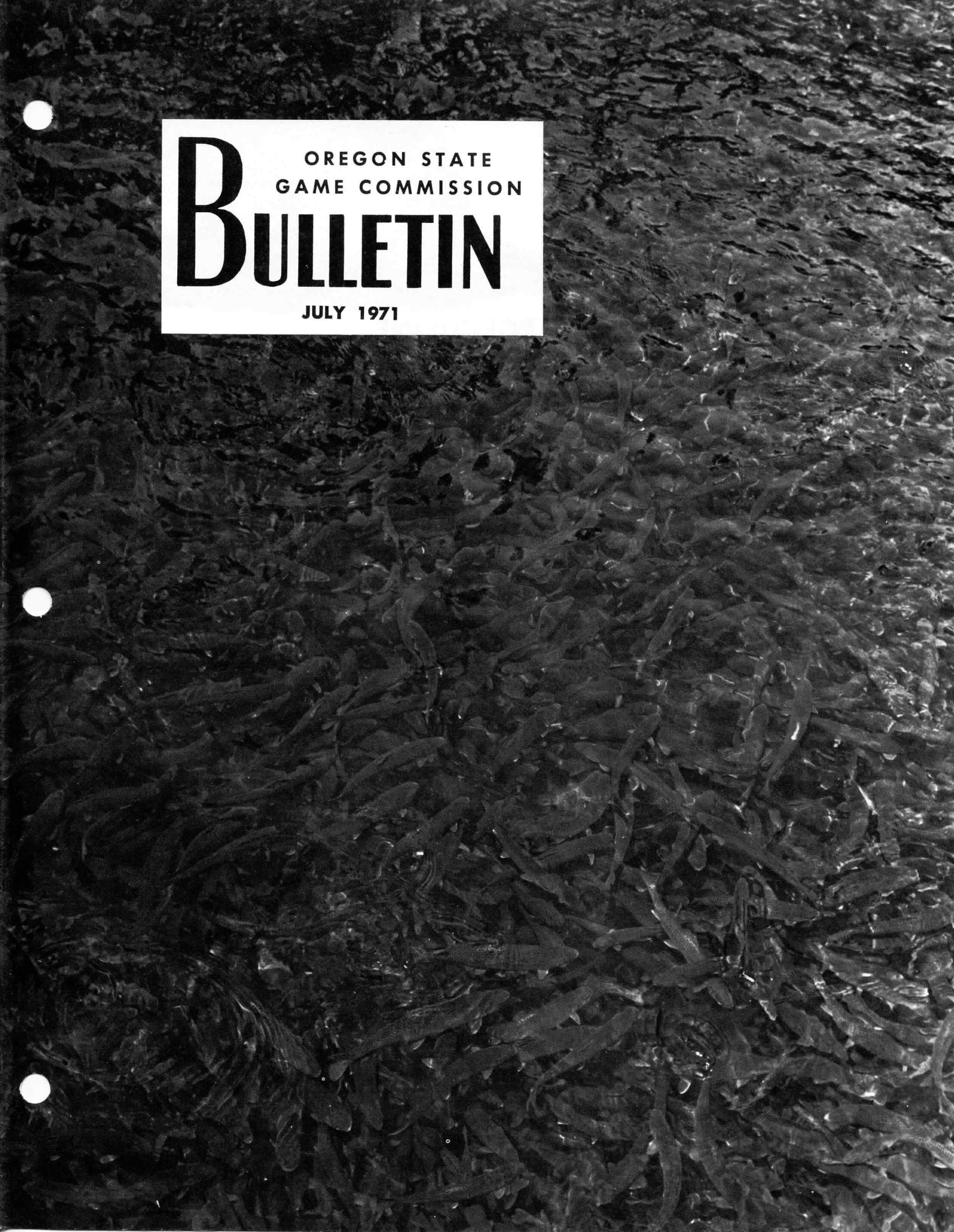

OREGON STATE GAME COMMISSION BULLETIN

JULY 1971

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BULLETIN

JULY 1971
Volume 26, Number 7

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The Cover

HATCHERY POND

Photo by Al Miller

HUNTER SAFETY TRAINING PROGRAM

Instructors Approved

Month of May	9
Total to Date	2,341

Students Trained

Month of May	578
Total to Date	167,183

Firearms Casualties Reported in 1971

Fatal	0
Nonfatal	10

THE PORCUPINE

(Erethizon dorsatum)

