

OREGON WILDLIFE

JULY 1978

OREGON WILDLIFE

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The Cover

This year's run of shad in the Columbia River is likely to be an all-time record. A total of about one million fish is expected to reach The Dalles Dam. The run usually lasts from late May through June.

Photo by Jim Gladson

HUNTER EDUCATION PROGRAM
INSTRUCTORS APPROVED
Month of May 12
Total Active 1,420
STUDENTS TRAINED
Month of May 765
Total to Date 253,806
HUNTING CASUALTIES REPORTED IN 1978
Fatal 1
Nonfatal 7

Isolation Through Specialization?

In a recent issue of AFRICAN WILDLIFE magazine, James Clarke wrote a column entitled "From the Concrete Jungle". He comments on the course of study his daughter is taking in school and suggests the demands on modern children to get through school and get more and more specialized education are intense.

In writing about the subject he points out that "The task of putting across to them (students) the real needs of man, as opposed to his wants, is becoming almost impossible."

Other thoughts in the article seem very appropriate here in the U.S. Clarke says, "More serious teachers try to infiltrate geography with lessons on what constitutes a healthy human environment. But so few teachers really understand the holistic concept of environment, that such lessons fall far short of being even adequate."

"Even biology . . . fails because children are steered into micro-organisms and the workings of the amoeba before they have a grasp of the biotic world at large."

And finally, in summary he makes a point that we feel is a particularly good one — one that is becoming increasingly true even here in the somewhat less urban western United States.

Clarke suggests, "There is a real danger that the urban child's vision of the world will become so narrowed he will perpetuate the mistakes his parents' generation is making — believing that man is dependent on the urban environment."

Summer and vacation time is here. It is the time when many folks head for outdoor recreational pursuits. Often they try to take the amenities of their urban life with them and seemingly attempt to isolate themselves from the outdoor world they are visiting.

We're not suggesting that it is necessary to participate in a "roughing it" type experience on every trip to the outdoors, but we would suggest that such trips present an important opportunity — an opportunity to observe and contemplate nature, to look at the ways of nature and then think about how they interrelate. Then finally, and most importantly, this is an opportunity to realize how humans as another member of the animal kingdom fit into the natural scheme of things.

Much of fish and wildlife management is protecting the environment for various species. In building cities, man has removed himself from the environment upon which he is dependent. Hopefully summer trips, whether they be to the forests, to farmlands, or to the wide open spaces, can provide a setting where one will be able to realize man is a part of nature and natural systems, not a creature apart.

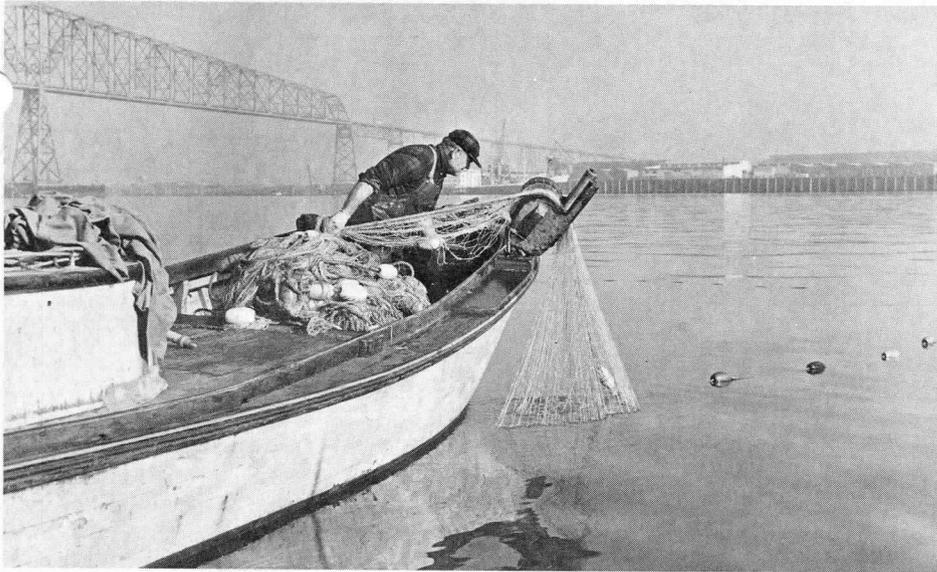
By obtaining a better understanding of the natural sources that provide the needs of man, it will be easier to understand why agencies such as the Department of Fish and Wildlife are constantly fighting to protect essential natural habitats and have urged proper land use in the state. Animals are dependent on many complex, interrelated natural systems. Biologically, man is an animal — an animal capable of destroying himself by destroying the land base on which his survival depends.

RES

Commission and Compact Meetings

The Fish and Wildlife Commission will conduct a general business meeting to consider its budget and other items at 9 a.m. on Thursday, July 27, in Fish and Wildlife Department headquarters, 506 SW Mill Street, Portland.

On Friday, July 28, the Columbia River Compact will meet at 9 a.m. at the location given above to consider an August gillnet season and the Indian fall salmon season. □



THE COLUMBIA A River System Under Siege

(part two)

by William L. Robinson

(Editor's note: Last month Mr. Robinson examined environmental problems and their effect on the salmon and steelhead runs returning to the Columbia River. This article looks at the management of the treaty Indian, recreational, and commercial gill net fisheries — the history of their regulation, how they are regulated now, and some examples of how this all fits together.)

Regulation of salmon and steelhead harvests in the Columbia River has historically been the focal point for philosophical debates involving one user group versus another. As the need to conserve spawning escapement increased over the years, new methods of fishing gained acceptance which were individually less efficient at catching fish but gave more fishermen the opportunity to participate in the harvest of a limited resource. The philosophical question of broad participation versus elite participation in the fishery has been a basic issue for nearly 100 years.

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The evolution of the drift gill net to replace the fish wheel, fish trap, or seine as the only legal method to commercially catch salmon in the Columbia River was a direct result of the application of this philosophy. Today the same philosophy causes conflicts between recreational fishermen and commercial fishermen.

Sports fishermen base their claim to a share of the resource primarily on the premise that sport angling affords broad participation and distribution of the catch, yet takes relatively few fish. Commercial fishermen, on the other hand, argue that they provide a food product to a large population of consumers while adhering to the principles of resource conservation.

Indian fishermen base their claim to the resource on ancestral rights guaranteed by treaties signed with the U. S. Government in the 1850s and recently upheld by the federal judicial system. Some of these sociological decisions have been made at the ballot box, some in the court-

room, while others must be made by the regulatory agencies.

