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- **Umpqua River Cutthroat Trout Listed as Endangered, p. 4**
- **Water Pollution; its effects on Oregon's fish and wildlife, p. 8**

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The Cover

Pollution continues to haunt
Oregon's fish and wildlife. *File Photo*

Table of Contents	Page
Editorial	2
Update	3
Umpqua River Cutthroat in Peril	4
Water Pollution; its effect on Oregon's fish and wildlife	8
Attack of the Yellow Star Thistle	12
Bullish on Brown Trout	13
Stream Habitat Enhancement... Horse Style	14

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FROM THE DIRECTOR

Not All the Fish News is Bad

Sometimes it seems you have to read beyond the headlines to get the whole story about salmon. Umpqua River cutthroat trout have been added to the federal Endangered Species List and coastal coho are in such a serious state of decline that Governor Kitzhaber has instituted the most far reaching recovery effort in the history of the state. And now, coastal steelhead are being considered for federal listing as well.

These stories are big news and the headlines correctly highlight very serious problems that need to be fixed. Efforts are already in place or under development to do just that. But there is another side to the salmon story in Oregon.

In the Umpqua River we are seeing a very solid run of chinook, the summer steelhead numbers are at or above the 50 year average return, while the winter steelhead runs also remain very solid. In addition, coho are crossing Winchester Dam in near record numbers. These fish represent solid performance of hatchery fish as well as strong wild runs.

Chinook in general are doing very well along the coast. South of Cape Blanco, where localized upwelling has provided outstanding food sources, we are seeing particularly strong runs, though central coast rivers are seeing excellent returns as well. And don't overlook the consistent opportunities available for fall chinook at Tillamook Bay.

While coastal coho are not doing well, there have been some

excellent localized coho fishing opportunities on hatchery fish. One of them is at the old OreAqua fish facility in Newport Bay. There the Department of Fish and Wildlife and the Port of Newport worked together to hatch and release coho from that facility so that the returning fish would provide a "terminal" fishing opportunity in the bay without adverse affects on wild runs.

Some of the problems we've had with fish have been drought and ocean related...and we hope these may be in the process of turning around. Work to improve and restore habitat and watershed is a long-term proposition but is a change for the better that is underway and accelerating. We are certainly seeing better production in streams where low summer flows over the last decade made juvenile survival very difficult. This is also true of trout production in central and eastern Oregon.

The situation we face with many of our anadromous fish is serious and the Governor's plan for coastal salmon offers solid solutions that will take Oregon into the future. But there are strong, healthy runs of fish out there now as well. We should appreciate them, and enjoy them. And we can fish for them even as we come together to work for the return of the salmon populations that need our help.

Rudy Rosen, Director

Oregon Outdoor Women Completes Second Year

The popular Oregon Outdoor Women Program completed its second season with a September 7 seminar in La Grande.

During five summer seminars, over 330 women and 30 children received training in skills such as rifle and shotgun safety and shooting, basic fishing, flyfishing, survival skills, canoeing, deer and elk hunting, clamming and crabbing, outdoor cooking and archery.

"Oregon Outdoor Women gives women the training to become actively involved in outdoor activities," said assistant coordinator Kendra Callahan. "We measure the success of our program by the number of women who actually go out after the seminar and use the skills they have learned. It is exciting to see the program work."

Callahan credits the success of the program to the work of instructors and volunteers. "We would not have been able to put on this program without the help of nearly 200 volunteers."

Major sponsors for the program include Columbia Sportswear, 3M Scientific Anglers, National Rifle Association, Oregon Hunters Association, Rocky Mountain Elk Foundation, Safari Club and W.H.A.T. (Wildlife, Hunters, Agriculture, Timber).

Planning is underway for next year's seminars. The department is looking at offering workshops in other locations and adding several topics to the list of courses that are available. According to Callahan, the published schedule should be available after the first of the year.

UPDATE

Commissioners Approve 1997 Angling Regulations

Oregon's state-wide angling regulations will look different in 1997, and the difference is more than just skin deep.

Printed regulations will be available in late 1996. Some of the more notable statewide changes include:

- Anglers will now have a choice on whether to use barbed or barbless hooks statewide in 1997. Anglers will be urged, through various education materials, to use barbless hooks.
- Reduced annual **wild** steelhead limit (where harvest allowed) and reduced annual salmon/steelhead bag.
- No size or number limit on brook trout caught in streams.
- Standardized opening of trout season in most areas.
- Reduced trout bag limit in lakes to five per day.
- Lakes open all year for trout, with exceptions listed by zone.
- Catch-and-release only for coastal trout in all Northwest and Southwest zone streams.

Diamond Lake Fish Restoration Gets Commission Nod To Proceed

Diamond Lake is legendary in its ability to grow large trout quickly, drawing anglers by the thousands. Unfortunately, tui chub also do very well there and have nearly destroyed the popular trout fishery that has thrived for decades.

History has repeated itself - this is not the first time tui chub have taken over the lake. Department biologists are hoping to repeat history themselves by removing the chub and recreating the once-thriving trout fishery.

Biologists believe the only effective tool to eliminate tui chub from Diamond Lake is rotenone, the same naturally-occurring chemical used in 1954.

Cost will be substantial, estimated at nearly \$1 million. A public involvement process will be required, including review by the U.S. Forest Service as required by the National Environmental Policy Act. Department staff will also study potential impacts on other wildlife that use Diamond Lake. Treatment probably would not occur until the year 2000 or later.

Tip Of The Hat

A tip of the hat to Josephine County District Court Judge Gerald C. Neufeld and aggressive prosecution by Josephine County Deputy District Attorney Scott Titzler.

