

BULLETIN

OREGON STATE
GAME COMMISSION

OCTOBER, 1958



BULLETIN

OREGON STATE
GAME COMMISSION

October, 1958

Number 10, Volume 13

Published Monthly by the
OREGON STATE GAME COMMISSION
1634 S.W. Alder Street—P. O. Box 4136
Portland 8, Oregon

MIRIAM KAUTTU, Editor
H. C. SMITH, Staff Artist

MEMBERS OF COMMISSION

J. H. Van Winkle, Chairman.....Oregon City
Kenneth G. Denman.....Medford
Rollin E. Bowles.....Portland
Ralph T. Renner.....Lakeview
Max Wilson.....Joseph

ADMINISTRATIVE STAFF

P. W. Schneider.....Director
C. B. Walsh.....Assistant Director
W. D. DeCew.....Controller
John B. Dimick.....Chief, Supply and Property
Roy C. Atchison.....Attorney
C. J. Campbell.....Chief, Basin Investigations
R. C. Holloway.....Chief, Info. and Educ.
John McKean.....Chief of Oper., Game Div.
H. J. Rayner.....Chief of Oper., Fishery Div.
George Kernan.....Engineer
A. V. Meyers.....Chief, Lands Section
H. R. Newcomb.....Personnel Officer

REGIONAL SUPERVISORS

Leslie Zumwalt, Region I,
Route 1, Box 325, Corvallis
J. W. Vaughn, Region II.....Box 977, Roseburg
L. M. Mathisen, Region III.....222 E. 3rd, Bend
W. H. Brown, Region IV.....Box 742, La Grande
W. V. Masson, Region V.....Box 8, Hines

Entered as second-class matter September 30, 1947, at the post office at Portland, Oregon, under the act of August 24, 1912.

Please report promptly any change of address. Send in both the old and new address with notice of change.

At the present time the Bulletin is circulated free of charge to anyone forwarding a written request.

the cover

The Game Commission exhibit at the 1958 State Fair was a popular attraction. This view shows the two ponds used, one for fish and the other for waterfowl. (Photo by Ron Shay)



AUGUST MEETING OF THE GAME COMMISSION

The Oregon State Game Commission met August 27 at its headquarters in Portland and considered the following matters.

Bids: Accepted bid of F. E. Wilburn for \$5,410 for construction of boat ramp and parking area at Shinglehouse Slough.

Emergency Hunt: Approved emergency elk hunt in Douglas County for September 6, 7, 13 and 14.

Saunders Lake: Heard residents at Saunders Lake (Coos County) protest acquisition of boat ramp site on the lake. Matter referred to staff for further investigation.

Biennial Budget: Approved biennial budget for submission to Governor and Legislature.

Capital Outlay: Approved following capital outlay items: 2 fish liberation trucks at \$4,500 each; construction of garage and warehouse at southeast regional headquarters at Hines; garage and storage shed at Fall River Hatchery; water control on Sauvies Island Management Area; 3 miles of fence at Klamath Management Area; 10 duck blinds and 4 access bridges on Camas Swale Management Area; concreting of pond bottoms and installation of pond safety covers at Willamette Hatchery; 1¼ miles of fence at Fish Lake Management Area.

Winchester Counting Station: Authorized repairs at Winchester counting station at estimated cost of \$1,048.

ELK REGULATIONS

Elk hunters are reminded that anyone killing a bull elk must tag and possess the antlers with the scalp and eyes attached while the carcass is in possession in the field or forest or on any of the highways or roads in the state of Oregon.

The general elk season opens November 1 and extends through the 16th in the coastal area, where the bag limit is one bull elk with at least three points two inches or more in length on one antler. In the Cascade and northeastern areas the season runs from November 1 through the 25th. The bag limit in these areas is one bull elk with antlers longer than the ears except that either a cow or bull elk may be taken in the following game management units: Wheeler, Grizzly, Ochoco, Maury, Northside, Baker, Keating, Lookout Mountain, Murderer's Creek, Beulah, Malheur River and Silvies. Detailed descriptions of the areas mentioned are given in the 1958 hunting synopsis.