Who regulates fishing on the Columbia River? The state of Washington restricted fishing for the first time in 1859, Oregon in 1877. Early attempts by each state to regulate commercial fishing on the Columbia River resulted in discontinuity and contradictions in regulations. Beginning in 1889, joint committees of the Washington and Oregon Legislatures attempted to agree on identical commercial fishing regulations. But despite identical regulations, each state found it difficult to enforce its own regulations on citizens of the other state. Therefore a compact between the two states was created and ratified by Congress in 1918. It allowed commercial fishing regulations to be created and enforced by mutual consent. The compact does not, however, prevent one state from being more restrictive with its own citizens than the other state. The compact regulates all commercial fishing, both Indian and non-Indian, to this day.

The Columbia River Compact is composed of the seven-member Oregon Fish and Wildlife Commission, who share a single vote, and the director of the Washington Department of Fisheries who also carries one vote. Recently the state of Idaho, concerned for the welfare of salmon and steelhead runs originating in that state, has politically and legally pressured for compact membership. Legislation has been proposed in both Oregon and Washington that would make Idaho a voting member of the compact.

Recreational fishing in the Columbia and its tributaries is regulated by the individual agencies within each state. The Oregon Department of Fish and Wildlife regulates sport fishing in Oregon while Washington's authority is split between the Washington Department of Fisheries for salmon and the Washington Department of Game for steelhead.

The considerations the regulatory bodies must balance before reaching a management decision are numerous and can be awesome. For simplicity, they fall into four categories:

1. Biological
2. Sociological
3. Economic
4. Legal

The most critical piece of biological information needed to manage all the Columbia River fisheries is the best possible estimate of the number of fish that will return to the river from any given run. In other words, how many fish are there and how many can we catch? The factors that make up a run-size estimate are numerous and biologists must try and fit them together like pieces in a jigsaw puzzle. The spawning success and juvenile production of the parent generation, the contribution and quality of hatchery releases, and the success or failure of the juveniles to negotiate the obstacle course of dams on their way to the ocean are some of the long-range factors considered.

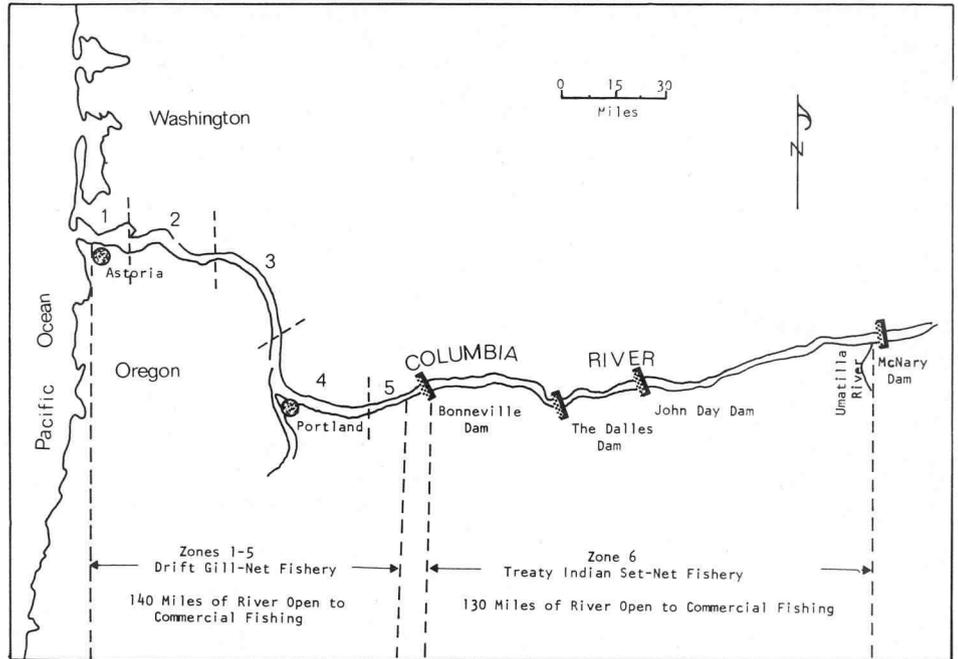
Although as yet we know little about the factors influencing survival in the ocean, we do believe that ocean conditions can significantly affect the survival and growth of salmon and steelhead. Most chinook salmon travel north from the Columbia and most coho travel south. Both species are caught in the ocean by sport and commercial fisheries off California, Oregon, Washington, British Columbia, and Alaska. As much as 75 percent of the total harvest of Columbia River stocks comes from these fisheries.

Biologists monitor the runs in several ways as they enter the river. Test fishing is conducted near the mouth of the river to try and estimate the



The author, biologist Bill Robinson, takes a scale sample from a spring chinook salmon caught during test netting in the lower Columbia.

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Map of the Columbia River below McNary Dam showing areas open to commercial fishing.

size and age composition of the spring chinook run before it reaches Bonneville Dam where the fish can be counted. In the case of fall chinook, the commercial gill net fishery itself is used as a test fishery and run-size estimates are made from the numbers of fish caught and the catch per effort. In addition, biologists monitor the passage of the fish runs over the dams and adjust escapement needs based on losses of fish between each dam. And finally, the relative strength of one age class of fish may have some predictive value for the health of 1-year-old fish the following year. For example, returns of 4-year-old spring chinook one year can be indicative of the return of 5-year-olds the following year.

The sociological and economic considerations the compact or regulatory agency must weigh are perhaps the most complex factors involved in regulation making. Both recreational anglers and commercial fishermen are served by substantial support industries representing considerable economic investment. Decisions adverse to one user group can certainly extend their effects well beyond that particular group.

In the past, legal considerations did not play a major role in the regulatory procedure. Today the picture has changed dramatically. After

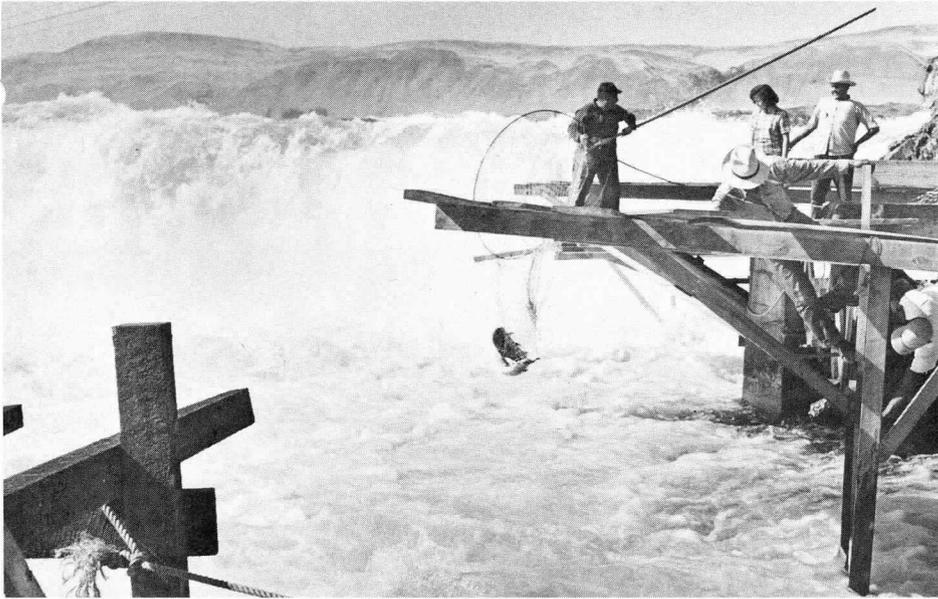
basic biology, legal restraints are now perhaps the most important factor influencing decisions. The reason for this should become clear from the following short discussions on the three major types of fisheries in the Columbia River.

