	Game Bagged	Per Cent Success
Muddy Creek Elk	Aug. 31-Sept. 2	641	15	2.34
Burnt River Deer	Sept. 22-27	60	26	43.33
Deschutes Archery	Sept. 28-Oct. 6	140	8	5.71
Canyon Creek Archery	Oct. 9-25	43	3	6.98
Summer Lake Deer	Oct. 26-Nov. 2	388	127	32.73
Troy Elk	Oct. 24-28	75	24	32.
Crooked Creek	Nov. 4-10	260	245	94.23



## Grading Trout

In the spring of 1945, grading of fish in Oregon's trout hatcheries was started. An experimental fish grader was built by Mr. Harold Bowers, Engineer for the department. This was tested out at the Oak Springs Hatchery and after taking the "bugs" out of it, one was built for each station.

A fish grader works on the same principle as an orange or apple grader; it separates large fish from the small. The grader now in use is merely a box six feet long, three feet wide, and seven inches deep, with parallel metal bars spaced at definite intervals across the bottom. In use, the grader floats in about five inches of water in a live-box. Fish to be graded are netted into it and the smaller fish swim through into the live-box. The larger fish that cannot pass through the bars are netted out of the box and another lot of fish to be graded are dumped in it. Grading is necessary because some fish, like some children, grow much faster than others and unless the larger fish are separated from the smaller ones, losses from cannibalism are often heavy. Big fish eat their smaller brothers and sisters even though they may be fish of the same age. Sorting of fish into various size groups is a modern hatchery practice just as necessary to normal operations as proper feeding or spawning.

The spacing between the metal bars in the graders in use is  $\frac{1}{4}$ ,  $\frac{1}{2}$ ,  $\frac{5}{8}$ , and  $\frac{3}{4}$  inches. Roughly, these size openings will let fish 2, 4, 6, and 8 inches respectively, pass through.

Ernest Smith, Foreman of the Willamette Hatchery at Oak Ridge, has designed another type of grader with adjustable side and end openings that offer

good possibilities in that changes of width of openings can be made without having to change the spacing combs that hold the rods as in the present grading box. Still another type designed by Mr. A. B. Cook in Michigan uses tapered pieces between ends of the rods, and raising or lowering these automatically widens or narrows the spaces. The drawback to this type is its cost which runs around \$175. Those now in use in Oregon's trout hatcheries cost around \$50 each.

## Fisheries Men Conference

(Continued From Page 5)

Natural Foods of trout — P. R. Needham, Oregon State Game Commission.

Thursday, December 5 — Techniques:

Scale mounting and reading demonstration — F. H. Sumner, Senior Biologist;

Fish grading;

Fish population study methods — H. J. Rayner, Chief Biologist;

Methods of collecting and preserving fish specimens — R. C. Holloway, Chief Biologist;

### Diseases and Parasites

New methods of disease control in hatcheries — Dr. Frederick F. Fish, U. S. Fish and Wildlife Service, Corvallis, Oregon;

Disease control in Oregon hatcheries — Dr. H. S. Davis, Oregon Game Commission;

Discussion;

Message from the Game Commission — E. E. Wilson, Chairman;

Banquet;

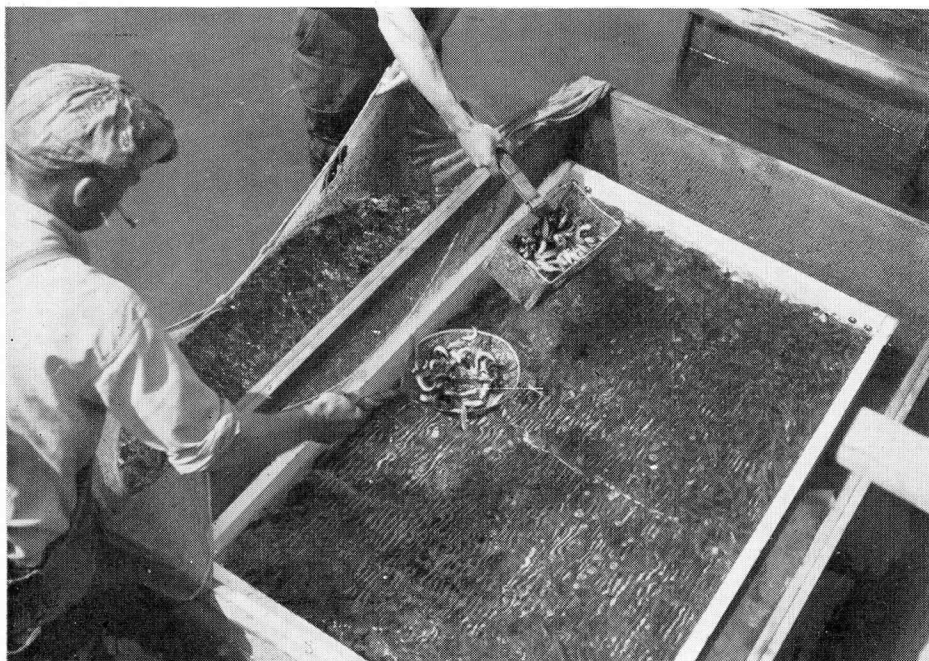
Movies by Jim Loder, Izaak Walton League.