Slow-moving and deliberate actions characterize the porcupine. It is one of the few animals that can protect itself by merely bristling up its coat. Throughout its long guard hairs and fine, brown underfur are very sharp, hollow quills. The quill tip tapers to a sharp needle point covered with overlapping barbs.

To protect itself the porcupine turns and wheels, always keeping its thick, blunt tail toward the enemy. He does not worry about losing quills for these are constantly being shed and replaced by new ones. The quills are not thrown but are loosely attached and come out very easily.

Because of the spine-tipped armor, he has few enemies. The bobcat, lynx, mountain lion, and fisher are the most formidable, with the fisher the most proficient.

Porcupines are found widely distributed throughout the forested areas of eastern Oregon. Only occasionally are they reported from points west of the Cascades.

Mating takes place in the fall and a single young is born the following spring. The youngster is well developed at birth. It can walk unsteadily and will wheel smartly, with tail toward the intruder and inch-long juvenile spines erect. It climbs at two days and is weaned within a week or two.

Porcupines will eat almost any plant. They are especially fond of salts and other minerals and will chisel away at the bones of dead animals and the shed antlers of deer and elk. They may do considerable damage in forested areas by girdling young, second-growth trees.

SMALL TRIBS ARE IMPORTANT

Research workers of the Game Commission reported that 97 Rogue River upstream tributaries, many of them intermittent, are utilized for spawning purposes by summer steelhead.

Research investigations on the life history of the Rogue River summer steelhead which began several years ago revealed 81 small streams utilized for spawning. This past winter summer steelhead were found using 16 additional tributaries.

Many of the tributaries are small, ranging from 1 to 20 cubic feet per second, but the average is about 5 cubic feet per second. Significant numbers of adult fish spawned in streams with flows as low as 3 cfs, indicating that very few streams in the Rogue Basin with suitable gravel and cover are too small for summer steelhead reproduction.

Biologists report that these fish move into the small tributaries during high flows in winter and spawn on gravel bars in water which barely covers their backs. Since many of these streams are intermittent—down to seepages or potholes by late summer — the young fry seem to possess a built-in instinct to move downstream to the main Rogue or into larger tributaries before their place of birth goes dry. According to the investigators, these small streams are the absolute key to the maintenance of the famous run of summer steelhead in the Rogue.

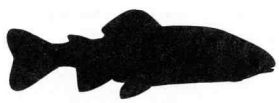
Biologists also reported that the number of spawning fish recorded this winter indicated a much larger run in 1970 than the very fine run in 1969. Evidence of this large run was borne out last summer and fall when anglers reported some of the best steelhead fishing ever enjoyed on the Rogue.

The Role of Fish Hatcheries in Management

By CHRIS JENSEN, Fish Culture Coordinator

FRY 1 to 2 inches long

Trout this size are released into some lakes and reservoirs. Steelhead trout and salmon are placed in rearing impoundments to be released after growing on the natural food.

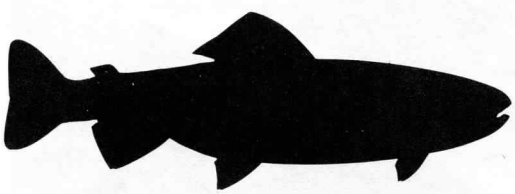


FINGERLINGS 2 to 5 inches long

Trout of this size are stocked in lakes and reservoirs. Many are transported by aircraft and dropped into high mountain lakes.

SMOLTS 5 to 8 inches long

Year-old salmon and steelhead are released at this size because they are ready to go to sea. Best returns of adult fish are obtained from these releases.