Indian Fishery

For thousands of years the Columbia River and its tributaries have been a source of food for Pacific Northwest Indians. Many Indians lived on the rivers or traveled to fishing sites to fish or barter during peak runs. Fishing efforts were usually concentrated at natural barriers or in tributaries where fish were easily accessible. The most famous of these was probably Celilo Falls. Traditional fishing methods involved use of baskets, dip nets, spears, weirs, traps, and even hook and line.

The discovery of gold and the subsequent settling of the Oregon territory brought about a distinct clash of values between the Indian and the settler. The settler firmly believed in property ownership whereas the Indian was more flexible, believing that land supported the community, or tribe, and belonged to no individual. In order to facilitate homesteading under the Donation Land Law of 1850, the U. S. Government, represented by Washington Governor

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Dipnetting salmon was an exciting Indian method of catching salmon at Celilo Falls before it was flooded beneath The Dalles Dam pool.

Isaac Stevens, entered into treaties with the Indians establishing reservations exclusively for the Columbia River treaty tribes. The most important of these was the treaty of 1855 with the tribes and bands that now make up the Warm Springs, Umatilla, Nez Perce, and Yakima Indian nations. Initially, all the reservations were quite large but were eventually reduced as more land was apportioned for settlement.

A further provision of the treaty of 1855 stated "... the exclusive right of taking fish in the streams running through the bordering said reservation is hereby secured to said Indians, and at all other usual and accustomed stations in common with citizens of the United States ..." In comparison to many of the treaty rights that diminished or disappeared over the years, fishing rights have survived and in the last 10 years they have had major impacts on fisheries management.

Until 1957, Indian fishing methods had not changed much from historical times. Nearly 95 percent of the annual Indian commercial catch of almost 2 million pounds was taken with dip nets at Celilo Falls. In 1957 the completion of The Dalles Dam flooded Celilo Falls and essentially destroyed the Indian commercial fishery. In compensation for the lost fishing sites, the federal government reimbursed the four treaty tribes for

the capitalized value of the average annual Indian landings during 1949-53, \$27 million.

From 1957 to 1961 there was virtually no Indian fishery on the Columbia River. Indian fishermen began to successfully experiment with set nets about this time and a new fishery was born. The period of 1961-69 was one of regulatory chaos where the treaty tribes often regulated their own fisheries despite opposition from the states.

In May 1968 the U.S. Supreme Court "Puyallup" decision cleared away some of the confusion. The "Puyallup" case confirmed the authority of the states to regulate Indian off-reservation fishing provided the regulations were necessary for conservation and did not discriminate against the Indians.

In 1969 a small group of Indians challenged the compact's regulatory scheme in U.S. District Court before Federal Judge Belloni. In short, the now famous "Belloni" case declared that the treaty tribes were entitled to take a fair and equitable share of all fish the state allows to be harvested from a run. The legal precedent was now established for restricting one fishery to provide fish to another fishery. In addition to restricting the commercial gill net fishery to protect spawning escapement, the compact now had to provide a fair share of fish to the Indian fishery.

In 1974 the controversial "Boldt" decision in the state of Washington defined the Indian's right to a fair share of the fish as 50 percent of all fish taken in fresh water and within 3 miles in the ocean.

Judge Belloni subsequently adopted the 50 percent interpretation for the Columbia River and ordered the states and the Indians to resolve their dispute through a comprehensive fish management plan. To avoid future prolonged court battles at the expense of the salmon and steelhead resources, Oregon and Washington and four treaty tribes commenced negotiations in August 1976 to produce a management plan which would assure adequate spawning escapements and an allocation of the harvest with which everyone could live. In early 1977 agreement was reached and the plan was submitted to and adopted by the federal court. According to the terms of the plan, all the parties agree to work together to maintain, perpetuate, and enhance salmon and steelhead runs to the upper Columbia River. In addition, sharing formulae based on run size are established between treaty Indian and non-Indian fishermen for each upriver run of fish.

All regulations affecting non-Indian commercial and sport and Indian commercial fishing in the main stem Columbia River now must be made within the framework of this comprehensive fish management plan. The plan expires after five years at which time it may be renegotiated.

The use of efficient set nets, increasing numbers of fishermen, and judicial protection have all combined to achieve the same level of catch the Indian tribes knew before the flooding of Celilo Falls. In the face of declining runs and severely reduced total catches, the treaty Indian share of the total Columbia River commercial catch has risen from an average of 14 percent for 1938-56 to a record 41 percent in 1975.

Commercial Gill Net Fishery

As soon as the first traders and settlers penetrated the Columbia Basin, they began fishing for their own use and trading for fish with the Indians. In 1830 the first salmon purchased for shipment from the Colum-



The price of prime salmon to the Columbia River fishermen has gone as high as \$2.75 per pound in recent years. The consumer will pay two to three times that price in the market.

bia cost three leaves from a twist or knot of tobacco per fish. They were sold in Boston for 10 cents a pound. The fishing industry expanded rapidly and by 1861 barrels of salted salmon were selling for \$12 per barrel. The advent of salmon canning in 1866 was the single development that led to the coastwide industry we know today. The number of canneries on the lower Columbia River peaked in 1887 at 39 but has declined since.

The fishing methods used by the industry's pioneers included gill nets, seines, fish traps, and fish wheels.

As the salmon canning industry grew, it was marked by conflicts between users of different types of fishing gear. Each claimed his method of fishing was less harmful to the salmon runs than his competitor's. The owners of gear with the greatest political backing usually succeeded in eliminating their competitors with less political influence. As the salmon runs began to decline, the state began to restrict and eliminate different types of gear. As early as 1930, drift gill nets accounted for 59 percent of the total Columbia River commercial catch. By 1950 the method that allowed the broadest participation in the fishery, the drift gill net, was the only commercial fishing gear allowed to harvest salmon in the Columbia River.

Several factors combined to reduce numbers of salmon and steelhead entering the Columbia River during the

first half of the century. Among them were a series of hydroelectric dams which destroyed large spawning areas and created fish passage problems. Overfishing in the river, an expanding ocean fishery, and the combined effects of a growing civilization each subtracted more fish.

