

Oregon State GAME COMMISSION BULLETIN

Vol. III

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No. 9

Umpqua River Study Continued

By HUGH ROSS NEWCOMB, Field Agent

Those who have read the feature article in the December, 1946 issue of The Bulletin (Vol. I, No. 9) had an opportunity to become familiar with the problems and objectives of the first year of study on the Umpqua River — a magnificent stream which drains well over 4,000 square miles of forest and agricultural land in Douglas county. The present article is intended to bring sportsmen and others interested in fishery management up to date on the work which has been done in this area and the facts which have been obtained. As was stated previously, the objective of the study is to secure a basic understanding of the biological, physical and economic aspects of the fishery resources of the Umpqua River drainage. Although the aims of the study remain constant, methods to achieve these goals are being shifted about in a continuing effort to utilize manpower and equipment most efficiently.

Upstream Migration

Since December 4, 1946, a counting station has been maintained at Winchester Dam on the North Umpqua River. This station, operated by two counters during all daylight hours except in periods of flood, has provided a virtually complete record of every adult fish moving upstream past that point. The circumstance of negligible night migration simplifies the counting program considerably. Table No. 1 shows the annual record of each run.

Estimates of Runs Into Entire Drainage

During the winter run of 1946-47 it was found, by means of tagging, that approximately 27 per cent of the steelhead escaping to spawn in the Umpqua basin utilized the North Umpqua River and tributaries above Winchester Dam. The run into the whole drainage was calculated to be slightly in excess of 41,000 fish. On a similar basis it was conservatively estimated that the 1945-46 run of winter steelhead approximated 23,000 fish. In the case of the spring chinook salmon, it has been estimated that the 1946 run into the whole

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Migratory Game Bird Rules For 1948

Waterfowl hunters of the Pacific Flyway states will have the most liberal seasons and bag limits of any section as a result of federal regulations adopted on a flyway basis. Oregon had a choice of a continuous season of 40 days or a split season of 17 days each. The latter was favored by the Game Commission as the best means of providing some shooting for all sections of the state. The dates selected are from noon on October 29 to November 14 and from noon December 23 to January 8, all dates inclusive.

The bag limit for ducks has been increased to 5 a day and 10 in possession, with not more than one wood duck allowed in possession.

The limit for geese remains the same as last year, 5 a day or in possession with not more than 2 Canada geese or its subspecies, white-fronted geese or brant. In other words, a bag limit of 5 geese in Oregon means that at least three must be snow geese.

The bag limit on coot has been reduced from 25 to 15 a day or in possession. For mergansers last year's limit of 25 prevails.

Pigeons may be hunted throughout the month of September and the bag limit is 8 pigeons a day or in possession. Dove season is from September 1 to 15 in Harney, Lake, Deschutes, Wheeler, Crook, Jackson and Josephine counties. Bag limit is 10 doves a day or in possession.

Another change is in the shooting time. Waterfowl this year may be shot from one-half hour before sunrise to one hour before sunset. Pigeons and doves may be shot until sunset, however.

In spite of requests for an open season on jacksnipe, none was provided as the Fish and Wildlife Service reports investigations revealed that the population was still insufficient to warrant a shooting season.

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MOTHER NATURE SPENT A MILLION YEARS PUTTING UP PRESERVES FOR US—NOW LOOK AT 'EM!



P.S. AND THE WORLD SPENDS THE REST OF HISTORY FIGHTING FOR WHAT'S LEFT OF SUSTAINING RESOURCES!

Time to take an inventory of our pantry.

☆ THIS AND THAT ☆

The Oregon Hunter's Guide, now available for distribution at all license agencies, includes not only the synopsis of the 1948 hunting regulations but also explanation of the reasons for some of the special regulations and miscellaneous information useful to the hunter. Copies also may be obtained from the office of the Game Commission.

The warning to hunters to be careful cannot be repeated too often as the records show only too well. Hunting accidents during the 1947 deer season totalled twelve, of which three resulted in fatalities.

Of these, six occurred because the hunter either was mistaken for a deer or was in the line of fire of another hunter. Five hunters were injured because of the careless handling of firearms. The twelfth hunter lost his life by falling off a cliff.

Hunters interested in applying for special tags should have their applications in the Game Commission office by October 1 for the Chesnimnus elk area; and by October 27 for the Dora and Baker elk areas. November 12 is the deadline for the Ukiah-Birch Creek elk area and for the Silver Lake deer area. Drawings were held on August 16 for the Ten Mile Lake elk and Crooked Creek deer hunts.

Stealing of traps during the hunting season each fall compels the U. S. Fish and Wildlife Service to curtail their predator control program while the hunters are out in the woods. About one-half of the traps set are lost each year, the Service reports, which works to the disadvantage of the hunters themselves since part of the predatory control program is financed by state game funds. Hunters are asked not to disturb any traps they might see while hunting.