Elk hunting rifles must be at least .25 inch caliber and be capable of developing at least 1220 foot pounds of energy at 100 yards. Besides those under .25 inch caliber some of the guns illegal for elk hunting include the 25-20, 25-35, 32 Winchester self-loading, 32-20, 32-40, 35 Winchester self-loading, 351 Winchester, 38-40, 38-55, 401 Winchester, 44-40, and the 44-70. If you have any doubt about your rifle, check it against a ballistic table.

This quail pen was one of several pens of upland birds that formed part of the Game Commission display at the State Fair.



Rearing Reservoirs

Harold Crane Smith

By H. J. Rayner, Chief, Fishery Operations

ANY PLAN FOR THE IMPROVEMENT of salmon and steelhead populations in Oregon must consider the segments of life history which are most vulnerable and must provide for the elimination of the hazards which exist in those segments.

The keys to highest production lie in disease elimination resulting from high temperatures and the presence of bacteria, in the avoidance of the scouring action of floods, in the escapement of young fish to the ocean at the optimal time in age and season, in the production of sufficient young fish to result in a significant return of adults, and in the presence of adequate living space and food.

With the changing watersheds and volumes of flow, none of the production keys can be attained consistently within the river channels. As the keys vary in whole or in part, so do the populations of fish change. Stability is needed and can only be attained in a controlled environment.

Hatchery operations to the end of the production of yearling fish have sometimes proven to be an aid but the results have been erratic to an extreme. Reasons for the unpredictable results are undoubtedly due to the presence of disease, to our inability to rear a significant number of fish, and to inimical stream conditions. The great

cost of rearing a significant number of fish and the scarcity of adequate water supplies precludes our carrying on a large hatchery operation.

ENVIRONMENTAL CONTROL IN THE MAIN THREAD of the coast streams is not easy since the actions of man and nature are difficult to regulate, but we must establish stable environments somewhere in the stream systems if we are to control the fish populations. That goal may be achieved through the building of a series of rearing areas where disease, flooding, and fish release are under rigid regulation.

The rearing areas contemplated are a series of impoundments in each system. Steelhead may require two ponds for the rearing of successive year classes to two years of age. Salmon as silvers and chinooks would probably require one impoundment containing both species.

No hatchery rearing would be involved except that eggs would be taken and the fish held to the advanced fry stage. Natural foods in the ponds would be present in sufficient quantity to rear the fish to migratory size or age. No artificial feeding is advocated owing to the costs and tendency toward crowding.

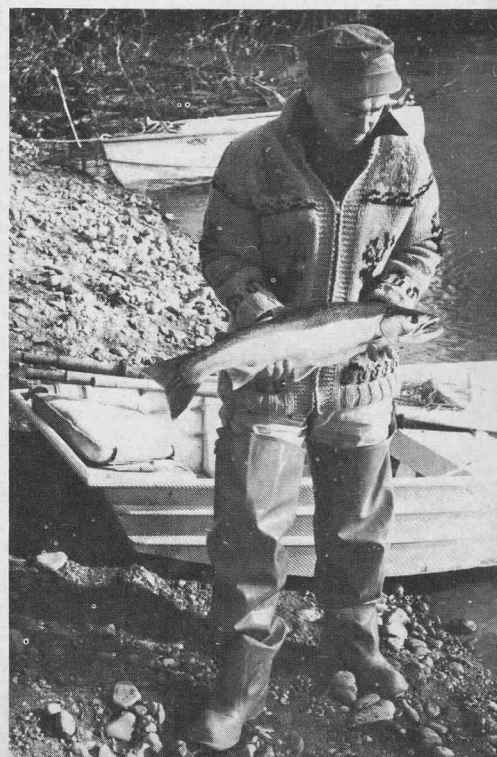
On the Rogue, Umpqua, and South Fork Coos Rivers, where certain fish populations are at a low ebb, the method appears to be well-suited for test.