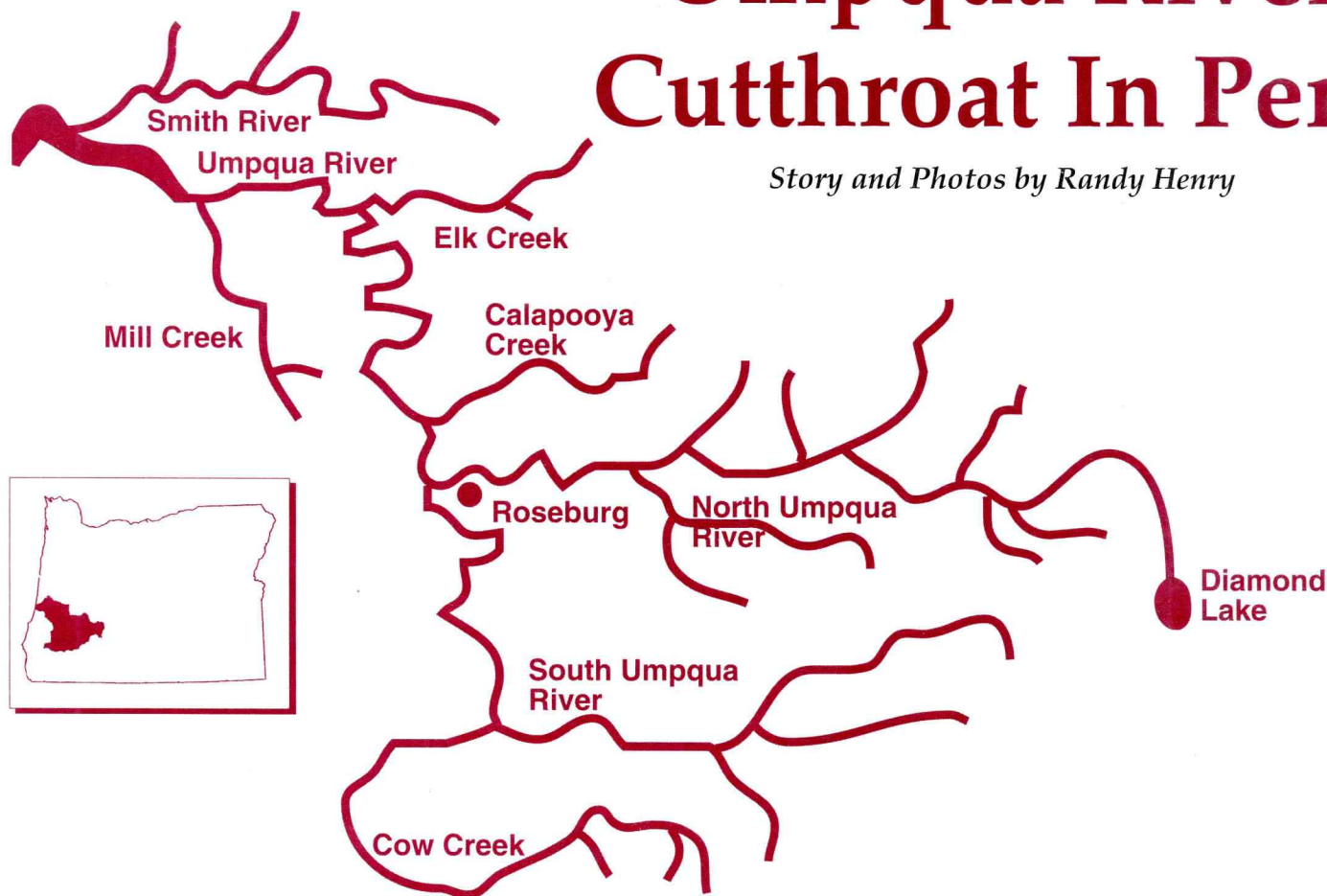
The judge sentenced two Coos Bay residents for killing five large bucks by spotlight along North Applegate Road in November 1995. Both subjects were found guilty of "Exceeding Bag Limit on Deer" and "Hunting With Aid of Artificial Light". Each suspect was sentenced to:

- Ten days in the county jail
- A fine of \$10,000 for each offense
- \$1,200 restitution to the State of Oregon
- Two year's revocation of hunting and angling privileges
- Five years supervised probation with a no-weapon provision.



Umpqua River Cutthroat In Peril

Story and Photos by Randy Henry



If the Umpqua River is a barometer, then the silver fish which swim the glassy currents are the mercury foretelling future storms.

The mercury is low and the wind is rising. The most fragile and complex fishery in the Umpqua River is in crisis. The National Marine Fisheries Service (NMFS) in August listed Umpqua River cutthroat trout as endangered under the Federal Endangered Species Act. One of

Oregon's most fabled rivers is about to close for the storm.

"You see hundreds of anglers along this stretch here by Roseburg. These areas at Amacher Park and Whistlers Bend are often crowded with people who come to camp and fish," said department biologist Dave Loomis, who manages fisheries on the Umpqua River. As part of

early agreements with NMFS to help save the cutthroat trout, the department will close all trout fishing on the Umpqua after 1996. Legal-sized hatchery trout reared and released in this highly prized fishery for the last 50 years will, in 1997, go to reservoirs and lakes elsewhere in the basin. It's the latest in a series of regulatory changes the

department has adopted to protect cutthroat trout.

NMFS lists all three types of the Umpqua River cutthroat trout - resident non-migratory, sea-run and "fluvial" - those which migrate between the main river and tributary streams. Though Loomis agrees that all three have seen declines, little is known about resident or fluvial populations.

What Happened in 1957?

"What we do know is that sea-run cutthroat counts over Winchester Dam took a nose dive in 1957 and have never recovered," said Loomis. A chart of the returns shows higher numbers from 1965 to 1973 - but these were Alsea River Hatchery cutthroat the department released above the dam. Counts crashed after the department stopped releases, indicating that

whatever had caused the initial decline was still causing problems.

"We don't have a smoking gun. There was no single catastrophic event that coincides with that decline," says Loomis. "There is no 'one thing' that would make this an easy puzzle to solve."

Many factors probably led to the decline. Habitat loss or damage from logging and road building, easy access for anglers using the new roads along the Umpqua, fish-killing ocean conditions from 1957 to 1960, and dams which altered river flows and raised temperatures are all key events which occurred in the mid-1950s. "Cutthroat trout are probably the least evolutionarily defined fish in the river - they compete with all the other fish species, but don't fit any particular niche as well as other fish like