YEARLING TROUT

Over 8 inches long

Released in heavily-fished streams and a few lakes to supplement natural production.

Do we need fish hatcheries? What do the hatchery fish contribute to the catch? Should we plant catchables? What are the costs?

Questions similar to these are asked by the public, legislators, fish managers, and especially by certain anglers who prefer to catch wild fish rather than their domestic cousins. To completely satisfy everyone is impossible, but through experiments and research we have arrived at some conclusions and methods that help define the role of hatcheries.

Fish hatcheries, first of all, are necessary to provide fishing in bodies of water having limited or nonexistent natural spawning areas. This includes most of our high mountain lakes and man-made reservoirs. Secondly, if we are to provide a satisfactory fishery in many of our streams and rivers we must supplement natural production with hatchery stock. There are still many Oregon streams that support naturally produced runs of trout, salmon, and steelhead. But how much longer can they support through such production a sustained fishery and still meet the water demands for industry, irrigation, pollution abatement, and domestic use? Heavy logging of many of the watersheds and various other watershed manipulations have added to the problem by reducing summer stream flows essential in maintaining present fish-rearing areas. It appears, then, that if we are going to provide good fishing for all tastes and desires, we will have to spread our fish-raising endeavors in as many directions as budgets will allow.

One example of successful lake planting is Diamond Lake where approximately 400,000 rainbow fingerlings are stocked each year. From this stock averaging 3 to 4 inches in length, Diamond Lake produces to the angler from 300,000 to 350,000 fish weighing up to 285,000 pounds. In 1970 approximately 117,000 angler trips were recorded on Diamond Lake with the catch averaging almost three fish per trip. Sixty-six percent of the fish were in the 10 to 14-inch size range. While most other lakes and reservoirs may not raise fish as fast or in as large numbers as Diamond, they do nevertheless provide a fishery from stocked fingerlings at a most reasonable cost.

Catchable — or legal — sized trout are stocked in major rivers such as the McKenzie, Deschutes, Santiam, Willamette, Clackamas, and other popular streams used by large numbers of anglers. Up to

(Continued on Page 4)

HATCHERIES . . .

(Continued from Page 3)

75 percent of these hatchery fish planted are caught in some of the more heavily fished areas. Elsewhere the average catch may represent 40 percent or less of those planted. The catchable program is a large expense but it provides excellent recreation for the average fisherman in free-running stream environments which are rapidly disappearing as additional dams are constructed. It costs from 75c to $1 per fish to stock trout of this size, ready to be caught when they hit the water.

The Game Commission hatchery program for steelhead has been highly successful in the majority of our coastal streams. From 6 to 10 percent of the steelhead smolts (see accompanying chart) released each year in the Alsea River at 7 to 8 inches in length return to the fishery as adult fish. While the hatchery returns on some of the other coastal study streams average only 5 percent, the marked upstream migrants quite often make up from 50 to 75 percent of the adult run in the stream. Research during the past few years has shown that release of hatchery smolts into a river benefits the fishery in two ways. These fish add substantially to the catch and serve to smooth out the wide variations of fish populations within the stream caused by annual normal fluctuation among the wild populations. The catch of wild fish appears to remain relatively constant even in areas where large plantings of hatchery smolts are made.

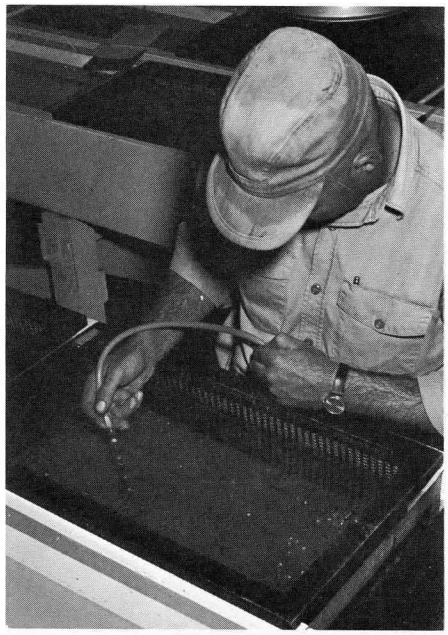
The hatchery program for spring chinook is best exemplified by work being done on the Umpqua River. Smolts released in the Umpqua River at 7 to 8 inches in length have returned to the fishery as adults at rates in excess of 9 percent of the plant. The Rogue has shown returns up to 5 percent and other streams at rates somewhat less. Returns of 9 percent or less may appear at first to be insignificant but it must be remembered that these fish face numerous predators and adverse conditions during the several years of life.