## Oregon Eleventh in Duck Stamp Sales

The recent release by the Fish & Wildlife Service on 1945 duck stamp sales shows that Oregon, with a total sales of 47,511, is eleventh on the list. The complete list is as follows:

State	Total
Alabama .....	9,466
Alaska .....	4,186
Arizona .....	6,203
Arkansas .....	45,538
California .....	131,009
Colorado .....	30,837
Connecticut .....	10,683
Delaware .....	4,648
D. C. ....	1,757
Florida .....	21,788
Georgia .....	3,866
Hawaii .....	151
Idaho .....	34,590
Illinois .....	77,452
Indiana .....	28,159
Iowa .....	43,529
Kansas .....	42,016
Kentucky .....	8,390
Louisiana .....	56,876
Maine .....	14,731
Maryland .....	16,738
Massachusetts .....	25,165
Michigan .....	100,382
Minnesota .....	130,757
Mississippi .....	15,211
Missouri .....	44,962
Montana .....	30,605
Nebraska .....	37,535
Nevada .....	7,808
New Hampshire .....	4,708
New Jersey .....	29,356
New Mexico .....	7,018
New York .....	56,354
North Carolina .....	11,666
North Dakota .....	37,108
Ohio .....	27,777
Oklahoma .....	37,851
Oregon .....	47,511
Pennsylvania .....	41,185
Rhode Island .....	4,220
South Carolina .....	6,996
South Dakota .....	66,012
Tennessee .....	20,393
Texas .....	115,008
Utah .....	24,883
Vermont .....	4,303
Virginia .....	15,641
Washington .....	76,007
West Virginia .....	2,014
Wisconsin .....	83,681
Wyoming .....	9,599
Puerto Rico .....	287
Philatelic Agency .....	10,889
<b>TOTAL .....</b>	<b>1,725,505</b>

The swan has more than three times as many neck vertebrae as the giraffe. Most animals have seven vertebrae but there seems to be no definite standard. Swans have 25, ducks about 16 and the tiny hummingbird 14.



Grading Trout at the Oak Springs Trout Hatchery.

## The Umpqua River Study

(Continued From Page 1)

they fully comprehend the terms "principal" or "breeding stock" and are aware that when the principal or breeding stock is consumed, future returns will be decreased. Even so, some sportsmen forget that unless those whose responsibility it is to manage the crop and brood stock in our streams can learn how many fish are removed from a given water, the trends in population cannot be detected until irreparable damage to the brood stock or principal may have been done.

In general the program of study consists of a salmon and steelhead tagging operation on the lower river, an upstream migrant count of all fish passing Winchester Dam, a sport creel census in both the lower and upper sections of the Umpqua River, a study of downstream migrations, and the recovery of tags from sportsmen, commercial fishermen, and from the fish themselves on the spawning grounds. The Game Commission Resident Biologist at Roseburg, Mr. H. R. Newcomb, is in charge of the investigation conducted on the upper section of the river. Two Fish Commission biologists, Mr. John Gharrett and Mr. Don Johnson, and one Game Commission biologist, Mr. Leonard Mathisen, conduct the lower Umpqua River study.

