

OREGON WILDLIFE

JUNE 1975

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The Cover

Pacific Tree Frogs

Photo by Jim Gladson

HUNTER EDUCATION PROGRAM

INSTRUCTORS APPROVED

Month of April 23

Total Active 1,911

STUDENTS TRAINED

Month of April 576

Total to Date 220,092

HUNTING CASUALTIES REPORTED

IN 1975

Fatal 0

Nonfatal 6

It's All Attached

In the past few months we've received an occasional letter from readers commenting on the articles carried in Oregon Wildlife. One writer mentioned he had noticed changes in the magazine. When the Commission was given the responsibility for the management of virtually all of the wild creatures of the state, our direction was somewhat set. Though none of the funds used by the Commission come from the General Fund, we still have a general responsibility by law to manage most all wildlife. Part of management is informing the public about the resource and its problems — hence the articles on the various forms found in Oregon.

Some of our correspondents have criticized the fact that we've carried articles on the environment in general and, more specifically, have reprinted some short articles on human population control and on land use practices. The complaint was that we are straying from our field of wildlife and getting off onto subjects that don't have anything to do with the wildlife resource.

Nothing could be further from the truth. All animals, including humans, are inhabitants of the closed system we call earth. If one animal, such as humans, exceeds the carrying capacity of its environment, it is going to have an effect on all of the other creatures dependent on that environment. If we modify the habitat by uncontrolled strip mining, filling of estuaries, paving of crucial areas, or any of many other activities carried on by man, we are very likely threatening the future existence of certain species.

John Muir once said that if one pulls a string in nature he finds that everything is attached. If we exterminate a species through improper land use, whether it be through poor city planning or incorrect use of chemicals, we may set off a chain reaction in the biotic community that will continue beyond our wildest expectations. Though the first parts of such chain reactions may seem meaningless to man, the eventual result over a period of time can be one that returns to haunt us.

Wildlife biologists probably should be called ecologists since the product they are dealing with basically comes from the land and its systems. Wild species cannot survive if they don't have the proper habitat. The biologist can count the critters, but he must also be ever aware of what is happening to their living space.

A well informed hunter or angler must also share this concern. Some of the first real movements to protect habitat were launched by concerned anglers and hunters. The key to fish and wildlife in the future is the protection of necessary places to live. It is for that reason we bring you articles concerning this whole place where we live — the biological community inhabiting the earth.

RES

Oregon's Turtles, Toads And Frogs

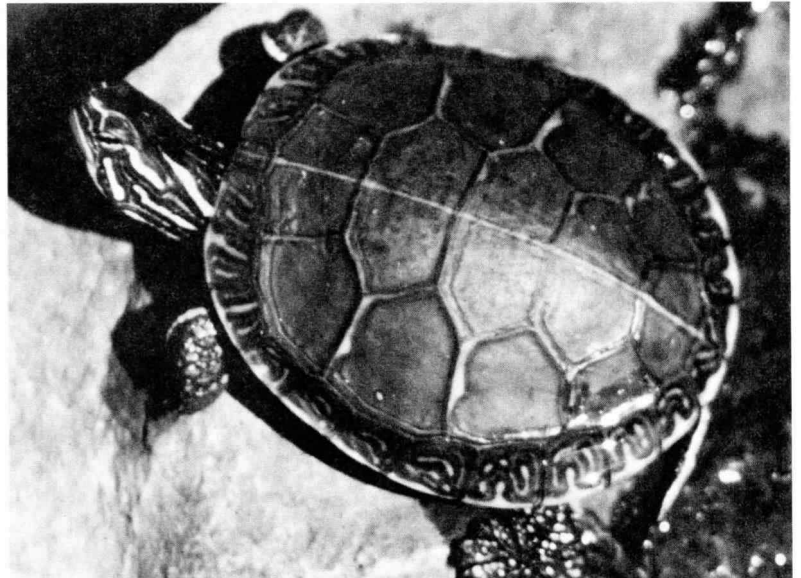
by Dr. Robert M. Storm
Zoology Department,
Oregon State University

A visit to the streams, lakes and ponds of Oregon in the right season is almost certain to reward the careful observer with a sighting of one or more of the forms that make up the turtles, toads and frogs of the state. The entire far west is very poor in number of turtle species and Oregon can boast of only two.

In the sloughs near the Willamette River from about Salem north occurs the most colorful of these, the *painted turtle*. It can be recognized at some distance by the yellow lines on its dark head and feet. When picked up and turned over, this turtle exhibits a dark central pattern on the red undershell or plastron. Portlanders can see the painted turtle in ponds and sloughs on Sauvie Island, and it occurs in similar habitats up and down the Columbia River.