Outstanding among the requisites for

production of anadromous fish is the stocking of an adequate number of young in the stream. Nature puts thirty to fifty million eggs of salmon into the Rogue and gets back 15,000 to 35,000 adult fish. We shall have to produce large numbers of yearlings if we ever hope to make a contribution either through hatcheries or rearing ponds. We can't begin to

(Continued on Page 6)

Steelhead such as this one will be reason enough for impoundment rearing.



Road Construction and Fish

A CARFUL OF HAPPY ANGLERS were returning from a successful fishing trip on one of the coastal streams. As they sped along the modern highway nearing home, the conversation centered on the events of the day. Al, in the back seat, spoke up, "You know, we did pretty well for the shape the water was in."

At the wheel, George remarked, "You are just looking for an excuse 'cause you didn't get your limit again. If it hadn't been for those showers last night, we could prove you're a dub."

"Showers, my eye," retorted Al. "It's those blasted road builders, punching roads everywhere, dumping the creeks full of mud and rocks. They don't give a hoot about fish."

"You're all wrong, Al," George said, grinning in the rear view mirror. "You're just mad about our ribbing you. Besides, if it weren't for all these roads, how could we get to where the fish are? We can't stand in the way of progress."

"I'll admit that, but somebody oughta report that mud to the Game Commission, as if they'd do anything about it." With that off his chest, Al slumped down in his seat, determined to be angry at progress, road builders, mud, and anything else.

George, grinning at the others, paused for a moment, then remarked, "I'll bet, if that murky water was caused by road building, the Game Commission already knows about it. One of the fishery men from the Commission gave a talk at our club about a month ago about roads and

fish, and I was amazed at the complexity of the problem. This new stretch of road we're on was actually designed with fish in mind. Did you notice that big culvert on the bend back there? That handles the water from Bear Creek, which was just loaded with silvers and steelhead last winter. The old road had a dinky little culvert, and lots of times I saw silvers trying to jump into that little hole in order to get up the stream to spawn. When the water was low, they'd fight their way about half way through and then drop clear back again. Some years it's a wonder any got through. Now, that new culvert is big and has a natural stream bottom, with resting places like boulders, and the fish just zip right through. That fellow from the Commission said that all these road builders are now fish-conscious. I'll bet that run in Bear Creek has actually improved since this new road was built."

Al let out a grunt at this, "Well, if they are doing something about such things, why don't they let somebody know?"

"They probably will," George concluded, "they might even have an article about it in the Game Commission Bulletin soon." Well, George was right.

Actually surveillance of road construction projects is one of the least known activities of the Game Commission, but is rapidly becoming more important. Participation in the planning and designing of road projects is a relatively new function of this organization.

In former days, most road builders were unconcerned with wildlife needs and the need for recreational areas. The main idea was to build the roads to handle adequately transportation needs, and to build them as economically as possible. When crossing streams, the designers included culverts which would carry the flood waters of the stream so as not to endanger the road fills, but no thought was given to anadromous fish which needed to ascend the stream to spawn. Also, in the course of actual construction, silt and rubble were pushed into the stream bed because it was the simplest thing to do. Often, valuable spawning gravel was covered by silt and natural channels were severely constricted by excess material. Improper fills were eroded by running water, providing a constant source of silt.

The cost of remodeling poor culverts in order to allow passage of fish was usually prohibitive. The Game Commission had few funds available for this type of stream improvement. Private contractors could not be charged for improvements as they had finished the contracts according to specifications. Makeshift baffle installations were ordinarily the only solution to correct poorly planned culverts.

Five or six years ago, with the increased tempo of road building in forest areas due to timber sales, the Game Commission embarked on a plan to advise road building agencies of

(Continued on Page 5)



Before—Little Elk Creek culvert on North Pine Creek in Baker County in late 1957. Steelhead had difficulty entering stream at migration time.



After—Little Elk Creek culvert after stream bed of North Pine Creek was raised by boulder placement. Steelhead now have easy access.

Road Construction And Fish

(Continued from Page 4)

the importance of preserving fish habitat. Data was accumulated from the experience of other states, and then consultations were held with engineers, road building agencies, and land management experts. Tentative cooperative programs were developed with the United States Forest Service.