### TAGGING METHOD

The tagging operation involves catching the fish in a trammel net near Reedsport and tagging them in the water while they are resting in a cradle attached to the side of a skiff. Two colored plastic discs one-half inch in diameter, one on each side of the fish, are attached by means of a 3-inch nickle straight pin which is inserted through the back, behind and below the dorsal fin. One tag has a number on it and words Oregon Fish Commission, Reedsport, Oregon. By numbering the tags it is possible to trace the history of the individual fish from the moment and place of tagging to the recovery of the tag from that fish.

At the Winchester Dam upstream migrant counting station, a fish counter is on duty during all daylight hours to determine the numbers of each species passing above the dam. The fish must pass over a white board in water ranging from six to eighteen inches deep, depending upon the turbidity. The various species are thus easily recognized and counted. The fortunate circumstance of negligible night migration simplifies the problem. In addition, the fish with the various colored tags are readily noticeable to the counter. Since various color combinations are used in the tagging operations for set periods of time, it is possible to ascertain when these groups pass the counting station.

### FISH COUNTS

Between December 4, 1945, when the counting station was first established, and November 11, 1946, a total of some

9,500 steelhead, 2,500 chinook salmon, and 1,200 silver salmon have been counted up the North Umpqua River over the Winchester Dam. In addition some 1,100 other trout and 6,000 suckers, squawfish, and other trash fish have also been counted.

Before July 1, 54 per cent of this spring's tagged salmon which escaped the sport and commercial fishery had passed the counting station. This figure accounts only for those migrating up the North Umpqua River; nothing is known as yet concerning the number of tagged salmon which might be present in the South Umpqua River. It is hoped that tags will be recovered from the latter river fish during spawning ground surveys or received from anglers or residents of the area.

### FISH CAUGHT

During the past spring, sport fishermen on the lower Umpqua River below Elkton are known to have landed 203 salmon, 35 others are estimated to have been caught, totalling 238 salmon. Approximately 250 were caught in the upper section of the river for a combined total of 488 to July 1. By the same date, 159 salmon were sold to dealers by commercial fishermen, and preliminary estimates indicate that 128 additional fish were caught and eaten or otherwise disposed of, for a total commercial catch of approximately 287 salmon. Therefore a total of 775 salmon were taken by sport and commercial fishermen, while 2292 adult and jack chinook salmon passed the counting station on the North Umpqua River prior to July 9. From this information it is evident that the spring Chinook salmon are in a precarious condition in the Umpqua River. Regardless of what may have been the factors responsible, drastic measures will have to be taken to prevent further depletion or possible extinction of these fish.

The ratio of tagged to untagged fish landed by commercial or sport fishermen in comparison to the total number of fish tagged will produce a fairly accurate estimate of the total population entering the river. Also, by deducting the total sport and commercial catches from the total calculated population, it is possible to determine the total escapement which is basic to the management of the fishery. Much of the success of this program depends upon the cooperation of anglers in returning the tags together with accurate information concerning where and when each tagged fish was caught.

One tagged chinook salmon travelled 38 miles in 13 days, an average of about three miles a day, before it was landed by a sports fisherman at Elkton. Another spring chinook salmon made the 100-mile river trip from Reedsport to Winchester Dam in about four weeks, an average of approximately four miles a day.

### SEAWARD MIGRANT STUDIES

A downstream migrant trap, installed at the counting station on the North Umpqua River, collects the young of various species including chinook and silver salmon and rainbow or steelhead trout as they move toward the ocean. Incidentally, nine species of non-game fish have also been trapped here. From collections of seaward migrants, the time, size, numbers and species migrating can be determined. By periodic seining operations in tidewater, similar data are determined for seaward migrants in the lower river.

A thorough investigation of the spawning grounds will be made to learn their location, extent and availability. During the salmon and steelhead spawning seasons the Umpqua River and its smallest tributaries will be combed from stream mouths to headwaters to locate and count fish. In this manner tags can be recovered and the escapement of brood stock estimated.

One of the big items of the study will be concerned with measuring the sport and commercial catch. Obtaining the latter information is relatively simple since the fish are sold to four or five dealers, all of whom are located in Reedsport. Adequate records of the sport catch, however, can only be obtained by frequent check of the anglers on the river. Fishermen interviewed are given an addressed and stamped Catch Record Card on which a record of their catch for the day can be forwarded to the Game Commission. Each card contains spaces in which the date, the location fished, the number of hours fished, the numbers of salmon, steelhead, or trout caught, and other pertinent information can be entered. The card requires but a minute to fill out and **should be used and returned even though no fish are caught.** For a proper analysis of the sport fishery, the Game Commission needs a record of both the lucky and the less fortunate fishermen. Some 26 per cent of the upper river cards and 28 per cent of the lower river cards were returned. In many respects this is an excellent return, but more complete information will give the biologists a better understanding of the facts involved.