Our other species, the *Pacific pond turtle*, is confined to sloughs and slow-moving streams of the southern Willamette Valley (Salem south) and the valleys of the Umpqua and Rogue Rivers. Pond turtles are rather dull-colored, without lines on the feet and head. At close hand, the plates of the upper shell or carapace show radiating black lines; the plastron is yellowish with a central dark pattern. Turtles are omnivorous eaters, and feed on aquatic plants, invertebrates, frogs and tadpoles, fish and carrion. In turn, we fear that infant pond turtles are being preyed upon by a frog, the introduced bullfrog.

PAINTED TURTLE



(Photos not reproduced to scale)

PACIFIC POND TURTLE

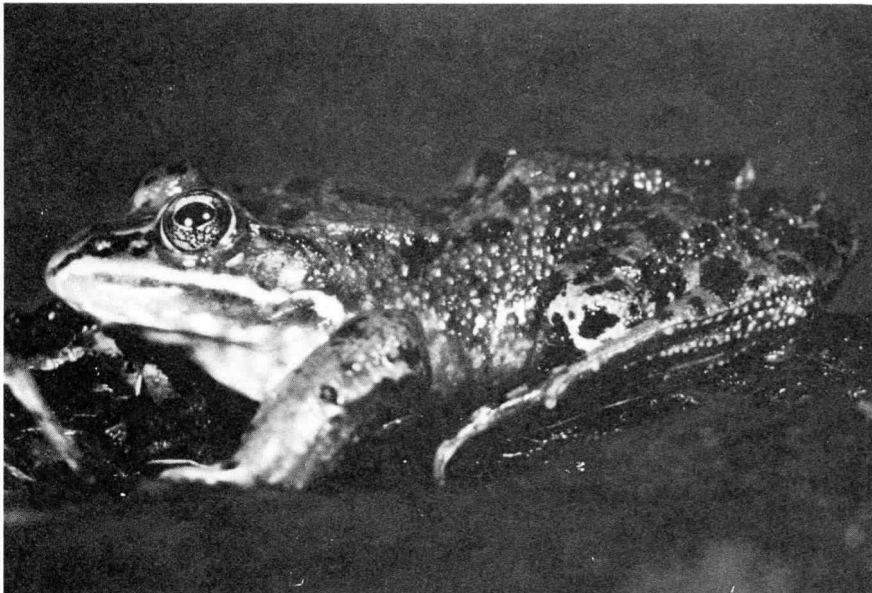


BULLFROG



Bullfrogs were probably introduced by well-meaning persons in the late 1920s or early 30s in the Rogue and Willamette Valleys. Since that time, through natural range extensions and further introductions, they have become widespread and are now only absent from mountainous regions and most desert areas. Aside from their undisputed value as a food animal, the deep "roars" of male bullfrogs add a pleasant note to summer evenings. On the other hand, they are undoubtedly harmful to certain native animals. Bullfrogs are highly carnivorous and even feed on smaller frogs, including their own species. A list of bullfrog foods includes such surprising items as occasional birds and small mammals. The effects of these feeding habits have been most severe on forms that tend to occupy the same waters as bullfrogs, usually ponds, sloughs, marshes or slow-moving streams. The pond turtle, in Oregon, may well be suffering a slow decline because young are not getting into the population in sufficient numbers.