From this humble beginning, more effort and time were expended to contact and work with other agencies concerned with road building. Some eyebrows were raised at the thought of including fish protection in the cost of constructing highways and timber roads. Little by little, as more meetings were held and the ideas of each agency were exchanged, most people involved realized that benefit to all would accrue as a result of such cooperative action.

Proper road building techniques can usually also benefit fish if certain small features are included. Practices which benefit fish habitat are also beneficial to watershed management. As evidence of these factors came to light, plus the knowledge that fish protection measures can be economically incorporated into road designing, most agencies were eager to cooperate.

At a meeting called by the Committee on Natural Resources late last year, significant strides were made in the direction of complete coordination. Representatives from such governmental agencies as the Bureau of Public Roads, United States Forest Service, Bureau of Land Management, State Highway Commission, State Board of Health, Oregon Game Commission, and the Oregon Fish Commission met for a conference on the subject. Also present were representatives of various county agencies and private logging interests. Valuable ideas were exchanged and a clear picture of each agency's problems was obtained. Future meetings at individual agency levels were planned and cooperation was generally assured.

The two main problems with which the fishery agencies are concerned are culvert installations and stream channel changes. Culverts should have no more

than a slight gradient and allow the fish to ascend without undue effort. Channel changes, although sometimes necessary, should be kept at a minimum and designed so that naturalness is preserved and stream velocities not increased unduly. The elimination of an oxbow in order to save the cost of several crossings will result in a new shorter channel of severe gradient. It has been recommended in such cases that the new channel be meandered, if possible, and large boulders placed in the stream bed to reduce velocity and provide resting places for fish. Also, in the case of channel changes, it has been requested that such work be done at times when fish are not spawning or eggs are not in the gravel. Cooperation with these requests has been gratifying.

The accompanying photos show improvements to an existing culvert installation. The entrance to the culvert was originally far above the stream bed and no pool was available from which a fish could jump. At the request of the local Game Commission biologist, Bureau of Public Road engineers raised the main stream bed by placing large boulders in the area below. The culvert now functions satisfactorily and fish ascend it easily.

Much progress has occurred in the last few years due to the cooperation of the various agencies. Biologists and engineers of the Game Commission and the Fish Commission are constantly in contact with the road building agencies. Advance plans for road and highway construction are being received daily. Most of these are relayed to the field and on-the-spot inspections are made. Many times, the length of the entire project will be walked by fishery people in company with representatives of the road designing agency. Many problems are ironed out far in advance of actual design.

Hard and fast rules for fish protection to cover all cases cannot be laid down. Each construction project presents different problems which can usually be solved through mutual agreement. Although fishery workers must preserve the existing habitat for anadromous fish, the road builders cannot be expected to shoulder the cost of creating new spawning areas. They are not requested to expend funds to improve streams, unless their operations will deleteriously affect existing conditions.

Although almost all road projects are now routinely located and designed with the approval of fishery agencies, much work remains to be done. Private logging interests are building many timber roads

(Continued on Page 7)



Copies of the synopsis of waterfowl regulations may be obtained from the Game Commission offices or any of the game license agencies.

* * *

British Columbia was furnished 58 sage grouse from Oregon as a return exchange for the bighorn sheep received in 1954. The sage grouse were trapped in Lake and Malheur counties and were transported over 700 miles to Richter Pass, about 15 miles north of the Washington border.

* * *

Game Commission personnel made about 200 visitations to summer youth camps this past season as part of its education program.

* * *

About 50 per cent of the 600 antelope hunters issued tags were successful during the open season from August 23 to 27.

* * *

Antelope herd composition classification counts in August showed that of the 1,475 animals classified from the air and ground, 18 per cent were bucks, 46 per cent does and 36 per cent fawns.

* * *

Field observations indicate upland game production has continued at high level over most of the state although Jackson and Josephine counties appear to be below last year's production level. Chukars particularly are very numerous throughout most of the more arid portions of eastern Oregon from the Deschutes to the Owyhee. Huns also appear to be plentiful.