Increasingly stringent regulations were imposed on the commercial fishery as conservation measures. As some upriver runs continued to decline, all fishing was stopped for these stocks. Fishing time has been reduced from 274 days a year in 1941 to a low of 40 days in 1977.

Before 1957, the commercial fishery extended from the ocean to the mouth of the Deschutes River, 200 miles upstream. When The Dalles Dam was completed in 1957, the fishery was restricted to the area below Bonneville Dam. During some seasons the area has been cut to a single 20-mile stretch of river. Gear restrictions have been and continue to be used to protect stocks of fish that are either weak or illegal to catch and sell.

Prior to 1963 the management objectives for the commercial fishery were to 1) commercially harvest a certain percentage of healthy runs, and 2) to reduce the commercial catch if data indicated escapement should be increased. This scheme was effective on relatively healthy runs but often overfishing could occur before the true status of a not so

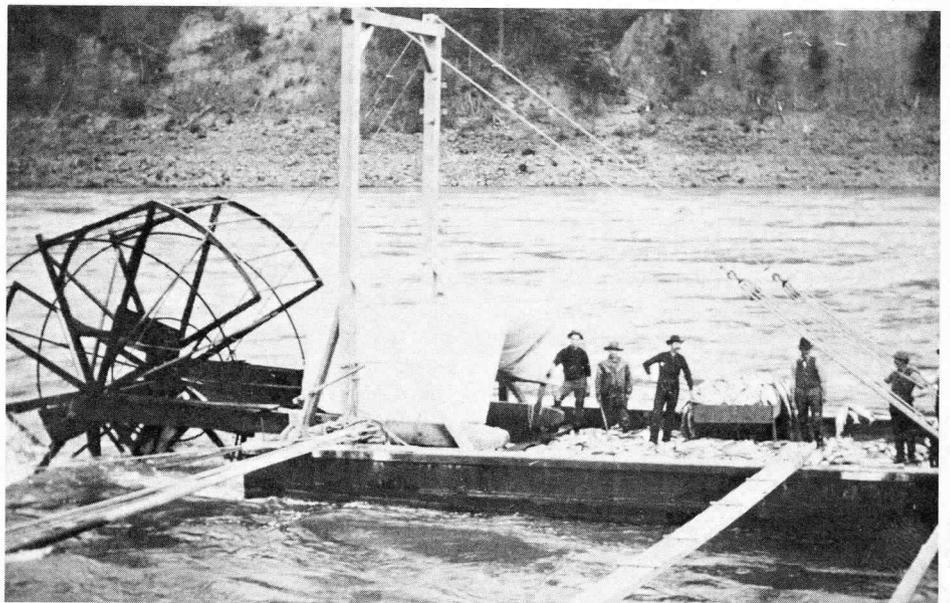
healthy run could be determined. At this time there was little need for allocating shares of the resource to either Indian or recreational fishermen.

In 1963, research on spawning escapement and production provided the basis for establishing escapement goals for each race of salmon and steelhead. An escapement goal is the number of fish needed to escape all main stem commercial and sport fishing to provide the optimum number of spawners and a tributary sport fishery. It must take into account losses of adults at various dams.

Since 1963 the commercial gill net fishery has been strictly regulated to achieve escapement goals. In several recent years the entire run of upriver spring chinook has been less than the escapement goal, so no commercial gill net, Indian, or recreational harvest was allowed. For the same reason, no commercial gill net harvest has occurred for summer chinook since 1964.

In 1969 recreational fishermen took the first step to eliminate the steelhead from the commercial catch. The Oregon Legislature declared the steelhead a game fish in Oregon and required that the incidental catch be regulated. An initiative petition in 1974 completed the job, making it illegal to sell steelhead in Oregon and requiring the catch be minimized.

Present management of the commercial gill net fishery is even more



The fish wheel was an efficient method for harvesting Columbia River salmon in the early days. Now the drift gill net is the only legal method.

difficult today due to the state's obligation to satisfy the complex allocation formulae required by the five-year management plan in addition to protecting spawning escapement.

Recreational Fishery

Recreational fishing on the Columbia River is relatively new compared to commercial fishing. While Indian and non-Indian commercial fisheries have remained relatively static in terms of the number of participants, the numbers of sports fishermen have increased dramatically during the last 20 years.

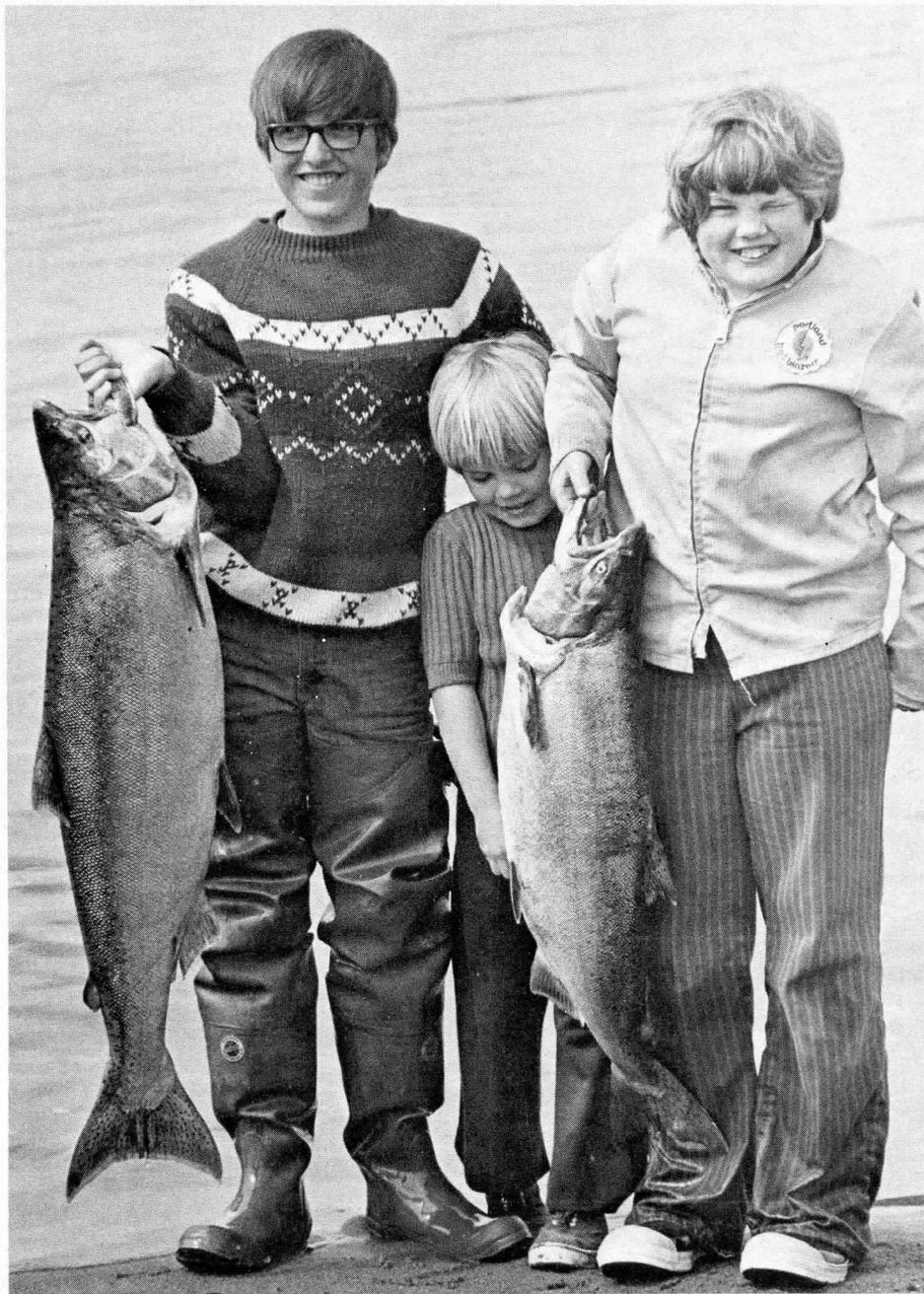
The susceptibility of a species to angling gear plays a major role in its popularity as a sport fish. For example, Columbia River anglers fish intensively for spring chinook and summer and winter steelhead because the fish are of good quality and can be taken on angling gear. These qualities are generally associated with fish that are not immediately ready to spawn.