The Game Commission fall chinook program is presently limited to pond rearing of fall chinook in three ponds—Whistlers Bend, Lint Slough, and Libby Pond. Larson Cove near Tillamook will be added later this year. Limited numbers of these fish have been observed as returnees from early experimental rearing but the ponds have not been in mass production long enough to have fish coming back on a significant scale.

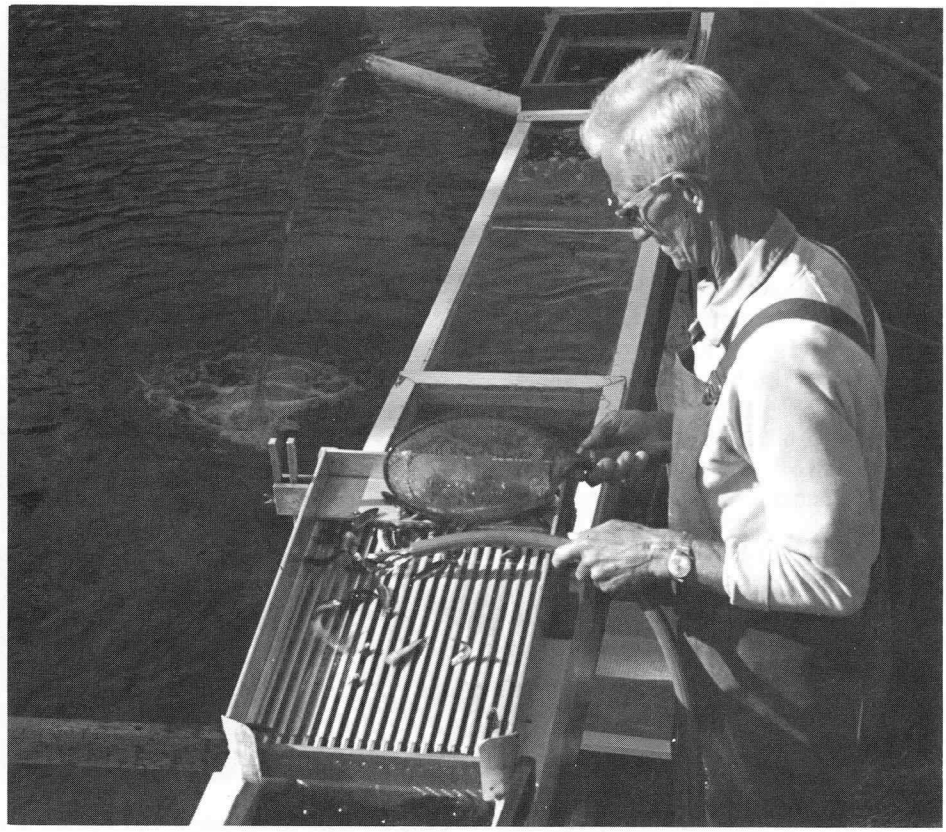
(Continued on Page 6)

Almost from the time they are hatched, the fish feel the new methods of hatchery operations. Automatic feeders for handling the fine dust-like pellets eaten by the fry are used on the inside troughs. As the fish grow, the pellets used are larger and the equipment to feed them modified.

Automatic feeders spew pellets to the hungry fish and the water boils. Controlled by timers, these feeders put out small quantities of feed at regular intervals making for fast growing fish and little wasted food.