Gun regulations for game hunters remain the same as last year with the exception that pistols and revolvers will be unlawful for hunting of game birds or game animals. As previously announced, the Commission proposes new gun regulations when firearms become more plentiful.

A cutthroat 7.75 inches long was caught June 9 on the Nestucca river between Beaver and Hebo, tagged and released by the Game Commission field agent. An angler caught the fish again on July 17 in the Hebo area. It had grown about 2.2 inches.

The first fish have been raised and released from the new Wizard Falls trout hatchery with the planting of approximately 300,000 fry in mountain lakes by the packstring.

August Meeting of the Game Commission

The Oregon State Game Commission transacted the following business at its meeting on August 13 and 14.

Upon completion of the 1948 rearing season, operations at the Brush Creek hatchery were ordered discontinued and the staff instructed to carry on investigations for another site in southwestern Oregon. It was decided that present conditions at this station did not justify the expense of making necessary improvements.

As the new game farm at Hermiston now was in operation, the Supervisor was instructed to ascertain the most desirable manner in which to dispose of the old game farm property at Pendleton.

Inasmuch as conditions at the Eugene game farm had become unsatisfactory for the rearing of pheasants, it was ordered that operations be suspended at that station at the end of the current rearing season. The Supervisor was instructed to ascertain the market value of the property.

The bid of Dolan Construction Com-

pany in the amount of \$1,288 for work at the Cedar Creek hatchery was accepted.

Purchase of a dump truck for the Summer Lake project was authorized.

Application was approved for a Federal Aid project to construct five waterfowl banding traps to be used as part of the cooperative waterfowl program of the Pacific Flyway states.

Petition for a game reserve in Benton county was disallowed for the reason that it is the policy of the Commission to create reserves only when a specific biological purpose is to be accomplished.

The Director of Game was authorized to release at his discretion surplus pheasant cocks at the western Oregon farms.

The Supervisor was authorized to execute cooperative agreements with various agencies in connection with the habitat improvement program.

The Supervisor was instructed to invite the Grants Pass Irrigation District Board to meet with the Commission to discuss cooperative plans for control of water at the Savage Rapids dam.

H. Barnard Construction Company was awarded the contract for improvements at the Butte Falls hatchery, costing \$17,930.

Bids received for proposed improvements at the Rock Creek and Fall River hatcheries were held for acceptance or rejection until the September meeting.

Approval was given for construction of a game fish hatchery by the army engineers on land adjacent to the Game Commission's Willamette hatchery provided such construction will not interfere in any way with the operation of the state hatchery.

When complaints of damage by raccoon are received, the Supervisor was authorized to issue, at his discretion, permits to kill such animals to the landowners or any of their agents, servants or employees.

The next meeting of the Commission is scheduled for September 10 and 11.

Pennsylvania Game Director Retires

Seth Gordon, executive director of the Pennsylvania Game Commission, is retiring after 25 years of service with that department, according to a recently received announcement.

One of the most prominent administrators in the state conservation field, Mr. Gordon developed a program that has become nationally outstanding.

No announcement has been made as to his immediate plans for the future although it is understood he wishes to devote himself to national conservation work.

Thomas D. Frye has been appointed as the new director.

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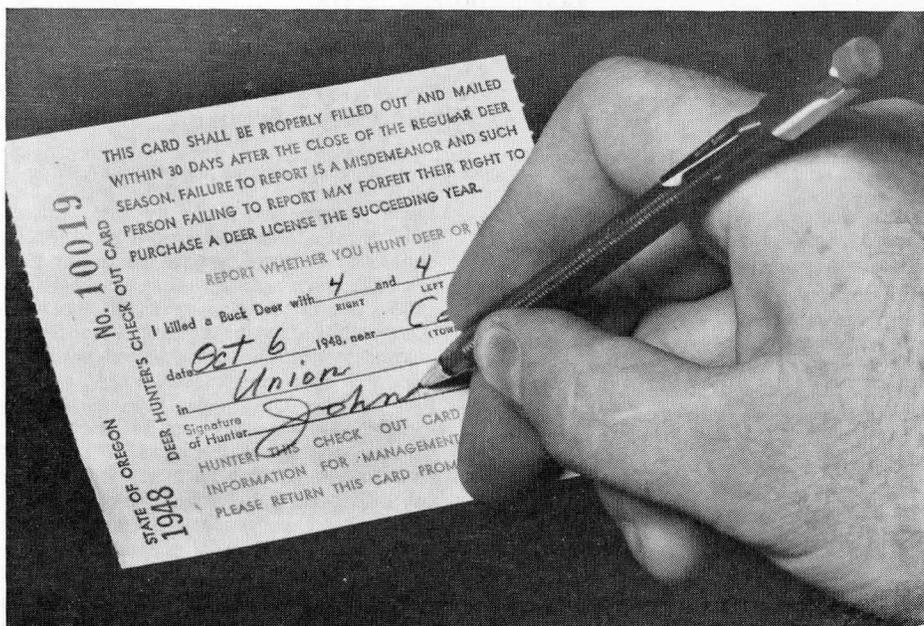
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ATTENTION DEER HUNTERS!