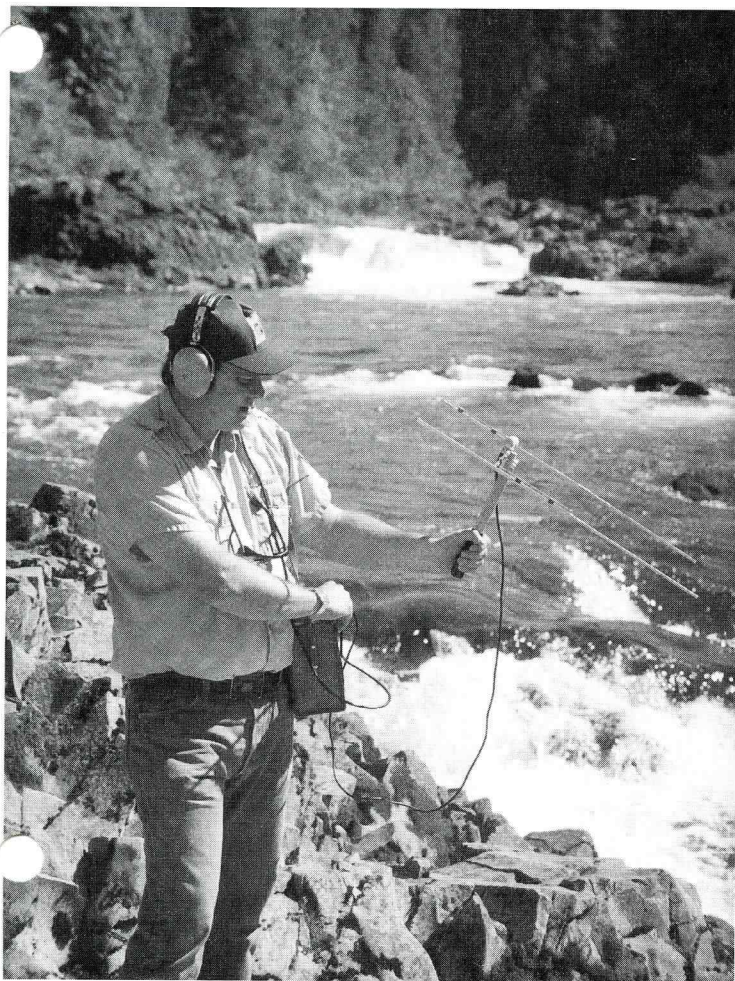
See "Cutthroat," page 6

What cutthroat trout need to survive

- Complex habitat
- Cold Water (below 60°)
- Large undercut banks of bed-rock, large woody debris in pools
- Healthy estuary environment

Sea-run cutthroat trout life history

- Hatch in early spring after salmon but before steelhead emerge.
- Migrate to sea during spring when 6-8 inches long - usually about 2-3 years of age, but sometimes older.
- Spend spring and early summer in the estuary or near-shore area, then migrate back upstream.
- Very vulnerable to predators when in the estuary. Because of aggressive nature, they are also vulnerable to anglers.
- Lifespan - 5-7 years
- Columbia stocks and most Oregon coastal stocks mature on first run. Spawn December-March. Can spawn multiple times.



Left: Dave Loomis searches for radio-tagged cutthroat trout on the North Umpqua River. Below: A cutthroat is about to fitted with a radio tag, allowing it to be tracked as it swims upriver.



"Cutthroat," continued

steelhead or salmon," explained Loomis. "They require the most complex habitat and are therefore the most vulnerable to land and water use alterations."

A Watershed Event

Because cutthroat trout require such diverse, complex habitat stretching from headwaters to the ocean, recovery efforts are also complex. These efforts started in the 1970s with a move to improve forest practices, and continued in the 1980s with on-the-ground habitat improvement projects high in the watershed.

"The Umpqua Initiative is the most notable recent effort to recover Umpqua cutthroat trout,"

says Loomis. The initiative grew from Governor Barbara Roberts Coastal Salmon Initiative to include agricultural and timber interests and Oregon's departments of Forestry and Fish & Wildlife. In the spring of 1996, Governor Kitzhaber included the Umpqua Initiative in the Coastal Salmon Restoration Initiative and designated it as the Watershed Council for the Umpqua Basin. Watershed Councils are coordinating bodies aiding in decision making processes affecting salmon, steelhead and cutthroat trout.

The Umpqua Initiative doesn't have a regular budget, explains Loomis, which surprisingly isn't a problem. "People come to the table

because they believe in their project and want to see them through. When they do that, the money follows," says Loomis.

The department is forging more and more partnerships with private landowners and others in an effort to fix the broken watershed. "Three big landowners have joined us recently. We cannot keep up with private landowners wanting to do habitat work," said Loomis.

Loomis admits the cutthroat trout listing and the emphasis on the Coastal Salmon Restoration Initiative will test the Umpqua Initiative. He believes that offering incentives to landowners to restore habitat is working well. "We're on a path to recover our watershed," says Loomis.

The federal listing will add a whole new complexity to the recovery process, but will bring additional players to the table to help recover cutthroat trout. Loomis has a long list of critical research projects as yet undone which will help answer questions and lead to recovery. He expects the spotlight of the listing to help solve many problems in the Umpqua Basin and help other fish species as well.

Until then, anglers and non-anglers alike will be asked to make sacrifices to help recover cutthroat trout in the deep, clear waters of the Umpqua River. ■



The Umpqua River has developed into a premier smallmouth bass river. Studies indicate very little direct smallmouth bass predation on cutthroat trout.

1945

1950

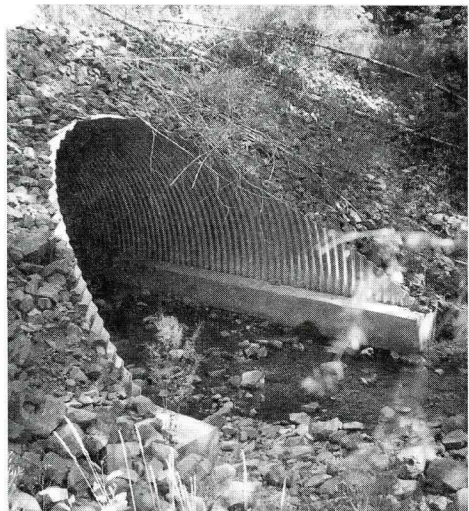
1955

• Post World War II Industrial Boom - A huge demand for raw materials sent loggers to the central Cascade Mountains, where watershed after watershed provided timber for a hungry economy.

• Heavy sedimentation colored the river red from 1948 to 1955. Steamboat Inn actually closed for a year because the river wasn't fishable.

• Highway 138 - Construction began in 1947, changing the course of the river, separating the river from its flood plane and blocking passage to certain tributaries.

• Dams - "Something changed the salmon fly hatch" says Frank Moore. "Just didn't see them after that. During this period, water temperatures rose throughout the system, in some key tributaries reaching 70-80 degrees.