* * *

A brood of six white-fronted geese were observed three times on the Klamath Management Area during August. There are no previous records of white fronts nesting in Oregon, their normal breeding range being in Alaska and Canada north of the Arctic Circle.





Delintment Lake — This picture and the one below show the type of impoundment structures considered in this article.

Rearing Reservoirs

(Continued from Page 3)

produce fish in our hatcheries that will provide fishing for steelhead or salmon, when one considers the survivals that we have been getting, unless vast investments are made. For example, on the Umpqua River, for \$500,000 a year, we could bring in a pretty fair run of salmon based on the results of stocking spring chinooks in that river; but, with rearing ponds, we may be able to do the same job for a small amount of that sum when one pro-rates it over a period of several years.

The number of fish needed for each river will vary directly as the angler use of adults and, to a lesser extent, as the size of the stream vary. With an expected production rate of 500 to 1,000 fish per acre and a possible need for at least 200,000 migrants for each year class, the minimal experimental pond acreage recommended for such streams as the Rogue and Umpqua for steelhead may be 800 and for salmon 400, the difference between the species being due to the possible difference in length of rearing period.

With such rearing ponds, we would not be limited by hatchery space, fish food shortages, disease, or by the continuing annual costs of hatchery rearing of salmon and steelhead.

THE RECOVERY OF THE FISH FROM THE REARING PONDS and their

placement in the river below or in other streams will be governed by the type of dam and water level manipulation. With screening at the outlet, a given pond may be suited to a slow lowering of water levels at migration time to a point where the fish can leave the impoundment area by passing through the shallow pool remnant by way of the outlet

when screening is removed. In another pond it may be more advantageous to allow the fish to pass over a spillway in free fall to a cushioning pool or down a sluiceway. All fish may have to be removed from the pond with each year class in order to avoid possible future predatory action.

Criteria for pond construction will vary with the degree of adaptability of sites to an ideal. The best pond is one whose inlet water supply is under control at all times. This may be the result of a bypass eliminating flood water, or the presence of a controlled feeder water supply or then again by the balance of inflow with evaporation and the presence of only enough run-off to fill the pond. Some screening at outlets may be necessary to prevent premature downstream movements of fish of less than migratory size where spill occurs throughout the year.

Site location in the stream profile is subject to much variation as the landscape changes between watersheds. It may be necessary to build a pond near the mouth of a given stream because other sites upriver are not to be found. In such a case the fish reared may have to be captured by means of inclined plane traps and transferred to the headwaters for the establishment of homing to the upper reaches. A given stream may not have a rearing pond site and it may be necessary to build a pond in an adjacent watershed.

Ponds can probably be built at or near an average of 500 dollars per surface acre
(Continued on Page 7)



Silver Creek Reservoir (Moon Lake)



Interest in salmon angling along the coast has been increasing each year.

Rearing Reservoirs

(Continued from Page 6)

judging from the experience of other states.

Surveillance for purposes of prevention of poaching might be necessary with steelhead since they are of larger size at effective migration time than the salmons. At our hatcheries we hire one man to rear 80,000 steelhead of migratory size. Steelhead rearing ponds on a given stream will approach an individual production of 200,000 fish and on the basis of such a production rate, the establishment of a caretaker for the prevention of fishing is justified. On the other hand, growth may be better in the ponds than in the hatcheries and the fish may have to remain in the ponds through only one fishing season. During this time they would not reach a size desirable to the poacher and would be planted in the spring of the following year before the trout fishing season and while inclement weather was still occurring. Thus the use of a caretaker may not be indicated unless the rearing area is close to a population center.

From our experience with the stocking of lakes and reservoirs with rainbow trout, it is to be expected that impounded waters at medial altitudes and lower (below 5,000 feet) will produce fish at ten to the pound readily in eighteen months of rearing. Should the fish be too large at optimal migration

time (April), an increase of stocking rate per acre can be used to check the growth as necessary.