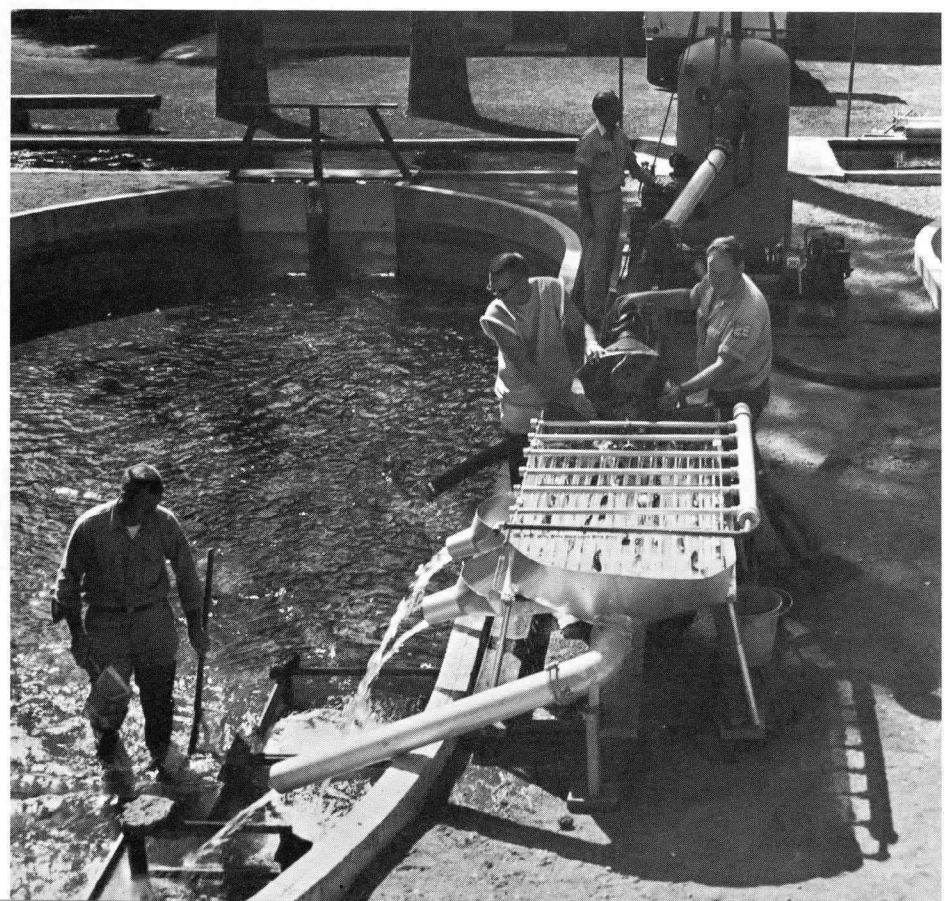
Infertile eggs turn white and must be removed from amongst the good eggs. Hand picking has been the traditional method but this job also is being turned over to a machine.



Keeping youngsters from taking all the food from their pond mates is a constant problem. Regular grading by size of the small fish gives everyone an equal chance with his neighbor. As the fish grow larger, grading also helps prevent cannibalism that will occur when there is great discrepancy in the size of fish being held together.

Mechanized fish handling. Inventive Gene Morton of Wizard Falls Hatchery first devised the grader in the foreground for sorting fingerling and larger fish into five size classes. The tank in the background uses varying pressures to move fish from the various ponds to the grader via long pipes.

Hatchery fish are often marked by the removal of a fin to determine their movements. Experience has shown that women are most adept at the minor surgery.



HATCHERIES . . .
The Costs

(Continued from Page 4)

The cost of the present hatchery program, approximately $1,200,000 annually, represents one-half of the fishery budget excluding research. In 1970 more than 27.5 million fish weighing 1,722,000 pounds were released by the Oregon State Game Commission. Rainbow trout and other resident fish numbered 20.7 million weighing 1,222,309 pounds (includes 2.6 million catchables). Salmon and steelhead represented 6.8 million fish weighing 500,000 pounds or about 29 percent of the poundage in 1970. This is an increase of more than 900 percent over the poundage of anadromous fish liberated in 1960. The total poundage of all fish liberated in 1960 was 766,310 pounds (17 million fish) or less than half of the 1970 production.