Natural and artificial barriers or hindrances to upstream migration, such as dams and log jams, will be located and recommendations for removal or provision for fish ladders will be made. It is unfortunate that many miles of excellent spawning grounds have, in the past, been eliminated by lack of adequate fishways at private dams. Many such structures persist although they are no longer used.

Biologists of both Commissions are now actively engaged in writing up a joint report covering all studies on the Umpqua River. As most readers know, in accordance with the terms of Fish Bill 312, a joint report must be submitted to the 1947 Oregon Legislature. Cooperation between staffs has been excellent.

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# Oregon State Game Commission Bulletin

1634 S. W. ALDER STREET  
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PORTLAND 8, OREGON

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## The Umpqua River Study

(Continued from Page 7)

It is hoped that the Umpqua River study program will stimulate an active sportsman interest and create a spirit of cooperation on the Umpqua as well as in other areas where research programs are under way. Aided by such interest and cooperation, the biologists assigned to the investigation should produce a workable management plan for the drainage basin in a much shorter time than would be otherwise possible.

## November Meeting

(Continued From Page 2)

brown trout in the lake and replant them in the upper Deschutes river.

Construction of a residence at the Cedar Creek hatchery for a cost of \$2,500 was approved.

Mr. Lockwood was authorized to negotiate for the purchase of warehouse buildings at Camp White which would be suitable for storing equipment.

Saturday morning the Commission heard Mert Foltz and Fred Brenne of the Eugene Chamber of Commerce, who presented the report prepared by a committee from the Eugene Chamber of Commerce, Springfield Chamber of Commerce, McKenzie River Guides Association and McKenzie River Development Association, with respect to recommendations covering planting and propagation of fish in the McKenzie River and tributaries and maintenance and management from the standpoint of law enforcement. The Commission gave assurance that it was desirous of doing everything possible to improve fishing conditions in the McKenzie as well as other waters of the state. It was decided to continue the hearing at the December meeting.

Upon report from the State Police that Willard F. Masten, licensed guide at McKenzie Bridge, had been arrested and convicted for having elk in possession at his hunting camp prior to the opening of the elk season, it was ordered by the Commission that Mr. Masten's license for 1946 be revoked and that no license be issued for 1947. Fine and costs paid upon conviction totalled \$275.

The Supervisor was instructed to prepare a list of recommended changes in the game laws for consideration by the legislature at its coming session.

The next meeting of the Commission will be held in Portland on December 14.

## Game License Sales

The recently completed analysis of 1945 game license sales shows that during 1945 there were 265,088 individuals who held either a hunting or fishing license or both. The total number of hunting licenses issued was 159,192 and the total for angling licenses was 175,552. Revenue from license sales, including special tags, totalled \$989,605. Based on 1945 census figures of 1,197,457, licensed sportsmen form 22.14% of the total population.

While figures on the number of licenses issued in 1946 so far are not available, comparison of cash receipts indicate that the sales this year will reach the highest peak in history. The following table shows the comparative figures on license sales collections as of October 31:

	Month of October	Jan. 1 to Oct.31
1945 . . . .	\$172,155.00	\$ 746,756.50
1946 . . . .	\$202,845.50	\$1,050,296.00
Increase . . .	\$ 30,690.50	\$ 303,539.50