There is no particular history of rearing pond use, as such, in our department, but we do know that the Tenmile Lakes, as a result of the natural stocking of fry, have produced more silver salmon than any of the Oregon coastal streams under present-day conditions. There have been years when the lake has been reported to have produced nearly 100,000 fish as adults.

WE ARE SEARCHING FOR ADEQUATE REARING POND SITES on all streams containing anadromous fish with emphasis on the particular streams mentioned above. The funds required to construct the reservoirs will not be immediately available for all streams but the key problem areas may be reached in the immediate future.

It must not be considered that the above represents a finished product and it must be looked on as of experimental nature. In the light of the experiences in attempts at rehabilitation of runs, it does appear that the method of environmental control projected is superior in many ways to any thus far tried. It must be realized that great costs are involved and that the results may vary strongly from stream to stream. We must, therefore, have more than one area of operation, building such rearing areas in several watersheds and planning the testing carefully.

CONSERVATION LEGISLATION PASSED BY CONGRESS

Conservationists scored well in attaining passage of legislation during the last Congress for the protection and management of the nation's natural resources. The list includes:

Amendment of the duck stamp law to increase fee to \$3 (effective next year) and assurance that funds will be channeled into program for purchase and lease of wetland areas.

Amendment of the Coordination Act which will provide for more consideration of fish, wildlife and recreation at federal water projects both in project planning and operation.

Enactment of the pesticides research law which will permit Fish and Wildlife Service to study effects of insecticides and other poisons on fish and game resources.

Law requiring Congressional approval for military withdrawal of any tract of land over 5,000 acres; and requiring the military to observe the state hunting, fishing and trapping regulations at all its installations.

Amendment of the Klamath Indian Reservation Termination Act provides for long term management of timber resources. Klamath Marsh was reserved for a national wildlife refuge.

Water Pollution Control Act appropriations renewed providing grants in aid to municipalities for sewage plants.

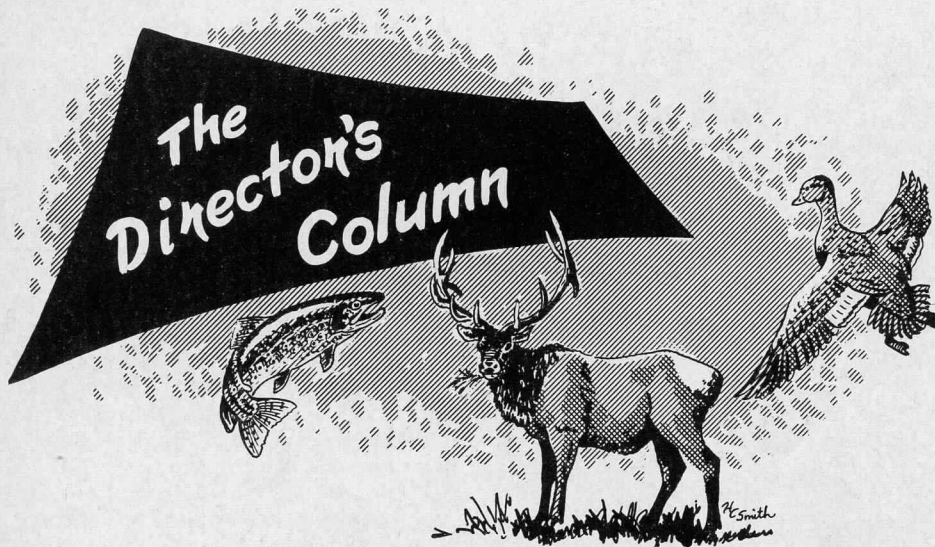
Road Construction And Fish

(Continued from Page 5)

in the forested areas. The access roads are generally well designed, but streamside logging along the roads can fill streams with debris and remove all cover, resulting in higher water temperatures and possible siltation. The prevention of such conditions still remains to be solved. Wise watershed management decrees that the roads should be away from the streams when possible, leaving a buffer strip of shade and ground cover. Where this is not possible, riprapping should be used for erosion prevention.