The Old Man's River

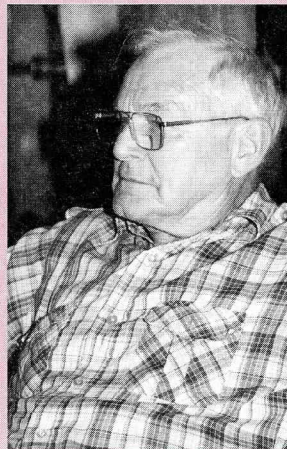
Bright steelhead still fight the currents on the North Umpqua. They still return in search of their natal streams, enticing anglers to toss still another fly.

They return in spite of man.

Frank Moore has seen a lot of these fish come and go. He's watched them pass the deep pools, and fight the swollen flows. He watched anglers come from around the world to pitch big feathery flies toward the legendary fish. He has seen it choked by the onslaught of human development and the need for raw materials that can come only from the wildest of places. As a member of the Oregon Game Commission from 1968 to 1974, he was in the midst of the controversy of modern fish and river management.

Moore owned and managed the

Steamboat Inn during the 1960s and early '70s. He fished with the masters and sheltered the famous. Zane Gray, Ray Bergman and Roderick Haig Brown - famous writers who shared a passion for the Umpqua.



Frank Moore

Frank Moore's passion made him protective. When poor logging practices destroyed Pass Creek - a tributary of the Umpqua - he spurred two young filmmakers in 1968 to make a documentary which outraged the public and helped father the Oregon Forest Practices Act.

Frank and his wife, Jeannie, still live along the Umpqua. Their memories reach back in time, before the highway, before the dams, before the logging.

And before the searun cutthroat trout nearly vanished from the river.

Partnerships — Public and private partnerships are helping to improve the Umpqua River for cutthroat trout. Top: Using funding from the state's Restoration and Enhancement Program, a private landowner built fencing to exclude cattle from a stream. Middle: A private-timberland owner cooperated in an effort to improve fish habitat in several North Umpqua tributaries. Bottom: The Bureau of Land Management installed this "fish friendly" culvert on a cutthroat rearing stream.

1960 1965 1970 1975

• 1957-1960 - El Niño - Change in ocean temperatures and food productivity was probably the initial punch that knocked sea-run cutthroat trout back in 1957. However, populations did not respond as expected when ocean conditions improved.

• Hatcheries - The department stocked an Alsea River strain of sea-run cutthroat trout in the river from 1961 to 1976, artificially propping the run up for over a decade. When the department stopped stocking, annual migration dropped to below 100 fish per year by 1978.

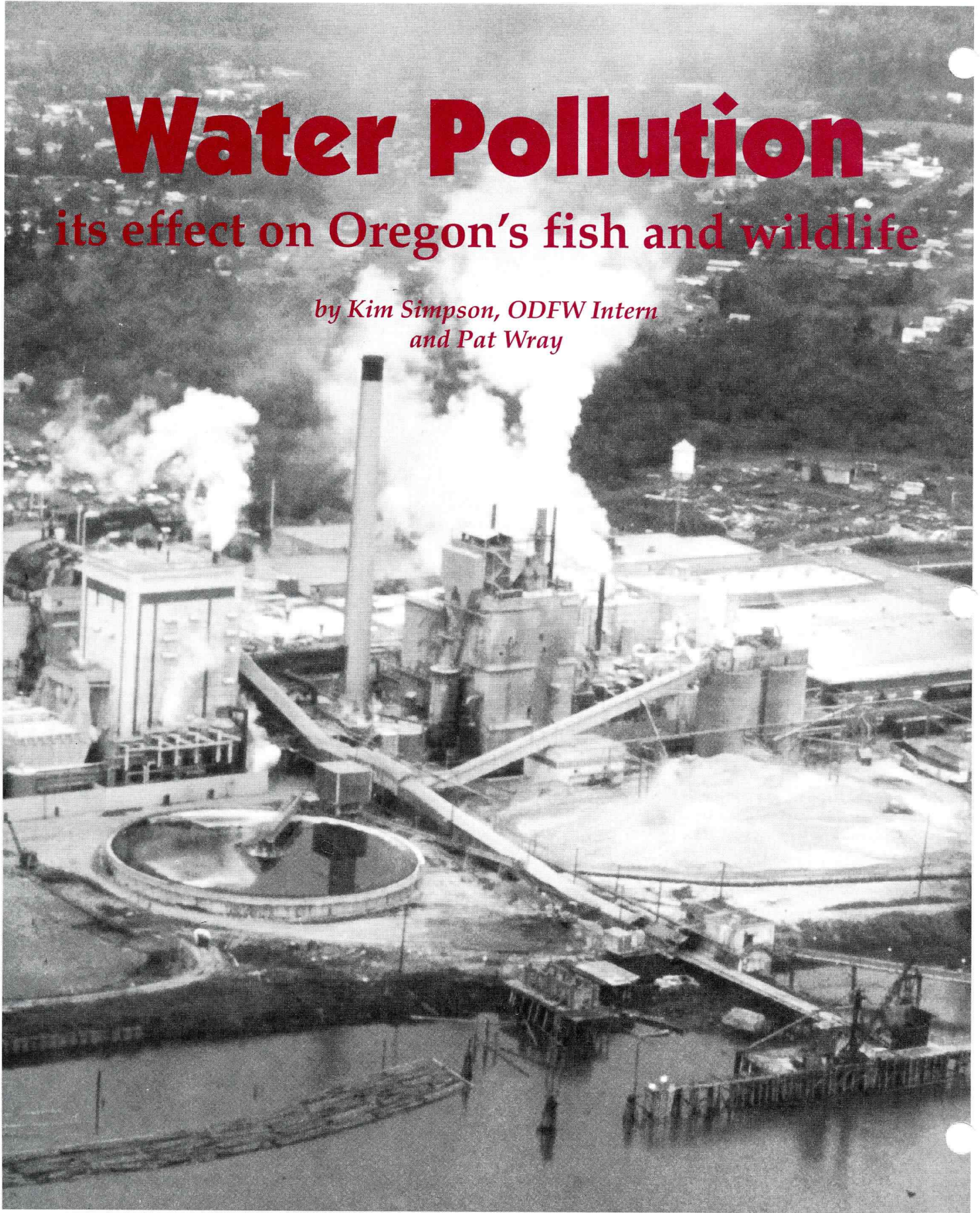
• New Predators - Striped bass peaked in the early 1970s. Voracious predators of sea-run cutthroat trout in estuaries.

Illegally introduced smallmouth bass populations peaked in 1980s in mainstem, though studies indicate little direct impact on cutthroats.