Fall chinook and coho salmon are not intensively fished in the river because they are more interested in spawning than biting. Substantial sport catches do occur on these races in the ocean. Expanding sport fisheries now occur on shad and sturgeon as well as salmonids.

The principal goals of sport fisheries management are 1) to provide an optimum yield from the fish resource and 2) to maximize the recreational value. To achieve these goals, regulations are established for both biological and social objectives. Biological objectives include protection of spawning escapement, protection of specific age classes or specific stocks of fish, and insuring adequate smolt escapement.

Social objectives include distribution of the catch for maximum public benefit, maximizing the quality of the angling experience, providing optimum palatability of the catch, and uniformity in regulations as well as considerations for public safety. Some regulations simply respond to public and political pressures from competing special interest groups.

Recreational angling on the Columbia River can be severely influenced by water conditions. Unlike the commercial fisheries, sports angling can be poor despite an abundance of fish. High and muddy water



Values in the recreational fishery can't be measured in dollars alone.

can reduce the sports catch to one-half of what it might have been. For example, the 1972 spring chinook run was the largest in recent history, yet the sport catch was only 29,000 fish. The following year the spring run was smaller than the 1972 run, yet anglers caught a record 43,000 fish due to low, clear water, good weather, and excellent fishing conditions. The commercial gill net fishery caught nearly the same number of fish from both runs which means that water conditions alone made the difference.

The presence of the commercial gill net fishery on the river does reduce the availability of salmon to the recreational angler. However, the sports fishery is generally allowed to operate over a much broader period of time and a much greater geographical area. On upriver spring chinook, for example, the main stem sports catch has peaked and catches are declining rapidly before the commercial gill net fishery usually begins. The opposite approach is used for harvesting lower river stocks of spring chi-

Wild Fish Policy Adopted

A 50-mile section of the Deschutes River has been named for initial consideration under a wild fish management policy adopted recently by the Fish and Wildlife Commission.

The Commission has directed the fishery staff to develop a written management plan before November for the section from Pelton Dam to Maupin. The plan is to consider those 50 miles for management of only wild trout, but also with attention to steelhead and salmon.

The newly adopted policy gives wild stocks of fish "first and highest consideration" in the Fish and Wildlife Department's management programs. The exact wording has undergone a gradual metamorphosis during the past several months.

It was first drafted by staff fishery biologists in the Fish and Wildlife Department, then modified in several public workshops and in response to suggestions received in the mail. Finally, it was amended slightly again

by the Fish and Wildlife Commission in adopting it at a recent meeting in Portland.

As finally passed, the policy reads like this:

Wild Fish Policy

"The protection and enhancement of wild stocks will be given first and highest consideration. Hatchery or foreign stocks of fish will be released only where deemed necessary to provide optimum benefits from the resource. Management options in priority order, harvest strategies, and other constraints will be:

1. *Manage exclusively for wild fish:* Harvest will be regulated to maintain production potential, genetic integrity, and genetic and size diversity of the fish populations. Extra protection will be provided depressed stocks that are being revived.
2. *Manage for wild plus hatchery fish:* Harvest will be regulated so that added fishing pressure created by, and for, hatchery fish does not significantly reduce future production of wild fish. Depressed wild stocks will be enhanced if practical while still optimizing benefits. Indigenous stocks will be utilized as the hatchery product wherever practical. Competition between wild and hatchery fish will be investigated and avoided to the extent deemed practical.
3. *Manage exclusively for hatchery fish:* Harvest restrictions will not be imposed to protect wild fish populations. Benefits from hatchery fish will be maximized.

"The following guidelines will be followed to carry out this policy. They will be implemented to the extent of available technical knowledge, funds, manpower, and cooperation of other public and private interests:

1. Aquatic and terrestrial habitat must be actively protected, rehabilitated and enhanced.
2. Written management plans will be developed for all waters of the state. The plans will identify physical and biological capacities, limiting environmental factors and the fish management scheme best suited to each area.

The Columbia *(continued)*

nook which are primarily Willamette and Cowlitz stocks. The commercial gill net fishery occurs very early in the run and takes only a limited number of fish. The sports fishery then occurs over a 2½ month period, mainly in the tributaries if the upriver spring chinook run is in poor condition. Unfortunately, in three of the last four years the upriver spring run has been below the number of fish needed for spawning, so all three fisheries have been closed for most of the spring. Measures taken to combat mortalities at hydroelectric projects as well as further mitigation through the lower Snake River Compensation Plan should help restore the upriver runs to levels where fisheries can again occur.

The proportion of a specific run that is caught by the sports fishery versus the commercial gill net fishery to a very large extent depends on how well the fish bite. Nearly two-thirds of the Willamette and Cowlitz stocks and almost one-half of the upriver spring chinook catch is made by sports fishermen. These stocks bite well and the management objective for the two fisheries is to optimize the sport fishery and provide a commercial fishery, yet maintain optimum spawning escapement.