The various agencies which are now building a record number of roads in the state are to be commended for their realization that they can work cooperatively with fishery agencies in the preservation of our natural resources. It is possible to have new roads and still retain our valuable fish resources and, in addition, preserve the beauty and recreational aspects of our streamside areas.

Reino Koski



FROM TIME TO TIME we hear expressions of concern regarding the relationship of sports angling regulations to the anadromous or sea-run fish resources, particularly to the salmon. In the face of an increasing pressure from the sports angler on salmon and all our fish resources, it is logical to evaluate the Commission's regulations in relation to the needs of the fish stocks involved.

Regulations designed to control a phase of harvest of any renewable resource represent only one of the necessary tools of management. Other tools of as great importance used in the Commission's management and research program include habitat improvement in the form of stream clearance, screening of diversions, laddering and similar efforts; artificial propagation (which is costly and has its limitations) directed at supplementing natural propagation; inventory of basic stocks; and related activities. Each of these could be discussed in great detail. The following comments are confined to the factor of regulation.

The Game Commission, in planning and programming the fisheries management phase of its operations, operates under a policy directed at increasing these resources. This is predicated upon three fundamental principles: First, the inherent capacity of at least some of our waters is greater than the yields currently being realized. Second, there is evident an increasing demand for a resource in short supply in terms of angler use. Third, the resources involved

are remarkably responsive to management procedures which provide them the necessary protection for natural reproduction while at the same time yielding a harvestable crop.

The Commission long ago recognized the necessity of diligent attention to its regulations regarding salmon. As rapidly as facts have become available indicating the need for regulatory action, this has been done. The result has been a set of regulations imposed upon the Oregon angler which are the most stringent and conservative to be found any place within the natural range of the Pacific salmon in North America. This situation has prevailed for some time but has been more pronounced in recent years because of the increased interest in this fishery and the increased problems associated with its maintenance.

The regulations, upon analysis, are of several types and designed to afford necessary protection to the several phases of the salmon's life history.

With respect to the immature fish, which embraces both the downstream migrant fingerlings and the relatively small size fish in the estuaries and offshore, the following regulations prevail: An eight-inch minimum length limit on all trout and salmon in appropriate zones to assure maximum escapement from the trout angler. Tributary closures to protect vulnerable concentration areas. The progressively later opening of trout season to further afford maximum

escapement of downstream migrants by completely removing angling pressure during this vulnerable period. Local gear regulations. Special river system regulations and joint special length regulations to protect sub-adult fish vulnerable to the angler in the lower reaches of rivers such as the Columbia.

For adult fish, the following regulations have been in effect: A bag limit of two fish per day, four in possession and twenty per year represents the most stringent bag limit on the Pacific Coast. Closure of tributary and vulnerable areas for spawning mature fish. Immediate imposition of closures to local areas where unexpected or critical situations develop of an unexpected nature justifying added protection to the fish involved. Gear regulations in local areas. Special and more conservative regulations on river systems and on certain races which are at seriously low levels of abundance. Seasonal closures. Development and use of the salmon-steelhead punch card.

These have been supplemented by such legislative actions as the enactment of the landing law which reflects the concern of the legislature for the maintenance of this important part of our fish resources.

Although it is the continued desire of the Commission to simplify rather than magnify the complexities of their regulations, this is not always possible. The problems and needs of the salmon resources from the sports angling standpoint, which can be served in part by the regulatory phase of this task, are met with dispatch and in the interest of protecting the fish involved.

P. W. Schneider

Deer Hunters! As soon as you have killed your deer and used your general deer tag, remember to send in your report. That information is needed for future management. (If by the end of the season, you have not killed a deer, send in your report anyway because we need that information too.)

* * *

Parents are reminded that though children under 14 years of age may hunt small game without a license, they are required to have the regular adult hunting license and tag to hunt deer or elk. This requirement also applies to juveniles from 14 to 18 years of age, as the special juvenile hunting license is good for small game only.

Oregon State Game Commission Bulletin

1634 S.W. ALDER STREET
P. O. BOX 4136
PORTLAND 8, OREGON