Water Pollution

its effect on Oregon's fish and wildlife

*by Kim Simpson, ODFW Intern
and Pat Wray*



Water pollution encompasses a variety of different problems. Pollution can result from chemicals or excess nutrients, gravel, soil, leaves, wood chips or oil. It can come from countless sources—some natural, and some a function of human technology. Regardless of the type of pollution or its origin, water pollution can harm fish, wildlife, and humans.

Non-point sources contaminate our waters from a broad area, as opposed to **point sources** that discharge pollutants from a localized source, such as a manufacturer's outfall pipe or a pesticide overspray.

Septic discharges and fertilizer runoff can contribute to non-point source pollution. Both materials are high in nutrients, such as nitrogen and phosphorous, which are always present in water, but can be detrimental if they exceed the natural balance. Algae flourishes where excess nutrients are present, and in the process, dissolved oxygen in the water is used up. Without oxygen, fish suffocate. Excess nutrients from a variety of sources are contributing to the decline of Lost River suckers and shortnose suckers in Upper Klamath Lake, according to the United States Geological Survey (USGS).

The Tualatin River is experiencing much higher levels of nitrogen and phosphorous than ever before, due to rapid housing development along its banks. According to the National Water Summary performed by the USGS in 1990-91, increased sewage-treatment plant

discharge caused the Tualatin River to have the lowest dissolved oxygen concentration of the 10 Oregon rivers in their study. Under such conditions, native fish species—such as cutthroat trout and Chinook salmon—are not able to survive as well as some of the more pollution-tolerant species—including carp and catfish.

Land use practices, including road construction, logging, and agricultural operations, can deposit excess **sediment** into our water bodies. "Sediment can be detrimental to salmonids—such as salmon, trout, and steelhead—because they need clean water to develop, reproduce, and find food successfully," said Greg Robart of the Oregon Department of Fish and Wildlife Habitat Conservation Division.

A human trying to jog in the dust cloud of a fast moving vehicle on a dirt road is probably experiencing the same breathing pleasure as a salmon living in a stream choked by sediment runoff. Excess sediment, much of which eventually settles at the bottom of rivers, also smothers fish eggs.

Devils Lake, near Lincoln City, is experiencing sedimentation problems partly because of rapid development and logging nearby. According to a study by E&S Environmental Chemistry in Corvallis, if increased sedimentation rates continue, the volume of water contained within the lake will decrease significantly.

Septic runoff has contributed to high levels of nitrogen and ammonia in Devils Lake, which are toxic to fish and cause algae blooms and low dissolved oxygen.

"Salmonids require low **temperatures**, between 55 and 65 degrees, for survival and good reproductive success," said Greg Robart. When shady vegetation along a water body is removed, water temperatures often rise above these critical levels. Water at higher temperatures holds less oxygen than the fish need, so they either die, leave the area or become less capable of successfully reproducing.

The John Day River, historically very productive salmon water, has lost much of its salmon run as its water temperature has climbed.

The river still attracts a run of steelhead and spring chinook and has become one of America's best known small-mouth bass rivers...but the once numerous

Everybody lives downhill from someone.

fall chinook salmon, which returned when the river level was naturally low, have essentially disappeared. Loss of shade along the river, begun by heavy sheep grazing in the 1800s, started the process. Extensive **irrigation diversion** has also contributed to the increased temperature of the John Day and the parallel decline of salmonid populations.

American Rivers, an environmental organization concerned with preserving the health of our nation's rivers, has documented summer temperatures in the John Day River of 80 degrees.

Chemicals also increase fish and wildlife's struggle to survive. **PCBs**—or polychlorinated biphenols—are chemicals which were once used for their versatile insulating and lubricating properties. They are no longer manufactured in the United States because

🔥 **Pulp and paper mills release dioxins and other chemicals into Oregon rivers.**

Everyone lives in a watershed

they have been linked to reproductive, cardiovascular, and respiratory problems in animals.

Chemical pollution in the lower Columbia River appears to be adversely affecting reproductive organs of young male river otters. According to Chuck Henny of the National Biological Service in Corvallis, the reproductive organs of young male otters collected from

the lower Columbia River were significantly smaller than from young otters collected in less polluted areas. Henny says PCBs and **dioxins** may be contributing to the developmental problems but other chemicals not yet evaluated could also be playing a part. High concentrations of several chemicals found in young male otter livers correlated with smaller reproductive organs.

Dioxins—chemicals used in pulp and paper mill bleaches, sewage treatments, and some kinds of fuels—have been shown to cause cancer in laboratory animals even in small doses. Dioxins can cause reproductive abnormalities, learning disabilities, as well as cardiovascular, immune, and nervous system damage.

National Wildlife Federation studies have shown that dioxins damage the growth, fertility, and immune systems of birds, fish, and mammalian wildlife.

All of these chemicals, in addition to some **pesticides** and the **heavy metals** lead, mercury, and cadmium were found in bald eagles and their eggs along the lower Columbia River in a recent cooperative study by the U.S. Fish and Wildlife Service and Oregon State University.

This study links those

contaminants to the declining bald eagle population in the Columbia River Estuary. Study results indicate that the average number of eagle eggs in the estuary was below statewide averages. In addition, eggshells found were 10% thinner than eggs studied before the pesticide **DDT** was in use. Thinner shells are more likely to be accidentally crushed by the parents in the nest.

Pollutants are usually stored in fatty tissues and are not easily broken down within the body. Contaminants **bio-accumulate** (build up) in bald eagles and other meat eaters, like human beings. Their bodies develop much higher concentrations of pollutants than the animals they eat. Eagles and other predators are more likely than prey species to develop related health problems.

Even the young are not safe. Contaminants are transferred into mother's milk when they are nursing their young. As a result, young predatory mammals can receive high doses of pollutants before they eat any meat.

A particularly worrisome characteristic of some chemical pollutants is their ability to behave like the female hormone, estrogen. They are capable of **disrupting hormonal production** in both males and females...and hormones control many bodily functions.