### SUMMARY OF 1945 LICENSE SALES BY COUNTY

County	HUNTERS		ANGLERS		Total Sales	% of Total Sales	Total Undup. Sales
	No. of Licenses	Amt. Recd.	No. of Licenses	Amt. Recd.			
Baker	3,857	\$ 11,776.50	2,652	\$ 6,713.50	\$ 18,490.00	( 2.03)	5,080
Benton	2,891	7,808.00	2,990	7,833.00	15,641.00	( 1.71)	4,587
Clackamas	4,277	11,836.00	5,816	15,261.00	27,097.00	( 2.97)	8,207
Clatsop	3,555	9,838.00	4,339	11,584.00	21,422.00	( 2.35)	6,256
Columbia	2,765	7,910.50	2,367	6,234.50	14,145.00	( 1.55)	4,115
Coos	5,404	14,897.50	6,407	17,072.50	31,970.00	( 3.50)	9,238
Crook	1,626	4,884.00	962	2,546.00	7,430.00	( 0.81)	2,124
Curry	1,001	2,772.00	2,763	8,548.00	11,320.00	( 1.24)	3,134
Deschutes	5,768	18,386.50	5,384	14,502.50	32,889.00	( 3.60)	9,253
Douglas	5,843	16,158.50	6,234	16,711.50	32,870.00	( 3.60)	9,200
Gilliam	547	1,694.50	384	977.50	2,672.00	( 0.29)	734
Grant	1,978	6,749.00	1,251	3,250.00	9,999.00	( 1.10)	2,567
Harney	1,695	6,247.50	822	2,102.50	8,350.00	( 0.91)	2,054
Hood River	1,757	4,891.50	2,068	5,474.50	10,366.00	( 1.14)	3,082
Jackson	8,035	23,147.50	8,471	22,851.50	45,998.50	( 5.04)	13,059
Jefferson	419	1,324.00	501	1,368.00	2,692.00	( 0.29)	738
Josephine	3,492	10,017.00	5,112	14,339.00	24,356.00	( 2.67)	6,786
Klamath	10,569	35,570.00	7,414	20,469.00	56,039.00	( 6.14)	14,737
Lake	2,131	8,663.00	1,720	4,640.00	13,303.00	( 1.46)	3,123
Lane	13,395	36,888.50	16,005	42,510.50	79,399.00	( 8.70)	22,907
Lincoln	2,831	7,624.00	4,541	12,442.00	20,066.00	( 2.20)	5,770
Linn	5,520	14,924.00	5,243	13,519.00	28,443.00	( 3.12)	8,391
Malheur	3,970	15,194.50	3,247	9,707.50	24,902.00	( 2.73)	6,034
Marion	7,737	20,783.50	8,328	21,564.50	42,348.00	( 4.64)	12,830
Morrow	944	2,684.00	664	1,640.00	4,324.00	( 0.47)	1,228
Multnomah	22,565	66,339.00	35,605	97,855.00	164,194.00	(17.99)	48,066
Polk	1,721	4,748.00	1,514	3,813.00	8,561.00	( 0.94)	2,573
Sherman	280	807.50	302	853.50	1,661.00	( 0.19)	465
Tillamook	3,192	8,642.00	4,360	11,906.00	20,548.00	( 2.25)	5,812
Umatilla	6,551	21,645.50	4,586	12,086.50	33,732.00	( 3.70)	8,874
Union	4,123	12,343.50	3,050	7,828.50	20,172.00	( 2.21)	5,614
Wallowa	2,180	6,670.00	2,216	6,034.00	12,704.00	( 1.40)	3,528
Wasco	2,190	6,552.00	2,400	6,388.00	12,940.00	( 1.42)	3,674
Washington	3,759	10,171.50	3,926	10,098.50	20,270.00	( 2.22)	6,034
Wheeler	487	1,507.00	282	714.00	2,221.00	( 0.24)	601
Yamhill	3,776	10,356.50	3,627	9,423.50	19,780.00	( 2.17)	5,832
Out of State	320	2,716.50	1,618	6,884.50	9,601.00	( 1.05)	1,899
<b>TOTAL</b>	<b>153,151</b>	<b>\$455,169.00</b>	<b>169,171</b>	<b>\$457,747.00</b>	<b>\$912,916.00</b>		<b>258,206</b>
Spec. Ann.							
Comb.	5,538	2,769.00	5,538	2,769.00	5,538.00		5,538
Sp. Ann. Hunt	501	250.50	....	....	250.50		501
Sp. Ann. Ang.	..	....	841	420.50	420.50		841
L. F. Vet.	2	.50	2	.50	1.00		2
L. F. Pioneer	..	....	....	....	....		....
<b>TOTAL</b>	<b>159,192</b>	<b>\$458,189.00</b>	<b>175,552</b>	<b>\$460,937.00</b>	<b>\$919,126.00</b>		<b>265,088</b>
Cert. of Lost Licenses					804.50		1,609
Special Tags					70,479.00		14,225

Total License Receipts — \$990,409.50