Your cooperation is needed in order to achieve the purpose for which the separate deer tag, in use for the first time this year, was instituted.

The check-out card attached to the deer tag must be filled out and returned to the Game Commission within 30 days after the close of the season, even if no deer is killed. Failure to make a report gives the Com-

mission the right to refuse issuance of a deer tag the next year.

Heretofore, no definite figures have been available as to the number of deer hunters, the number of deer killed, areas of highest kill, and time of heaviest kill. This information is important for sound management of the deer herds.

Tagging Regulations

Several changes in this season's tagging regulations will affect both bird and big game hunters.

All game animals and game birds in possession in the field or forest or in transit more than 48 hours after the close of the open season must be tagged with a metal seal of the Game Commission.

If a hunter wants to give away to friends some of his legal kill of big game or game birds, the part given away must be tagged with a metal seal.

Any game taken during special seasons will have to be metal tagged also.

Hunters transporting pheasants to closed areas or those having lesser bag limit than area in which birds were killed will be required to have their pheasants tagged.

When a deer or elk hunter makes a kill, he must punch out the date of kill on his hunting tag, and attach it to the animal in plain sight. The tag shall be kept attached to the carcass or parts thereof so long as the same are preserved or until tag is replaced by metal seal of the Game Commission.

Care of Game Animals

All big game should be dressed quickly. Immediately place the animal so that the head is lower than the body. Using a heavy knife, sever the veins and arteries where the throat and breastbone meet so that the blood in the body will drain rapidly. Split the body cavity from throat to tail by making the first incision just below the first ribs, large enough so that a hand can be inserted to press the stomach and entrails away as the skin and thin flesh are cut with the tip of the knife. Then insert at the point of the first incision and cut from the first ribs to the throat, taking care not to cut the esophagus (food pipe), stomach or intestines. Spread the hind quarters so that the entrails can be removed intact, but allow for sex identification as required by law. The vent should be cut loose without severing and tied with a piece of string for removal with the viscera. Likewise, the food pipe leading into the stomach should be tied before severing. This can be done in the chest cavity or just before it reaches the stomach. The remainder of the food pipe can then be carefully removed.

Careful skinning of the animal will provide better flavored meat.

Game should not be dragged. The

The general season for blacktail and mule deer having at least forked antlers is open from October 1 to 20, inclusive, in all counties except Sherman and Gilliam. However, deer of either sex may be taken under the general deer tag by archers hunting in the three special archery areas. These include the Cove area in Union county and the Mt. Emily game refuge in Union and Umatilla counties, both of which are open from September 18 to September 23, inclusive; and that part of Canyon Creek reserve lying north and east of Canyon creek, which is open from September 18 to October 20. Archers in these three areas are required to have also a free special archery permit and check-out form.

simplest manner of getting big game out of the woods in good condition is probably to skin and quarter it, especially if the hunter is alone. Care should be taken not to disguise the sex of the animal. If big game is brought down in the heat of the day, it should be allowed to cool and if possible left in the shade until sundown.

If game meat is to be transported by automobile, be careful not to expose it to the heat of the motor or exhaust gases,

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Umpqua River Study

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drainage amounted to 4,400 fish, including 21.3 per cent "jacks," while the 1947 run included 6,000 fish of which 21.4 per cent were "jacks."

No Time For Optimism

Even though the 1947 runs of both steelhead and chinook salmon show measurable gains over those immediately preceding them, there is no basis for optimism, especially in the case of the spring chinook. The life history of this species covers a five-year cycle (with some variations) and there is no practical significance between the numbers of any run and that immediately before or after it. The important thing to be determined is the relationship between any given run and its parent run which appeared five years earlier.

Examination of commercial catch records from the lower river over a considerable period indicates a rapid rate of chinook depletion during recent years.



New fish ladder at dam on Calapooya Creek, tributary to Umpqua River.

Following analysis of this information it was predicted with a considerable degree of assurance that the spring chinook salmon runs during 1948, 1949 and 1950 would become smaller unless there had been exceptionally favorable conditions for survival. This prediction has already been partially fulfilled by the decline in the current run as can be seen in the foregoing table.

The spring chinook salmon population of the Umpqua is now at such a low level that if every fish is not given the utmost in protection to enable it to fulfill the purpose of its existence — namely, successful reproduction — the virtual extinction of the runs is a certainty. Past experience has indicated that more salmon

TABLE No. 1

Run of Fish	1945-46	Peak Week	1946-47	Peak Week	1947-48	Peak Week
Winter Steelhead	6,370	3/ 5	11,211	3/12	9,790	3/26
Summer Steelhead	3,404	10/ 5	4,718	10/ 8	Incomplete*	
Salmon Trout	1,139	7/23	996	7/16	Incomplete	
Spring Chinook†	2,508	5/14	3,810	4/30	2,377	5/21
Silver Salmon†	1,411	10/22	1,034	10/ 8	Not started	
Suckers†	5,257	6/18	13,156	5/14	6,183	6/25
Squawfish†	732	7/16	1,692	6/25	416	6/25

*Data August 3, 1948 is 2,328 or 473 less than at same date last year.