WESTERN SPOTTED FROG

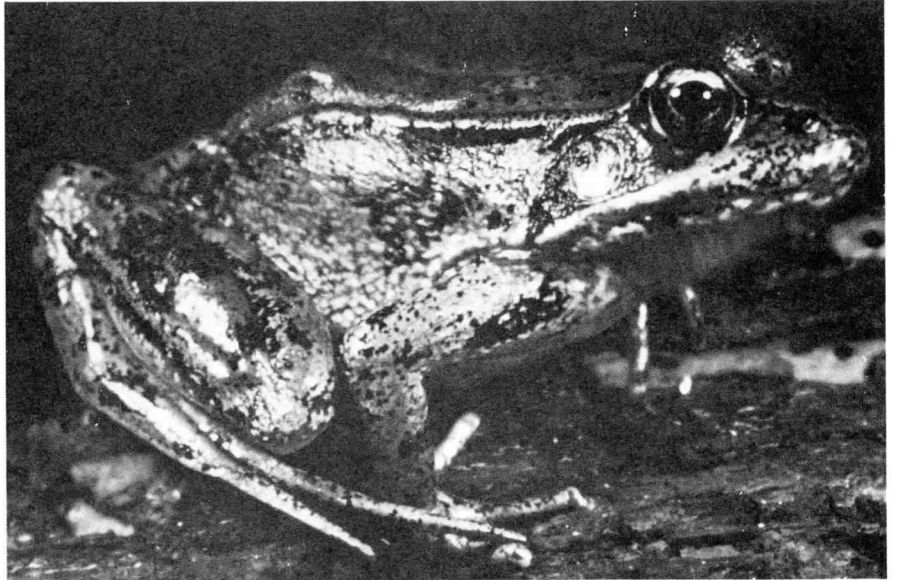


A more severe effect involves another frog species, the *western spotted frog*. Formerly common in the valleys of western Oregon, this species has not been collected here for several years, undoubtedly a victim of bullfrog predation. Spotted frogs also occur in mountain lakes and streams and are probably safe there, since habitats may be too cold for bullfrogs. The recent introduction of the bullfrogs in the Blitzen River of southeastern Oregon will probably see the end in a few years of the spotted frog population in that river.

Spotted frogs have colorful underparts, varying from red in Willamette Valley, Cascades and Blitzen River populations to orange-yellow in Blue Mountain populations. This color almost appears to be "painted on" the lower abdomen and hidden hind limb surfaces.

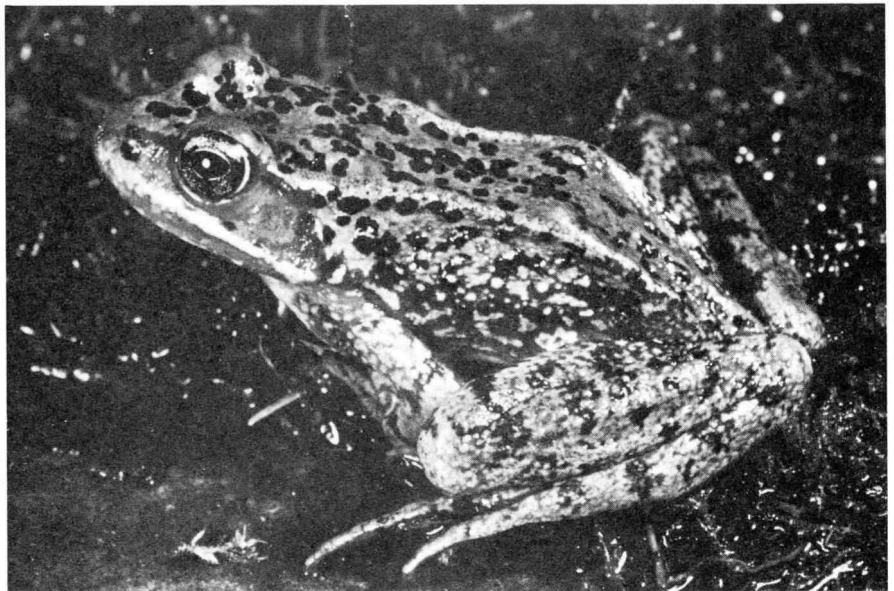
Another colorful frog, the *red-legged frog*, is confined to western Oregon, usually occurring in damp forested or wooded areas. In this case, the red of the underparts seems to be deeper beneath the surface. Red-legged frogs spend much of their adult life in damp woods, but move to ponds as early as December and January for egg-laying. By starting early, they can successfully breed in temporary ponds that will dry up by late May, but not before the tadpoles have metamorphosed into little frogs.

RED-LEGGED FROG



A very similar frog to the above two is the *Cascade frog*, which is limited to streams and lakes above about 2,700 feet in the Cascade Mountains. The western spotted, red-legged and Cascade frogs are all medium-sized frogs, being 3 to 4 inches in body length. Cascade frogs lack bright colors on the underparts and usually exhibit inky black spots of irregular size and shape on their brown to tan back. Cascade frogs stay fairly close to water, usually laying their egg-masses in the edge of mountain ponds or marshes in May or June. Several females may place their eggs at one location, producing a single mass 2 or 3 feet across.