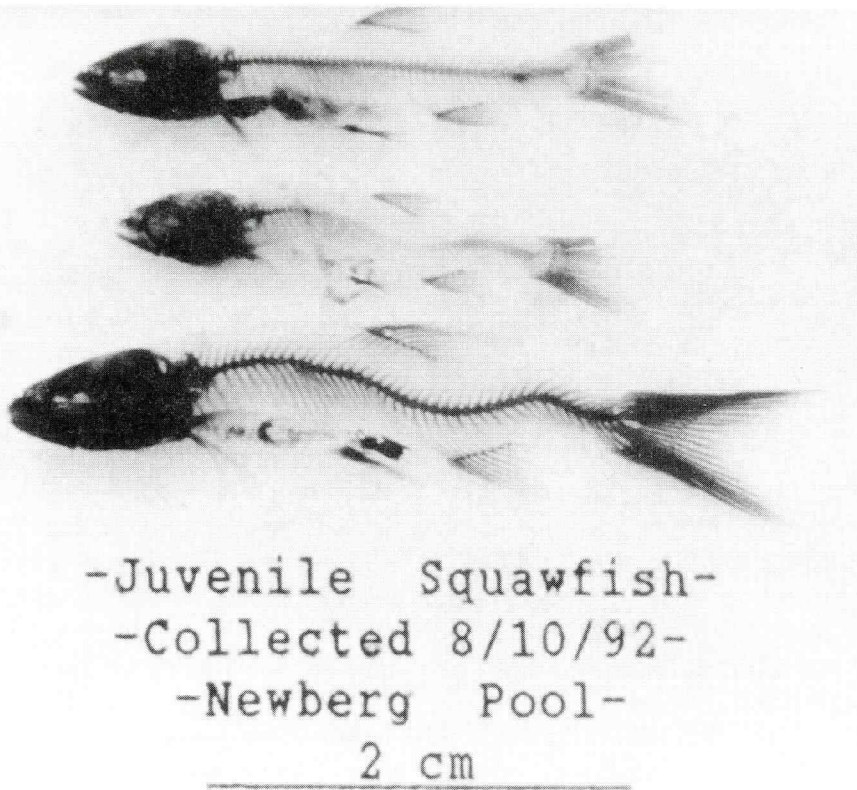
Numerous studies have documented this disruption, revealing juvenile chickens with adult plumage and immune system problems. In some cases, both sets of reproductive organs occurred in the same animal.

Even more troubling are areas where fish and wildlife have serious biological problems, but no one knows why. One such site is the Newberg Pool on the Willamette River. During Phase I (1991-1993)



RA. GROVE

Studies of the effects of chemicals on osprey and other wildlife species are underway.



DEPARTMENT OF ENVIRONMENTAL QUALITY

Skeletal abnormalities in juvenile squawfish in the Newberg Pool of the Willamette River. The upper skeleton is normal, and the lower two skeletons have increasingly severe abnormalities. Causes of these abnormalities are unknown.

and Phase II (1993-1995) of the Willamette River Basin Water Quality Study, DEQ found that three percent of all the juvenile northern squawfish studied had some kind of skeletal abnormality, which appeared to be normal. However, in the Newberg Pool, 22 to 74 percent of the tested fish had abnormalities depending on their location in the pool.

Scientists have studied the Newberg Pool for the last several years, and studies continue, but as yet the type and source of pollution has not been discovered.

Pollution is such a widespread topic that many of us have lost our fascination with it...worse, we seem to have lost our fear. Or we have adopted scapegoats on whom we heap the blame, thus absolving

ourselves of responsibility for a problem that belongs to each of us. Deformed fish swim weakly beyond our sight, eagle and

osprey eggs break silently in nests beyond our reach, otters with diminished sexual organs simply do not breed and bring no young

It doesn't go away... it goes somewhere else.

What You Can Do To Help



- When you use pesticides and fertilizers, make sure to use, store, and dispose of them properly. The same is true for paints, oils, cleaners, and other toxic chemicals. Local utilities offer disposal opportunities for household chemicals.
- Make sure that your septic system does not leak by having it checked regularly.
- If you vacation on the water, take your trash and chemicals back with you on land and dispose of it there.
- Encourage government to make and enforce pollution laws.
- Get involved in local stream restoration and pollution-prevention activities.
- Keep informed about the discovery of newly-found pollutants. Researchers are learning that some substances and practices we thought were safe are not.
- Your actions and words can make a difference in whether or not our waters continue to support life activities.

into the world. They can do nothing about the conditions in which they live...but we can, if we care enough to try. There may be no better perspective on water pollution than the following thought.

"If you're not worried, you don't understand the problem."

Attack of the Yellow Star Thistle

By Jim Yuskavitch



To a world traveller the word "exotic" is likely to conjure up thoughts of tropical beaches and colorful natives. But in Union County, the word exotic is the stuff of nightmares. In this case the nightmare exotic is a plant that hails from the Mediterranean, and is known as yellow star thistle, or *Centaurea solstitialis*. It is a member of the sunflower family, grows from one to five feet high and thrives in disturbed environments. And that fact has left land managers and ranchers in Union County plenty disturbed.

Over the last 20 years, yellow star thistle has spread from about 2,000 acres to nearly 15,000 acres in the rolling native grasslands between Mt. Harris and the town of Cove, in the foothills of the Wallowa Mountains. And it has been nothing but bad news for local ranchers.

"When yellow star thistle comes into this type of terrain," explains Gary Dade, director for vegetation management for the Union County Noxious Weed Agency, "it not only crowds out all the other vegetation in the area, but actually destroys nearby vegetation by giving off a toxin."

This has resulted in the loss of the area's native grassland community. "Ranchers and farmers here had given up doing anything about it because it's so invasive and expensive to control," continues Dade.

Craig Ely, Assistant Northeast Regional Supervisor for Oregon Department of Fish and Wildlife, has seen the effect the noxious weed has had on the Mt. Harris elk

and mule deer winter ranges. "The loss of native forage plants is displacing big game to surrounding lowlands," says Ely. "Ranchers and farmers are experiencing increased damage to haystacks and other agricultural crops, as well as deterioration of their livestock ranges."

Yellow star thistle is believed to have entered Oregon in the 1940s, when ranchers in Union, Baker and Wallowa counties brought in sheep from northern California. Northern California has been infested with yellow star thistle since the 1920s and now has 10 million infected acres. It is widely held that these imported sheep carried the seeds of today's infestation tucked away in their wool coats.

One of the more insidious impacts of the yellow star thistle infestation is an increase in erosion along the steep west slope of the mountain. This weed, which crowds out all surrounding native plants and grasses, does not possess a large enough root mass to hold the soil in place on steep slopes. So wet weather means erosion anywhere yellow star thistle is found.