†Data for 1948 to July 29, but virtually complete. All totals for salmon includes "jacks".

hatcheries are not the answer either, especially with spring chinook.

Sport Creel Census

A considerable portion of the task of determining trends in fish populations and angling pressure is met by conducting an angler check or creel census on each important run. Since it is obviously impossible to meet every angler at the conclusion of his fishing day, total figures must be obtained by sampling much in the manner in which the Gallup Poll is conducted to determine trends in public opinion. This has been successfully done for over two years. With rare exceptions, cooperation by the angling public has been of a very high order. The effort expended on creel census may seem to be a futile gesture but aside from its value as an indication of over-all trends in populations from year to year, and in time the trend of each cycle as well, it furnishes a record of the economic value of the resource as demonstrated by the degree of angling pressure. As a result of the work done on creel census, dependable estimates regarding the sport catches of certain species and races in the Umpqua River have been made and are presented in Table No. 2. Data for summer chinook, fall chinook and silver salmon were obtained in the lower river by L. M. Mathisen.

Spawning Ground Surveys

Coupled with migratory counts and creel census is a third means of securing facts upon which to base recommendations for sound management practice. The tool referred to is the spawning ground survey. Each year at the proper time, considerable effort is expended covering as much of the watershed as possible, and certain selected streams with special care, counting the spawning fish or those in the resting holes. It is particularly useful in the case of the spring chinook salmon in the South Umpqua River and for fall chinook and silver salmon in some of the lower tributary streams.

Here are two examples of the value of

these stream checks. The fall chinook fishery was extremely poor in 1947. It could not be known with certainty that the fish were actually fewer merely because the catch was poor. A thorough study of the spawning areas confirmed beyond doubt the disastrous decline of the 1947 spawning class of that race of fish in the Umpqua River. Spawning ground surveys gave further support to the demonstrated increase in the 1947 run of adult silver salmon as evidenced by the improved fishery but which was not mirrored by an increase in the number of fish passing through the counting station at Winchester Dam. This last example illustrates the necessity for utilizing each and every available method of securing information.

Tagging Studies

Another study of particular interest and great potential value is the tagging of steelhead, salmon trout and resident rainbows. As part of the cooperative work with the Oregon Fish Commission, 55 winter steelhead of the 1946-47 run were tagged in tidewater above the commercial fishery but below the entire sport fishery. Tags of four different colors were used, changing the tag colors as the season advanced. Fifteen tag-bearing steelhead, with all colors represented, were observed passing through the counting station. This indicates that if there are different races of steelhead peculiar to certain sections or tributaries of the Umpqua, they were thoroughly intermixed while in the tidewater area of tagging operations. One tagged steelhead was known to be caught by a sport fisherman.

In addition to the 55 steelhead discussed above, 128 were released after being artificially spawned and tagged at Rock Creek while 204 were tagged at the Smith River egg taking station. Although only 1.07 per cent of the estimated 1946-47 steelhead escapement was tagged, a return of 1.05 per cent of the

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TABLE No. 2

Type of Fish	1946	No. F/A*	1947	No. F/A*	1948	No. F/A*
Winter Steelhead	(partial data)		4,100	0.38	2,400	0.19
Spring Chinook	483	0.22	250	0.14	589	0.16†
Summer Chinook (July)	37	0.09	123	0.37	Incomplete	
Fall Chinook	333	0.24	103	0.09	Incomplete	
Silver Salmon‡	2,243	0.35	1,675	0.25	Not started	

*Stands for number of fish per angler.

†The figure 0.16 F/A applies only to those fishing above Bullock Road Bridge. Average below that point was much less.

‡Silver "Jacks" 57% in 1946 and 16% in 1947.



Measuring out fish for the pack cans.



Loading the cans for packing by mules.



Result of earlier plants in Rigdon Lake.

High Lakes Stocked By Packstring and Plane

While most of the high mountain lakes are receiving their allocations of fish via pack mules, the aeroplane is doing the job in several areas. The use of the plane is proving more economical in stocking lakes that are a long way from a base camp and lakes that are planted with a large number of fish.

Several lakes in the Mt. Hood National Forest and the Bend area have already been stocked by plane this season. Some of the lakes stocked by air are Mink, Charleton, Duffy, Mowich, Maidu, Lucile, Honey and Kidney. Both eastern brook and rainbow trout are being flown to the lakes. The fish are carried in a specially constructed belly tank that is suspended between the wheels of the plane. Releasing the fish at an altitude of approximately four hundred feet above the lake has proven very successful.

Altogether, approximately 2,000,000 trout will be packed and flown into the high mountain lakes by the time the season is over, with about 300 lakes on the list to be stocked.