To satisfy angler demands for ever increasing numbers of fish and to stay within reasonable cost levels, the Game Commission is continually updating the 15 hatcheries in the state. Labor-saving devices such as automatic feeders, graders, fish loaders, fish pumps, incubators, and other mechanical machinery have been installed. Pumps have also been installed to recirculate water during the low flow periods for rearing additional fish in the summer months. New liberation trucks have been purchased and others modernized to carry heavier loads for longer periods of time. Airplanes, helicopters, and planting boats are also being utilized wherever they can add to the efficiency of the operation.

To meet rising standards for quality fish, selective breeding and upgrading of hatchery and anadromous stocks are continually being stressed. Feeding experiments are carried on at each hatchery to maintain quality control on diets and to maintain the condition of the fish at the highest level. Modern feeding and handling methods make it possible to convert 1.7 pounds of fish food into one pound of live fish. Fifteen years ago the ratio was 5 to 1. Programs to immunize selected species of salmon against specific diseases are being carried out. Marking programs aimed at later identification of the fish in the creels and in trapping facilities are being utilized to determine the best time and size for liberating fish to get the best returns.

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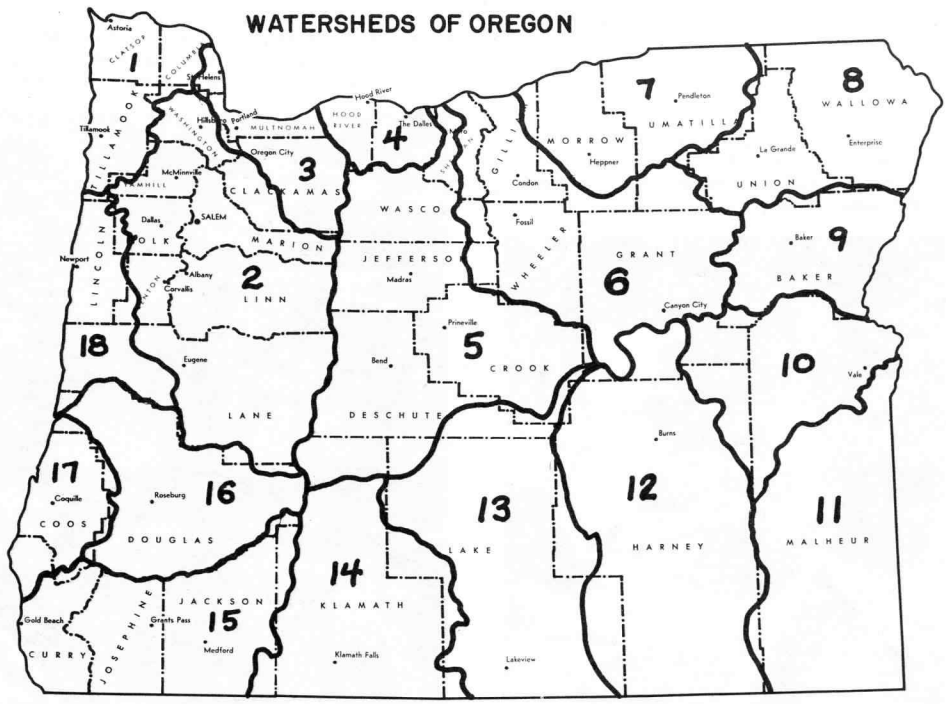
Using a mechanical elevator to load fish into a modern refrigerated liberation truck. Such trucks can haul heavy loads of fish for many hours with little mortality since low water temperatures can be maintained.



HATCHERIES . . . *The Future*

(Continued from Page 6)

Future programs include a new hatchery for the Rogue River located about 40 miles upstream from Medford. It is presently under construction by the Corps of Engineers. The hatchery will have facilities to rear approximately 4 million salmon, steelhead, and trout (425,000 pounds) for release in the Rogue River. It is being constructed by the Corps as restitution for the loss of spawning grounds that will result from the building of Lost Creek Dam.