The major sport catch of fall chinook and coho occurs in the ocean because these fish don't bite well after they enter fresh water. Therefore the in-river fisheries are managed principally for commercial har-

vest. Steelhead, by law, are harvested only by recreational anglers except for an incidental catch by commercial fishermen.

Percent of catch in the lower Columbia River between recreational and commercial fisheries 1967-77

	Sport	Commercial Gill Net
Lower River		
Spring Chinook	64%	36%
Upriver		
Spring Chinook	47%	53%
Fall Chinook	5%	95%
Coho	2%	98%
Steelhead*	100%	0%

**1975-77 after passage of Measure 15 which banned commercial harvest*

All three fisheries, today, must be regulated within the framework of the five-year management plan adopted by the federal court. The sharing formulae between the treaty Indian and non-Indian fisheries are established but the job of dividing the non-Indian harvest among competing user groups is complex and sometimes frustrating. The greatest frustration is in the inescapable fact that no matter what regulatory decisions are made, none of the competing user groups can be totally satisfied. The Department is trying to establish through negotiation a livable compromise between recreational and commercial fishermen on the Columbia River. □

(Continued page 12)

THIS AND THAT

compiled by Ken Durbin

African Elephant Listed as Threatened

The African elephant, the largest living land mammal, is being listed as a threatened species by the U.S. Fish and Wildlife Service.

Though it once was found in immense numbers, the African elephant's population has been declining for many years because of habitat loss and world demand for ivory. Current African elephant populations are estimated to total between 1 million and 1.4 million animals but growing demand for ivory makes them vulnerable to possible future endangerment if they are not protected.

In establishing protective regulations for the African elephant, the Service was most concerned with meaningful control of commercial exploitation. Import of African elephant parts or products into the United States, therefore, will be allowed only from those nations which are members of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

*

Near Miss

One vote could have made the difference. Massachusetts came that close to becoming the seventh state to pass a "bottle bill" requiring deposits on beer and soft drink containers. The Massachusetts House of Representatives passed the bill by a comfortable margin, the first time such legislation had passed either house in that state. But in the Senate the vote was a 20-20 tie, which meant the bill did not pass.

A year ago Massachusetts supporters of returnable bottles lost another squeaker. A referendum on the issue lost by less than half of 1 percent of the vote. But Massachusetts bottle-billers are gamely saying: "Wait 'til next year."

Audubon Leader

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Death for Illegal Logging

The Thai government is taking stern measures to save the country's remaining forests. The export of teak is now forbidden and the penalty for illegal logging is death. These measures were sparked by American satellite photography which revealed a 35 percent decline in Thailand's forest area in the past 20 years.

Yachts are the principal users of teak and the ban will hit western boat builders hard. Not much of Burma's teak reaches western markets, while this "gemstone among woods" is of a lesser quality in India, Indonesia, and Central America.

Demand for Thai teak remains strong. American wholesale prices doubled in 1977 (before the ban) and a black market in teak logs is now said to be operating in Hong Kong.

IUCN Bulletin

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Be Still, My Heart

We read now of the enthusiastic — and very successful — bluegill fisherman who was catching them so fast he stuck one in his shirt pocket and forgot it. Later, feeling a fluttering in the chest region, he bethought himself stricken with a heart attack. A friend rushed him to a hospital emergency room, where an alert medical team quickly smelled out the problem.

Cortland Line Co.
Fishing Line Facts

*

Winchester Publishes Dove Booklet

The latest in the excellent series of wildlife monographs written by Dr. Edward L. Kozicky and John Madison of Winchester is "The Mourning Dove". It is a detailed treatment of the life history, hunting, and management of our most widely hunted American game bird. The book is available at a cost of \$2 per copy from the Conservation Department, Winchester Group, Olin Corporation, East Alton, Illinois 60202. Other titles in this series still available at \$2 each are Cottontail Rabbit, Mallard, White-tailed Deer, Ring-necked Pheasant, Gray and Fox Squirrels, Elk, and Ruffed Grouse.

Frog's Legs Make Trouble for India

India's export of frog's legs, a delicious delicacy enjoyed by many Europeans and Americans, is playing havoc with its frog population and causing insect/crop problems as well. The government has banned their export during the mid-June to mid-October breeding season. Recent figures show India exports approximately 3,019 tons of frog legs, valued at \$85 million. Scientists who think the ban may not be enough to sustain healthy frog population levels suggest that "frog farms" be established to ensure a steady supply. Yet even with the species intact, another serious problem exists. Frogs are natural insect predators and reportedly consume about 20,000 insects in a four-month period. By depleting the frog supply, Indians must rely on pesticides to curb insect infestations of crops, creating an added pollution problem.

Conservation News

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Down the Tube

A 90-foot piece of iron drain pipe leading to an abandoned bath house in New Mexico is the only home for 2,500 remaining Socorro isopods.

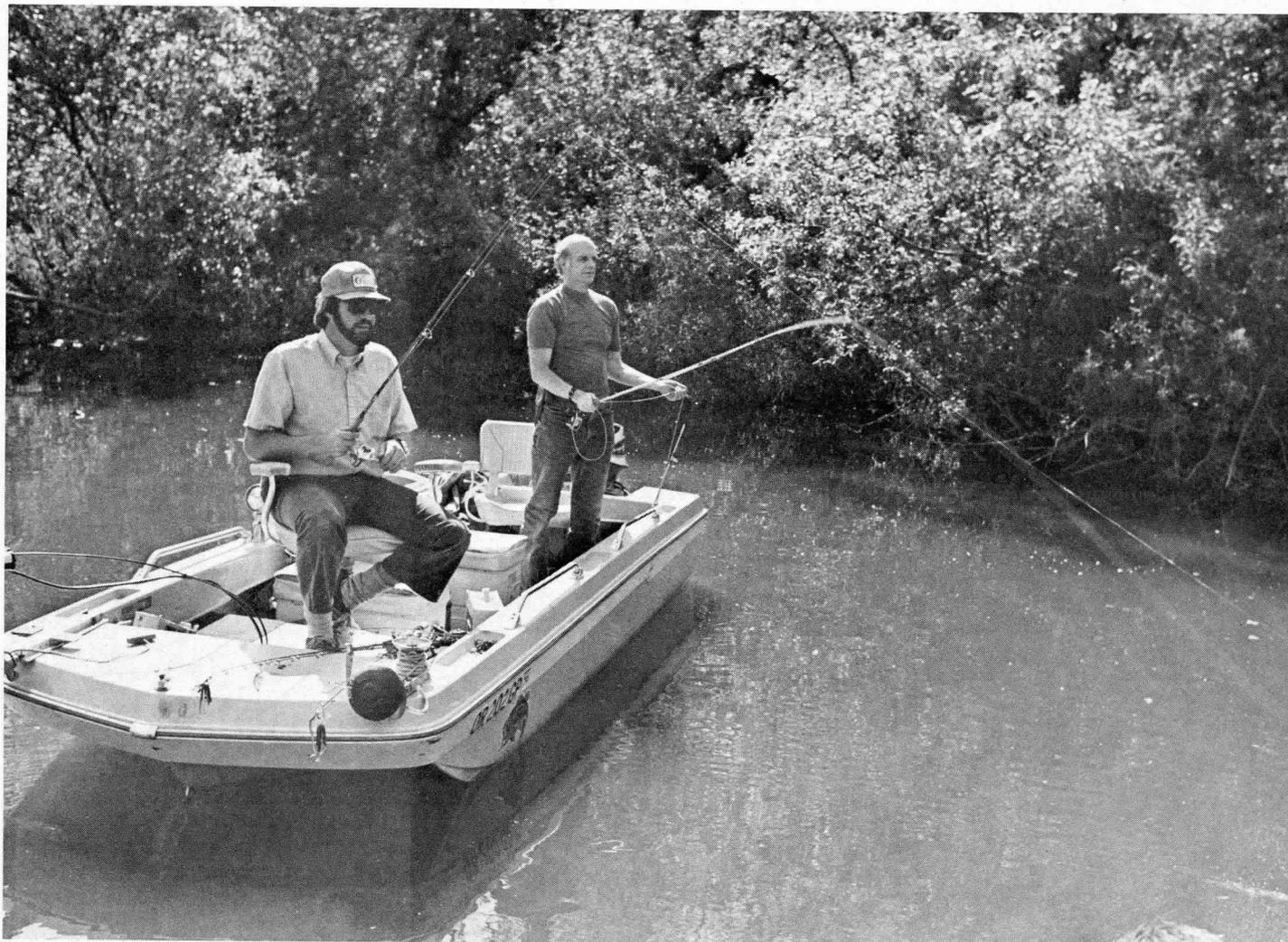
The U.S. Fish and Wildlife Service has proposed that this relative of the common sowbug be listed as an endangered species because of the link it may provide in the ecological and evolutionary web.