SEPTEMBER - OCTOBER CALENDAR

- | Species | Open Season |
|----------------------|--|
| Trout | — September 30, general season closes. October 31, coastal season closes. |
| Salmon & Steelhead | — Open season both months. |
| Jack Salmon | — Open season both months. |
| Spiny-Rayed Fish | — Open season both months. |
| Predatory Animals | — Open season both months. |
| Doves | — September 1-15. |
| Pigeon | — September 1-30. |
| Deer | — October 1-20. |
| Elk | — October 25-November 2, Western Oregon. October 25-November 11, Eastern Oregon. |
| Pheasant | — October 29-November 2. October 29-November 7 (Malheur). |
| Quail | — October 29-November 2. |
| Blue or Sooty Grouse | — October 1-20. |
| Waterfowl | — October 29-November 14. |

Pheasant Liberations Completed

Pheasant releases for the 1948 season have been practically completed from the four game farms and seven field rearing projects operated by the Commission. The total releases amounted to slightly more than 50,000 birds.

Liberation sites were chosen by the district agents with special attention to available feed, cover and water for the newly released birds.

Young mallard ducks can swim a third of a mile as soon as they leave the nest.

A Business View of Wildlife Conservation

By JAMES FORD BELL*

It is safe to say that there are definite limitations to the application of business management principles to a problem as saturated with controversy and public interest as is game and fish conservation. On the other hand, the objectives are clearly identical. The natural resources of game and fish, like business, must be managed in the interests of all the people.

Sportsmen tend to forget that hunting and fishing as we know them are not vested privileges, but rather an endowed heritage peculiar to America. In the old world these pleasures originally were reserved for the nobility and landed gentry, and ownership of game centered in the crown or the individual estate. In general this policy continues there today. In America, thanks to the bounty of resources and guarantees written into our basic law, game and fish are controlled by the state in its sovereign capacity and managed for all its citizens.

The point to be emphasized is that this common ownership implies a special obligation as well as a privilege. **Too often Americans shirk their individual responsibility for maintaining our game and fish supply.** This responsibility is best discharged by providing money adequate to support efficient management.

To operate a business efficiently, certain standard procedures must be followed, among them:

1. Accounting and inventory control.
2. Establishment of production (or sales) quotas.
3. Capitalization, or procurement of finances.
4. Agreement on long-term operating policy.

Admittedly these are only a few of the many considerations that must enter into the management of a business. But they are fundamental. Let us consider, briefly, their application to the management of a complex natural resource such as our game and fish supply.

Accounting and Inventory Control. Before game and fish can be managed, we must know what we have. Whatever the cost of obtaining this information, it must be secured accurately and at timely intervals. Upon it must be based such decisions as the dates and volume of harvest and the countless other regulations looking to wise usage. Our accounting must be standardized on a pattern that will win the ready acceptance and confidence of all citizens.

Establishment of Production Quotas. What do we lack, and how much of it?

*James F. Bell, eminent American business leader, is director of several corporations and chairman of the committee on finance and technological progress for General Mills, Inc., Minneapolis, Minnesota.

(This article is being published through courtesy of The Conservation Volunteer, official publication, Minnesota Department of Conservation.)

This can be determined from the inventory. Deficiencies must be underlined and widely publicized. Action must follow promptly to build up inventories. This production should be budgeted so that management will know what it will have to work with in the future.

Capitalization or Finances. Whatever it costs to maintain our resources on a level to meet all needs comes under this heading. First of all, we must see to it that hunting and fishing license revenues, upon which game and fish depend for support in this state, are not diverted to other uses. If the present fees are inadequate, we must dig down into our pockets and produce enough money to do the job. It may cost you \$25 for an auto license in a given year, yet two adult residents can fish twelve months on a fee of \$1.50. The expense of game and fish is the obligation we must assume for enjoying it. There is no alternative.

Long-term Operating Policy. This really combines the first three principles. It is to our advantage that our long-range policy of management be written for all to see, and that it be revised from time to time according to the dictates of necessity. In this way we can better "sell" the plan and the finances needed to carry it. If all the goals are not attained immediately, they will be projected in orderly fashion.

There is no broad and smooth highway to a land teeming with game and fish. To manage a resource that is annually tapped by some one million Minnesotans and visitors is a gigantic task, particularly when, as is now true, we have **less than one dollar to spend each year in management for each hunter and fisherman who stands to benefit!**

One important task of our publicity and information should be to point up the necessity for dedicating more money to the task before us. The needs of education, particularly in the adult field, should not be overlooked. The people must be kept informed through constant repetition of the program as it unfolds. But more important, we must meet the immediate needs of the problem, and in full. To solve any or all of them will cost money. We must be prepared to pay the price or stand the consequences of a game and fish supply facing slow exhaustion before ever-increasing hunting and fishing pressure.