Another new hatchery on the drawing board is designed for production of anadromous fish for the Deschutes River. The facility will be built by Portland General Electric Company at the base of Round Butte Dam and will initially provide 325,000 spring chinook and summer steelhead smolts. Both the Rogue River and Deschutes hatcheries will be operated by the Game Commission with funds supplied by the builders.

Other expansion plans include the immediate enlargement of Alsea Hatchery for rearing of an additional 250,000 winter steelhead smolts. Production will be increased further by the addition of ten new ponds at Wizard Falls Hatchery (near Sisters) for rearing rainbow trout and steelhead.

To sum it all up, we could live without fish hatcheries—but not as well. If fishing is to continue as a sport for all, then every effort must be made to provide angling in as many different types of environment as are available. The angler who fishes the streams and rivers early in the season is often the same angler who migrates to the lakes and reservoirs after the late spring thaw. Haven't I also seen that wilderness angler accompanied by his family taking advantage of some of the more easily accessible waters where hatchery fish predominate? Everyone's angling desires can never be fulfilled but hatcheries help us come closer to attaining such a goal.

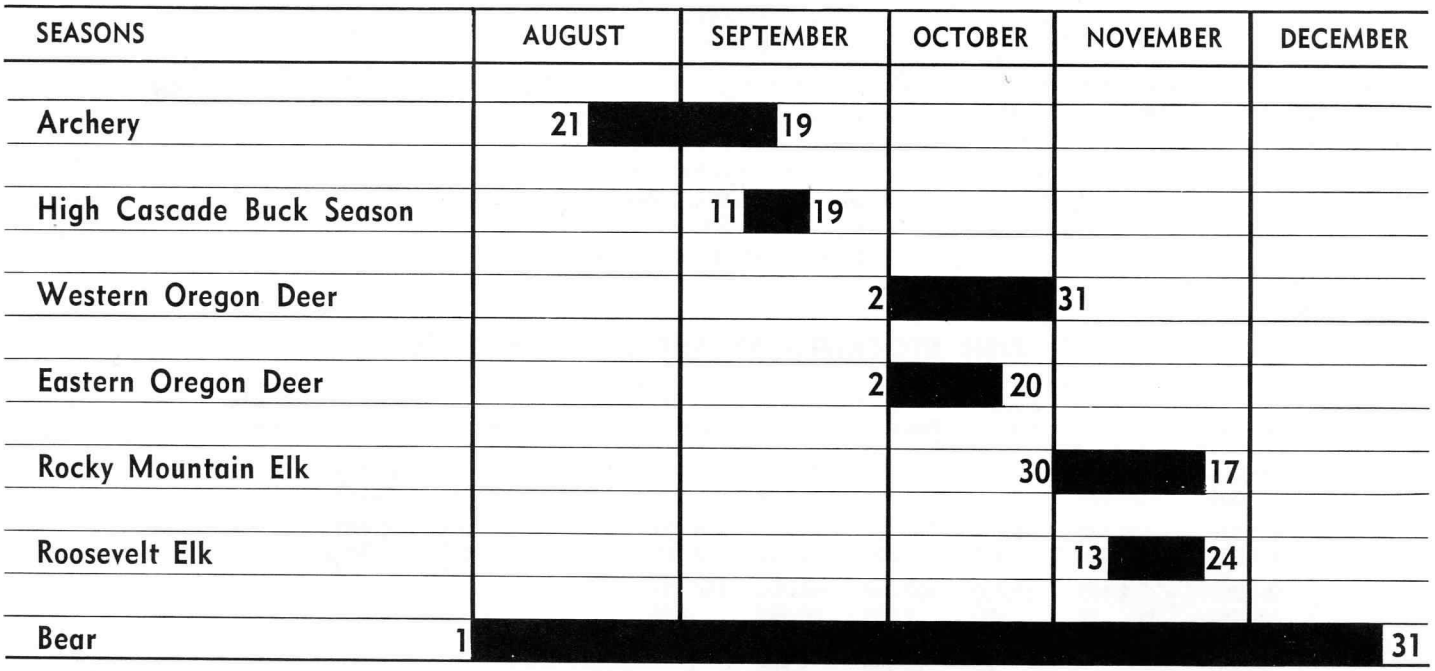
FISH STOCKING BY WATERSHEDS, 1970

Watershed	Rainbow	Cutthroat	Brook Trout	Steelhead Summer	Steelhead Winter	Kokanee	Brown Trout	Chinook Spring	Chinook Fall	Atlantic Salmon	Coho	Totals
1	14,374	209,453		145,384	692,999			60,636	121,045			1,243,891
	6,306	37,331		20,179	81,904			9,883	3,560			159,163
2	6,496,386	133,422	388,600	158,658	81,243	519,537		318,568	190,960			8,287,374
	351,976	1,306	1,345	11,502	6,032	2,585		26,992	934			402,672
3	596,397	2,620	53,630	107,242	256,206	150,135						1,166,230
	105,781	10	160	7,004	36,997	846						150,798
4	70,663		8,360	97,844	104,109							280,976
	25,951		22	13,456	2,298							41,727
5	2,816,119	14,446	488,424	341.144		1,149,404	121,373	355,270		52,697	239,849	5,578,726
	169,344	62	1,437	34,960		6,490	2,678	19,202		6,950	1,340	242,463
6	202,254									11,438		213,692