This half-inch freshwater crustacean, which eats the algae lining the drain pipe, is one of only two freshwater species in a family that is otherwise entirely ocean-dwelling.

Biologists think it may provide the key to understanding how this and other land-locked relic animals evolved from ancient marine isopods that lived in the oceans once covering much of the western U.S.

The Socorro isopod adapted to the warm, fresh water of a spring, where it lived for millions of years until the spring was capped in 1949. After that, the only place left to this small creature was the section of drain pipe.

This, the isopod's last toe hold, now is threatened by periodic drought and flushing of the pipes.



Photos by Bob Kuhn

Team Tagging Bass

*by Ray Temple
Warm-water Biologist*

Biologists are tagging largemouth bass in three Willamette River sloughs in efforts to learn more about their seasonal movements and anglers have been providing help by catching the fish, as well as by returning tags from their catches.

The tagging program began in 1977 to gain information on seasonal migration of bass within sloughs and between sloughs and the river. Bass migration must be better understood so results of population sampling can be correctly interpreted. Does a low midsummer bass population indicate

a problem of overharvest or low recruitment, for example, or simply that the bass have moved elsewhere? In order to determine the correct answer, the extent and timing of exchange between sloughs and the river need to be examined.

Besides improving interpretation of population samples, tag returns are also expected to provide information for a study of bass stomachs now underway. Stomachs are being collected from bass caught by anglers in the Willamette during the rearing and passage of juvenile salmon and

steelhead to determine extent of predation on these species. Tag returns will indicate whether any substantial shifts in bass populations occur coincidentally with smolt abundance.

Bass are being tagged in three sloughs: Lambert Slough, located 19 miles downstream from Salem; Jackson Bend Slough, about 1½ miles below Lambert; and Roberts Slough, about 3 miles below Independence. Lambert Slough is very large and deep, Jackson Bend is a more typical Willamette River slough, and Roberts is a large slough with freshwater

inflow until summer. From these samples, information applicable to a broad range of sloughs will be compiled.

Most of the bass tagged so far have been provided by anglers from the Oregon Hawg Hunters Bass Club of Oregon City. Bass are caught by hook and line, tagged by Department biologists, and released at the location of capture. Subsequent capture and tag returns by anglers provide data on growth and change in location during the intervening period. Recently the Hawg Hunters staged a tournament to provide bass for tagging in Lambert Slough, where the accompanying photos were taken. Other bass have been collected with a boat-mounted electrofisher, which stuns fish with an electric field.

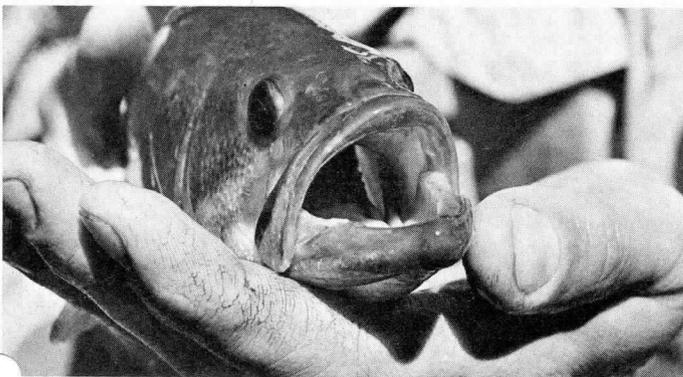
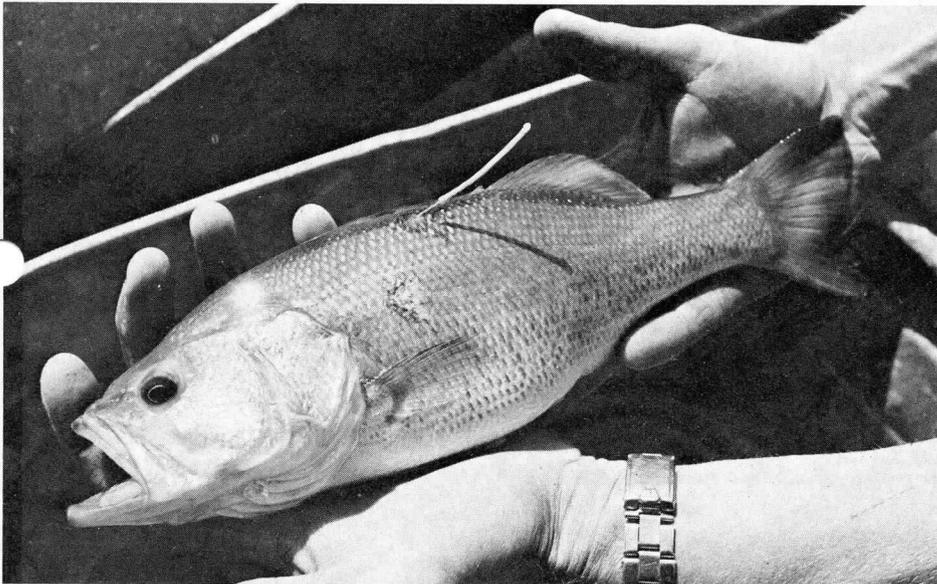
Bass longer than about 8 inches are being tagged with individually numbered plastic tubes about 1½ inches long. The tags are anchored in the left side of the back, just below the dorsal fin. When new, the tags are bright yellow, but rapidly acquire a brown coating of algae.