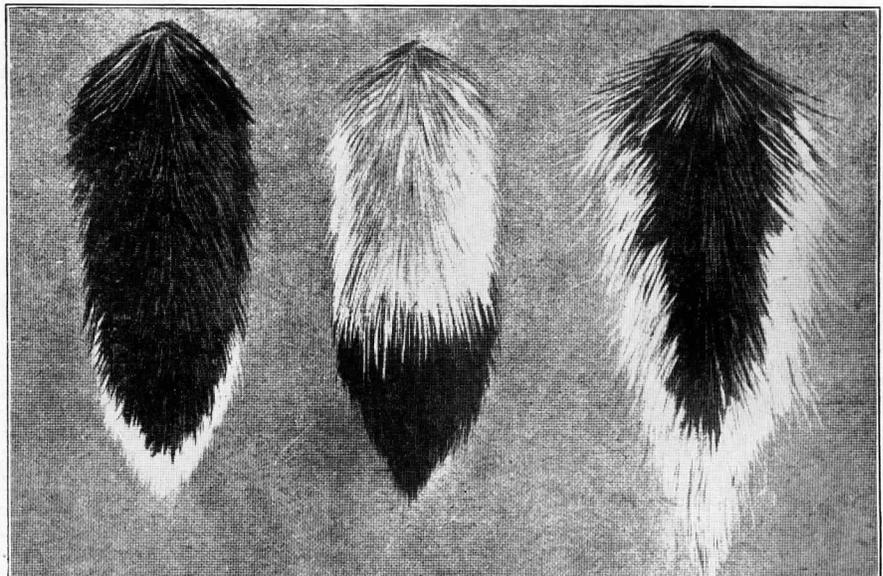
Our good friend Izaak Walton was endowed with unusual vision. Three hundred years ago he no doubt had in mind the thousands of self-appointed "experts" on all things game and fish when he wrote, "That which is everybody's business is nobody's business." Game and fish threaten to wither away to "nobody's business" or to no business at all if we fail to agree on a production program supported by a long-range plan with adequate finances. The sooner this basic thinking is accepted, the better.

Whether a sportsman is a conservationist depends on his state of mind. If he decides to be one — and it goes without saying that every sportsman should be — he can carry out his desire by obeying the laws, by encouraging compliance from others, and by cooperating with his conservation department at all times. These rules constitute a minimum personal conservation creed.

Frogs and toads use their eyes to help them swallow. The eyeballs are pulled down, and the food forced on down the throat.

* * *

Horses have the largest eyes of all land animals.



Tails of the three kinds of Oregon deer. From left to right: Columbian blacktail, mule and whitetail.

Umpqua River Study

(Continued from Page 4)

tagged fish has been realized approximately one year later. Three of the four, year-old tags were taken in commercial nets in the lower river. The fourth was seen passing through the counting station during the middle of March. L. M. Mathiesen, who is in charge of the lower river study, also tagged 94 cutthroat trout last year. This tagging work continues at every opportunity.

Beginning on May 6, 1947, 374 fall rainbow trout yearlings, ranging from five and a half to eight inches in length, were tagged with plastic discs and released into the waters of the upper drainage. In fourteen weeks, reports of 53 tagged fish were turned in to the field agent with information as to where and when each fish was taken. This was a return of 14.2 per cent. During that time there was comparatively little seaward migration. From the North Umpqua River alone there was a return of 18.4 per cent. Eleven per cent of this latter group moved downstream distances ranging from three-fourths of a mile to twelve miles. Two fish in the North Umpqua were known to move upstream 125 yards. The remaining 83 per cent moved downstream an average of only 118 yards during that period. As late as August 8, 1948, not a single additional return from this group has been realized. Although the possibility of complete mortality of fish tagged in this manner cannot be ruled out, we may find some of these fish returning a year or two later as "steelhead."

A different type of tag is being utilized this year. A circular, metal tag, similar to those used for bird banding, has been placed on the lower jaw of 1,087 fish which averaged nearly ten inches in length. These yearlings were released in Little River and the upper North Umpqua River mostly in early June. In two months there has been a return of approximately 15 per cent. In all but one instance, all reports show downstream movement or no migration at all. The later returns are nearly all downstream



Man-made obstacle removed on Deadman Creek, tributary to South Umpqua River.

from the point of release and it seems evident that three or four weeks must usually elapse after summer planting before migration, if any, takes place. There is one record of upstream migration to the extent of one-half mile. Slightly more than six per cent of jaw-tagged fish liberated in mid-winter have been caught at distances up to twenty miles below release sites.

It requires considerable time on the part of those conducting the study and the thorough cooperation of anglers before such tagging studies will bear fruit. If each angler who takes a tagged specimen or who catches one and releases it after noting the tag number will spare a few minutes to return the tag or report the number to the Field Agent at P. O. Box 451, Roseburg, or to the State Police, the Rock Creek Hatchery superintendent, or to any officer of the Roseburg Rod & Gun Club, this study will be greatly facilitated and may become extremely valuable.