	18,673									2,998		21,671
7	196,105											196,105
	19,438											19,438
8	165,930		1,650			50,215						217,795
	40,324		8			797						41,129
9	431,451		3,950								100,094	535,495
	30,758		20								143	30,921
10	518,725											518,725
	15,856											15,856
11	672,190										50,120	722,310
	10,390										557	10,947
12	265,828											265,828
	18,185											18,185
13	298,081					3,192						301,273
	19,801					12						19,813
14	1,506,170		25,496			70,095						1,601,761
	31,738		64			317						32,119
15	799,375	10,001	145,333	204,696	44,984	35,240		98.885	259,844			1,598,358
	76,536	4,574	975	23,280	6,337	94		9,851	3,098			124,745
16	743,579	94,793	22,762	203.455	61,299	51,125		182,914	914,598		74,368	2,348,893
	90,579	10,522	54	39,392	8,137	240		20,364	14,573		5,171	189,032
17	86,437	308,790			130,010							525,237
	22,437	22,250			18,082							62,769
18	55,370	433,923		66,008	627,830	229,320			502,338			1,914,789
	27,123	35,759		10,867	53,046	1,207			10,750			138,752
TOTALS	15,935,434	1,207,448	1,138,205	1,324,431	1,998,680	2,258,263	121,373	1,016,273	1,988,785	64,135	464,431	27,517,458
	1,081,196	111,814	4,085	160,640	212,833	12,588	2,678	86,292	32,915	9,948	7,211	1,722,200

NOTE: Lower figures denote pounds of fish.

1971 General Big Game Seasons

Consult regulations for details and exceptions and for information on Antelope, Sheep, and Antlerless Deer and Elk Seasons requiring separate tags and permits



Numbers Indicate First and Last Day of Seasons

Bighorn Sheep Season: September 25 through September 30. Three tags Hart Mountain area.
Eight tags Steens Mountain area.

Cougar Season: December 1 through December 31. (100 tags).

THERE IS NO OPEN SEASON ON MOUNTAIN GOATS.

CLOSING AND DRAWING DATES FOR 1971 TAGS AND PERMITS

Kind of Tag or Permit	Deadline Date	Drawing Date
Antelope, Sheep and August Deer Permits	5:00 p. m. July 13	10:00 a. m. July 23
October and November Deer Permits	5:00 p. m. August 10	10:00 a. m. August 20
Cougar Tags Elk Permits	5:00 p. m. August 24	10:00 a. m. September 3

For forms and information regarding applications consult your local license agency.

OREGON STATE GAME COMMISSION

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