A program of herbicide spraying in the 1960s and 70s provided some relief, but Mount Harris' native perennial plant communities were slowly overwhelmed by the aggressive exotic. In response, the Union County Noxious Weed

Agency has taken the lead in a long-term effort to control the spread of the plant and to reseed as many Mount Harris acres as possible with native grasses, to the benefit of big game and local ranchers alike.

Twenty two local landowners have signed on to have their lands treated for the weed. With participation from Union County, Union County Soil and Water Conservation District, Natural Resource Conservation Service, Boise Cascade, U.S. Forest Service and Oregon State University, some \$250,000 has been raised to make the effort a reality. This includes a \$50,000 Access and Habitat Program grant, which was approved by the Oregon Fish and Wildlife Commission last fall.

The Access and Habitat Board is a grant-making program created by the 1993 Oregon Legislature for the purpose of forming partnerships with private landowners to improve wildlife habitat on their lands and to increase public hunting access to private property. The program, administered by the Oregon Department of Fish and Wildlife, is funded through a \$2 surcharge included in hunting license fees.

"Eradication of yellow star thistle is not possible," states Dade. "But control is. Our long-term goal is to keep it contained to this area." To that end, they have sprayed 2,000 acres with herbicides this year. When the fall rains come they will reseed the treated area with native grasses. Next spring they will begin eradication efforts anew. ■

Bullish on Bull Trout

By Jim Yuskavitch



Bull trout, a once maligned native fish of the Pacific Northwest, have caught the attention of fisheries managers in recent years as their numbers and range in Oregon have declined.

A close relative of eastern brook and lake trout, bull trout are characterized by a broader, flatter head than those of other char and trout, and by the light colored spots covering their green-brown back and flanks. In prime habitat they may exceed 30 pounds.

Bull trout have been declining throughout their range, primarily due to habitat degradation and hybridization with introduced brook trout. In fact, this beautiful native char is a prime candidate for listing under the Endangered Species Act.

In Oregon, bull trout can still be found in the McKenzie River basin, in the Columbia River basin east of the Cascade Mountains and in some southern Oregon rivers. Biologists estimate there are currently about 65 separate populations of these fish in Oregon.

Until the 1960s, bull trout were often deliberately trapped and killed because they preyed on more "desirable" game fish such as rainbow, cutthroat and brook trout as well as juvenile steelhead and salmon.

The upper McKenzie River basin has been a focus of bull trout research and recovery efforts for a number of years. Because adult

bull trout typically migrate out of lakes or large rivers into tributary streams to spawn in the fall, human activities that block entry

into spawning areas have been a significant problem. In the summer of 1994, ODFW, U.S. Forest Service, Eugene Water and Electric Board, Oregon Department of Transportation, and the Oregon Council of the Federation of Flyfishers embarked on a \$60,000-plus project to install a culvert under Highway 126 - allowing bull trout in the upper river to reach spawning habitat in Olallie Creek. That project, now completed, was helped along with a \$10,000 grant from the Oregon Department of Fish and Wildlife's Fish Restoration and Enhancement Program.

The Restoration and Enhancement Board was created by the Oregon Legislature in 1989 and is funded by a surcharge on sport and commercial fishing licenses and commercial poundage fees. The Board, composed of citizens representing commercial and sport fishing interests as well as the general public, identifies and recommends funding for fish restoration and habitat enhancement projects throughout the state.

Brook trout, a native char of the east which have been introduced into Oregon waters, are also a threat to bull trout. Because both fish are char, they can interbreed - but the results are sterile offspring. This puts bull trout at risk of being bred out of existence in watersheds where the two species intermingle.

Because brook trout are present in the McKenzie River system, biologists set traps at the mouths of bull trout spawning streams, allowing the bull trout to continue their journey, while turning the brookies back.

Ongoing research includes snorkeling surveys and radio tracking. "Last summer," explains Dick Irish, assistant district fish biologist in Springfield, "we radio-tagged adult bull trout and we're now following them with receivers. We're trying to learn more about their movements, how they travel upstream, where they move up from, where their resting places are and similar kinds of information."

Bull trout populations are also under intense scrutiny in the Metolius River basin, one of the bull trouts' best strongholds in the Pacific Northwest. Biologists from ODFW's Prineville office have radio-tagged adults captured by hook and line at the mouth of the Metolius River, where it empties into Lake Billy Chinook, in an effort to discover previously unknown spawning sites.

Recent studies have concluded that recovery of bull trout will require restoring degraded habitat, removing brook trout and other non-native species from waters where they compete with bull trout, and improving passage around dams and through road culverts in order to allow the fish to reach spawning areas. But if all the pieces of the bull trout biological puzzle can be put back in place, this Northwest native can be saved - a fish that we might have lost forever before we even had the opportunity to know it. ■

Stream Habitat Enhancement...Horse Style

by Emmalie Goodwin, ODFW Intern

As the temperature climbs into the 90s, Pat and Frank are ready for a break. They've been working since early morning, and they're hot and tired. Even draft horses weighing 2,000 pounds get tired after a morning spent pulling logs and rocks into streams. Pat and Frank, and the work they do with the logs and rocks, are an integral part of salmon restoration projects in Oregon's coast range. They are placing debris into streams which will help create pools and provide overwintering habitat for juvenile coho salmon.

Pat and Frank are Suffolks, similar in size to the well known Clydesdale breed, with shorter coats, making them a good choice for summer work. Their owner, Bruce Reineiger and his partner Steve Trask are working for a private timber owner as part of a large scale cooperative salmon habitat improvement project on the Oregon coast.

Money raised by timber companies provided matching funds for a large donation by the Fish and Wildlife Foundation, a deal

brokered by the Oregon Wildlife Heritage Foundation. For every \$2 raised by the Oregon Wildlife Heritage Foundation and the timber companies, the National Fish and Wildlife Foundation is contributing \$1. That money has funded two ODFW biologist positions. Brett Hodgson of Newport, and Michelle Long of Tillamook hold those positions. They plan and coordinate projects undertaken by timber companies. Timber companies pay for habitat restoration projects on their own land, while the Fish and Wildlife



Bruce Reineiger guides his Suffolk draft horses, Pat and Frank, as they pull a log into Honeygrove Creek. The log will provide diverse habitat and hiding cover for juvenile coho salmon.

Foundation money is used to cover improvements made on private, non-industrial land.

Trees brought in by Willamette Industries are being used to provide pool cover and complex habitat diversity in this reach of Honeygrove Creek, a tributary of the Alsea. Five or six small bushy trees are placed at a single site, with one or more larger trees placed on the top to secure them. Selected sites in a given project area often have the trees secured by cable.