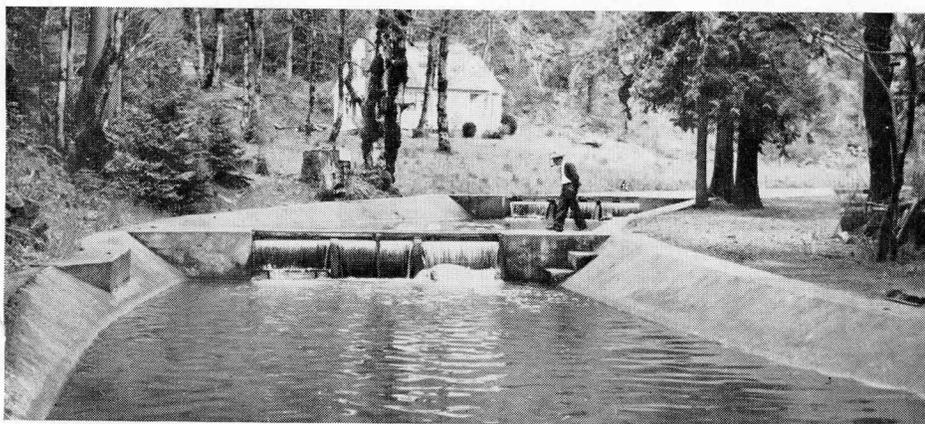
Seaward Migration

A record of seaward migration has been compiled at Winchester Dam on the North Umpqua and at Nonpareil Dam on Calapooya Creek. The traps at these locations have their limitations and no way

has been devised to improve the situation without interfering with the upstream migration which must take precedence. The traps serve to record very well the seaward movement of any current hatch of fish but are inadequate to capture more than an occasional hold-over fish of two or three years of age. Histograms, by half month periods, have been prepared which constitute a record of the size and frequency of seaward migrants appearing in the traps at Winchester and Nonpareil. The peak of the seaward movement of steelhead of the year, at Winchester, in 1947 appeared from May 15 through June 30. Most of the immature salmon trout were trapped during the week beginning June 12. There were two recognizable peaks of seaward migrating chinooks at Winchester. The first occurred between April 16 and May 31 and the second came during the period October 1 to 15. The migration of silver salmon was sustained at a fairly high rate throughout much of the year, being particularly high during the period May 16 through July 31. There was another apparent peak during October and early November. During April, May and June, seaward migration of all species during hours of daylight was stronger or nearly as strong as that during hours of darkness. The catch by a temporary trap in Willis Creek, a small tributary of the South Umpqua River, indicated that a midsummer freshet will produce an accelerated and strong seaward movement of fingerlings.

A much more difficult time has been had in attempting to determine the trends and peaks of seaward migration in the lower river. It has been learned, however, that chinook migrants are present in considerable numbers from early July to September. Silver salmon fingerlings were found in tidewater from the middle of March through May with the greatest abundance being noted in early May. It has not yet been determined when the steelhead migrants enter or leave the

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Rearing pond at the Rock Creek hatchery.

Oregon State Game Commission Bulletin

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PORTLAND 8, OREGON

1948 Migratory Game Rules

(Continued from Page 1)

The use of automatic-loading or repeating shotguns capable of holding more than three shells is still prohibited. An amendment of the regulation further provides that the plug in the shotgun must be incapable of being removed without disassembling the gun. Use of bait and live decoys also continues to be unlawful.

Interstate shipments of waterfowl in the United States may be made up to 48 hours following the close of the shooting season in the state where taken. Shipments from Canada and Mexico are permitted as late as 5 days after the close of the season. Dressed birds being shipped are required to have the head, head plumage and feet attached so that they can be identified.

Hunters may keep migratory game birds in possession for a period of 90 days after the close of the season.

Other regulations remain the same as last year.

Umpqua River Study

(Continued from Page 7)

tidal areas of such large streams as the Umpqua. Ocean bound salmon trout are apparently most abundant in tidewater during March and April.

In addition to the subjects discussed here, much time is devoted to learning the location of barriers, log jams and irrigation ditches, conducting age, growth rate and life history studies. A preliminary economic evaluation of the fishery resource has also been completed.

This article, touching briefly upon the highlights of the work being done and the information which is being accumulated and analyzed from the Umpqua River, is an account of but one of many studies carried on by the Game Commission in its effort to properly manage the fish and game of Oregon. This is not a job for the Game Commission alone. The wholehearted cooperation of sportsmen and sportswomen is also needed to insure the continued maintenance of a surplus crop of fish and game which may be harvested as part of the recreational resources of Oregon.

Crayfish eyes are dark at night and light in the daytime.

Game License Sales

Final analysis of the 1947 hunting and angling license sales reveals an increase over 1946 of 8.30 per cent in the number of license holders, which totalled 344,226 in 1946 and 372,813 in 1947. There were last year 265,563 licensed anglers and 208,620 hunters. Revenue received from game license sales was \$1,335,166.