Anglers should carefully examine their catches before releasing or creeling the fish. If the fish will be kept, the tag should be removed and sent to the Department of Fish and Wildlife at the address found on this magazine. If the fish is released, do not remove the tags but record the number and notify the Department. Anyone reporting a tagged fish will be given a report on his fish upon request. Anglers should include their names and phone numbers so they

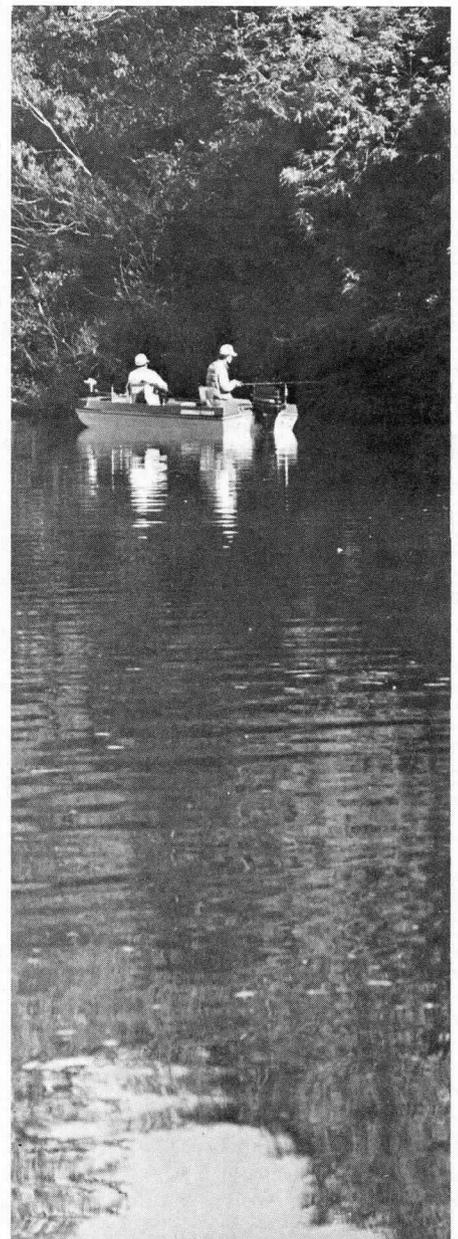
can be contacted for further information.

Tags have also been placed on channel catfish released in the Tualatin River to provide information on catfish distribution after stocking. Smallmouth bass in the Santiam River have been tagged as a means of examining movement and growth.

In tagging programs, fish must be caught and tags returned before anything can be learned. This is where anglers can be especially helpful. Please help by checking your catches and returning any tags to the Department of Fish and Wildlife. □



Even little largemouth bass live up to their names.



Fish and Wildlife Commission Renews Support for LCDC

The Fish and Wildlife Commission renewed its support last month for Oregon's Land Conservation and Development Commission in light of a petition drive for a ballot measure to essentially abolish it.

Protection of habitat is the single most important factor in fish and wildlife management and LCDC's planning goal number five requires that impacts to fish and wildlife be considered in county land use planning decisions.

A resolution adopted by the Fish and Wildlife Commission reaffirms support for goal number five and warns Oregonians of the potential harm to wildlife in the proposed measure. The Commission publicly supported LCDC two years ago when its existence was threatened by a similar ballot issue.

Although unsettled at press time, LCDC opponents had until July 7 to

obtain about 61,000 signatures to place on the November ballot a measure which would amend the Oregon Constitution to abolish LCDC's land use goals and reduce the Commission to an "advisory" body.

Some 1,058,000 licensed hunters and anglers as well as others with an interest in perpetuation of wildlife have a great deal to lose, Commission members said, if LCDC's land use goals are abolished and the "teeth" removed from LCDC itself.

"The Commission need not tell people how to vote," said Commission Chairman Louisa Bateman in proposing the resolution, "but the Commission should not sit passively and quietly by in the face of a proposed policy which would be bad for the wildlife values which . . . this Commission is responsible for protecting and managing properly." □

Anglers Reminded of New Salmon Regulations South of Cape Falcon

A few anglers have been caught short by new regulations which set minimum lengths for salmon caught in the ocean south of Cape Falcon. In these waters chinook salmon less than 22 inches long and coho shorter than 16 inches must be released unharmed. Before 1978 salmon of any size could be kept south of Tillamook Head. Cape Falcon is about 12 miles south of Tillamook Head.

The Fish and Wildlife Department says a number of anglers, apparently unaware of the new regulation, have been landing with undersize fish, especially in the Winchester and Coos Bay areas.

Misidentification of species has been another problem. With differing minimum lengths for chinook and

coho salmon, anglers need to be able to tell one from the other. Directions to help tell chinook from coho salmon can be found on page 10 of the 1978 angling regulations booklet available free where fishing licenses are sold.

License agents will also have a one-page supplement to the 1978 sport fishing regulations that details a number of rule changes adopted in April after the 1978 synopsis had already been printed. The changes were adopted to make Oregon's ocean salmon fishing regulations compatible with rules adopted by the Secretary of Commerce for the ocean zone from 3 to 200 miles offshore.

North of Cape Falcon the minimum length for chinook salmon is 24 inches; for coho it is 16 inches. □

Wild Fish (continued)

3. Department management activities that may create substantial adverse impact upon wild fish will be made known and alternatives explained prior to implementation.
4. The Fish and Wildlife Commission will periodically review progress in implementing this policy."

The Commission deleted another guideline which read, "The Department shall, within 12 months after this policy is adopted, establish a minimum of three streams, or portions thereof, to be managed exclusively for wild fish." Members said a short-term goal should not be part of a long-range policy. The Commission did, however, direct the staff to present a minimum of three streams of a quality nature for wild fish management exclusively, in addition to the Deschutes, by the time angling regulations are set this fall. Written management plans are to be developed for these waters as quickly as possible. □

Solar Hatchery

A fish hatchery in Manitoba, Canada is expected to demonstrate the first practical application of solar energy in a Canadian federal government facility. The hatchery, located in one of the highest solar radiation level areas in the country, should receive up to 70 percent of its yearly heating needs from the system.

Conservation News



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