There are advantages to doing specialized habitat work with horses instead of heavy equipment. They are much easier on the riparian area than a large tractor, which is often an important factor with private woodlot owners. This makes it easier for the area to revert back to its original condition. Horses are also best around small streams or where smaller diameter logs are used. Horse work is slower, however and can be more expensive.

To the untrained eye, horse operations look like one easy step,

but such is not the case. A pulley system is used to pull the logs into the stream as the horses are led away from it. Different angles and heights of the pulley and cables are used to get the logs into the right position.

"Come on boys," says Bruce gently. Pat and Frank immediately begin marching forward. They pull strongly in their traces as sweat mats their coats and flies buzz around their faces. As they pull, the cable goes through the pulley on the tree on the opposite bank and pulls the log into the creek. "Whoa, easy boys," calls Bruce as the log falls into place. Bruce unhooks the horses from the cable and leads them into the shade to take a few minutes of rest. A much needed breeze blows through. Both

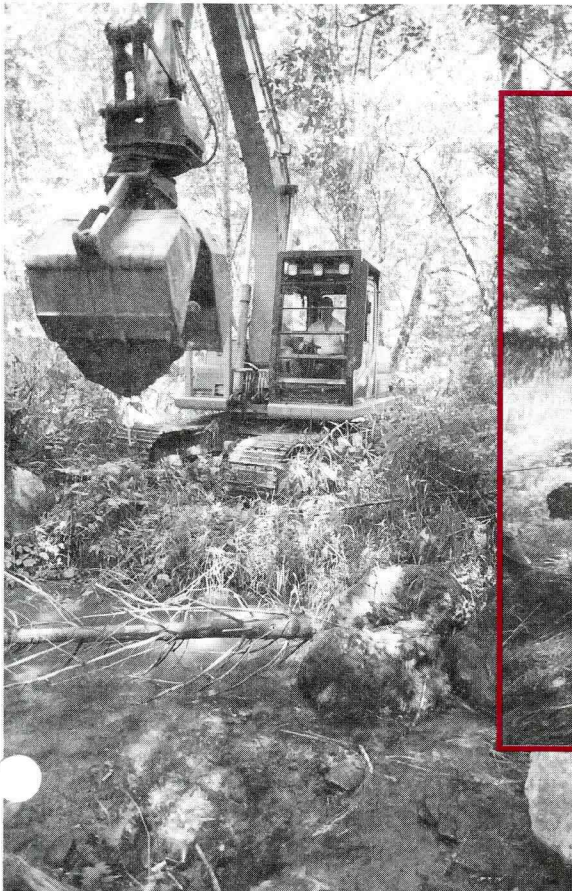
men and horses enjoy it equally. "Okay boys, come on," Bruce says as he picks up the reins to get another log. Pat and Frank are ready to go again.

In this stretch of Honeygrove Creek, the crew is trying to wedge a large log under two previously set logs to increase stability of the structure. Pat and Frank pull with all their strength, but even that isn't enough to pull the weight of the log under the existing ones. Bruce, Steve and Brett have to figure out an alternative plan.

"Do you think if we lift the opposite end of the log that it would be enough to slide it under?," asks Bruce. "Sounds good, lets try it," says Brett. "Maybe if we cut the end at an angle, it will slide under easier," says Steve. He

powers up the chain saw and cuts off a portion of the log end to make it into a chisel shape. "Okay, let's go," he says. A cable attached to the shore end of the log and over a high limb in a nearby tree is attached to Pat and Frank's harness.

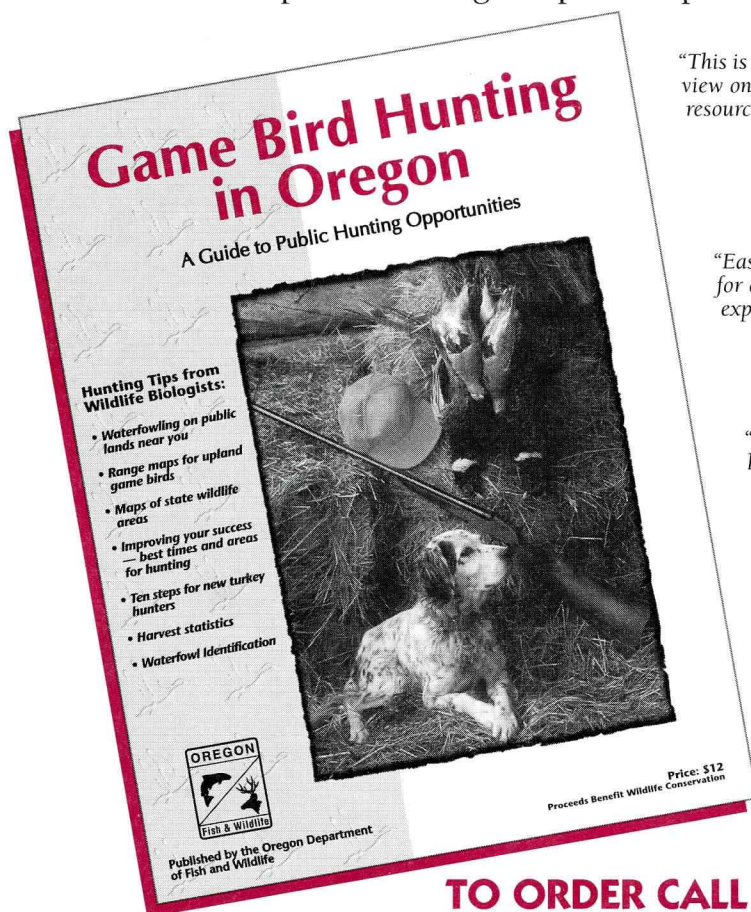
"Come on boys," says Bruce. Pat and Frank pull slowly. The creek end of the log lifts and slides easily under the logs already in place. Work is now completed on that site. Steve unhooks the harness from the choker and climbs out of the stream bank. Bruce checks to be sure the cable is clear of hooves, then says softly, "Let's go, boys." Pat and Frank move smartly downstream toward one of the remaining seven sites scheduled to be completed this week. ■



While horses are slower and in some cases more expensive than heavy equipment, they are an attractive option to many landowners because of their minimal impact on the riparian area. Excavators, like the one in the photo to the left, are a more typical choice among industrial timber companies. Photos by Pat Wray

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