Figures are not available yet for the 1948 season. Collection of license receipts from agents, however, shows that the sales so far are slightly ahead of the corresponding period last year.

License sales by county are shown in the following table.

Care of Game Animals

(Continued from Page 3)

but wrap loosely and pack in a cool place. Elk should be chilled and quartered before the homeward trip, each piece being wrapped carefully in paper, burlap, canvas, or similar covering. Dress out all big game at once because body heat spoils meat. Cut from breastbone to base of tail. Do not puncture intestines. Cut around vent and pull in. Roll out viscera, cut gullet loose and drain. Then be sure to swab whole cavity clean and dry.

Only the male Katydid, crickets and cicadas sing. The females are silent.

SUMMARY OF 1947 LICENSE SALES BY COUNTY

County	HUNTERS		ANGLERS		Number of Licensed Individuals	Total Sales	Per Cent Total Sales
	Number of Licenses	Amt. Received	Number of Licenses	Amt. Received			
Baker	5,034	\$ 15,916.00	3,698	\$ 9,644.00	6,608	\$ 25,560.00	01.91
Benton	4,028	10,910.50	4,851	13,013.50	6,764	23,924.00	01.79
Clackamas	6,164	16,930.00	10,101	27,123.00	13,197	44,053.00	03.30
Clatsop	4,420	12,125.50	6,519	17,946.50	8,626	30,072.00	02.25
Columbia	3,607	9,954.50	3,839	10,276.50	5,817	20,231.00	01.52
Coos	7,664	20,975.50	9,693	26,286.50	13,296	47,262.00	03.54
Crook	2,033	6,324.50	1,507	3,962.50	2,799	10,287.00	00.77
Curry	1,392	4,936.50	6,094	19,432.50	6,559	23,469.00	01.76
Deschutes	7,184	23,032.00	8,647	24,179.00	12,799	47,211.00	03.54
Douglas	9,005	25,022.50	11,186	30,865.50	15,650	55,888.00	04.20
Gilliam	662	2,109.50	549	1,432.50	914	3,542.00	00.27
Grant	2,687	10,021.00	1,789	4,675.00	3,468	14,696.00	01.10
Harney	2,191	8,359.50	1,106	2,878.50	2,646	11,238.00	00.84
Hood River	2,349	6,631.00	3,220	8,776.00	4,429	15,407.00	01.15
Jackson	11,564	33,545.50	14,954	41,629.50	20,997	75,175.00	05.63
Jefferson	797	2,451.50	1,002	2,772.50	1,416	5,224.00	00.39
Josephine	4,935	14,380.50	9,216	26,579.50	11,470	40,960.00	03.07
Klamath	12,611	44,424.50	12,009	34,052.50	19,883	78,477.00	05.88
Lake	2,911	14,917.00	2,269	6,377.00	4,188	21,294.00	01.59
Lane	18,393	50,937.50	24,101	65,511.50	32,859	116,449.00	08.72
Lincoln	3,719	10,071.00	6,054	16,702.00	7,529	26,773.00	02.00
Linn	7,644	20,958.00	8,556	22,560.00	12,432	43,518.00	03.26
Malheur	5,861	22,453.00	5,150	15,994.00	9,015	38,447.00	02.88
Marion	9,613	26,168.50	12,876	32,247.50	17,816	60,416.00	04.52
Morrow	1,078	3,278.00	806	2,018.00	1,392	5,296.00	00.40
Multnomah	33,200	79,179.50	56,330	138,867.50	69,565	218,047.00	16.33
Polk	2,598	7,097.00	2,551	6,618.00	3,991	13,715.00	01.03
Sherman	347	1,078.50	475	1,364.50	673	2,443.00	00.18
Tillamook	4,170	11,219.50	6,149	16,892.50	7,786	28,112.00	02.11
Umatilla	8,376	27,978.00	6,175	16,561.00	11,343	44,539.00	03.34
Union	5,211	16,416.50	4,281	11,294.50	7,299	27,711.00	02.08
Wallowa	2,902	9,500.50	2,790	7,668.50	4,401	17,169.00	01.29
Wasco	2,955	8,649.50	3,384	9,216.50	4,964	17,866.00	01.34
Washington	5,148	14,069.50	5,788	15,163.50	8,603	29,233.00	02.19
Wheeler	720	2,158.50	356	908.50	857	3,067.00	00.23
Yamhill	4,673	12,980.00	4,844	12,719.00	7,395	25,699.00	01.92
Out of State	774	10,271.00	2,648	12,425.00	3,368	22,696.00	01.70
TOTAL	208,620	\$616,531.50	265,563	\$718,634.50	372,814	\$1,335,166.00	100%

The panda is one of the rarest of mammals, with the face of a raccoon, feet like a cat, and body similar to that of the bear.

Most of the early spring-song of birds is by way of announcing their claim on certain nesting areas.