CASCADE FROG



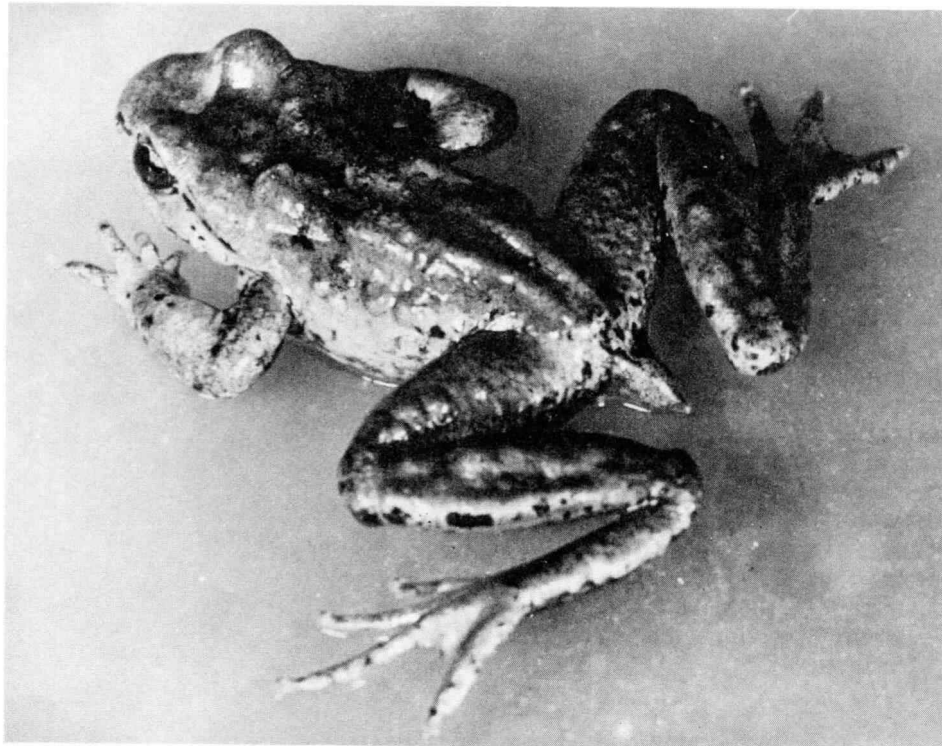
YELLOW-LEGGED FROG

Streamside explorers in the Rogue and Umpqua River systems or in the upper Willamette Valley may come upon a small-medium frog that is rougher of skin than most frogs and colored an olive green or gray-brown. This is the *yellow-legged frog*, and it is highly partial to streams with rocky bottoms, largely devoid of silt. The frog spends much time adjacent to these streams or hidden among the stones of the bottom. The lower abdomen and concealed hind limb surfaces are a light yellow.

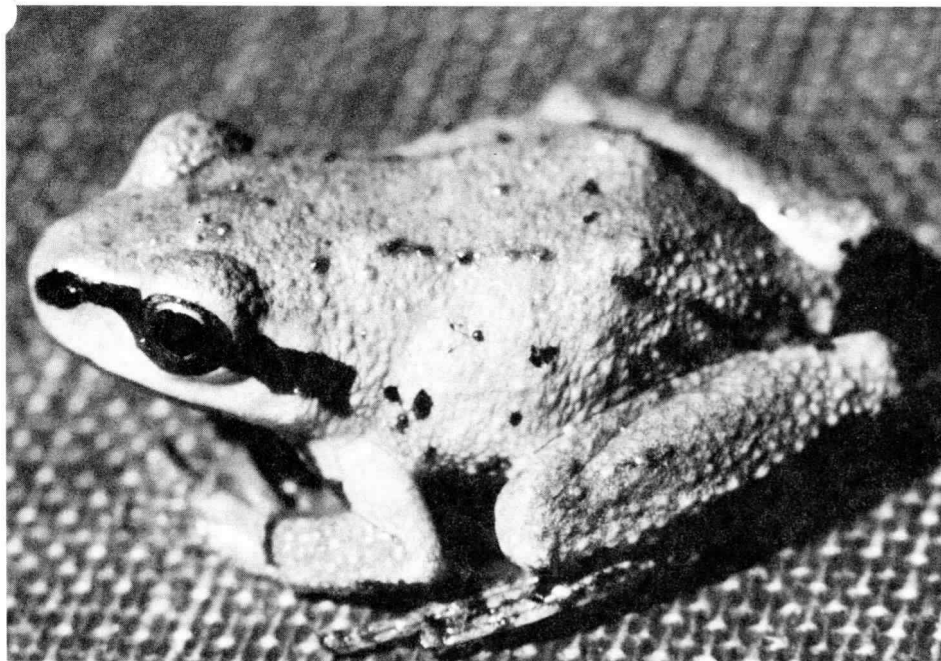


TAILED FROG

Higher up in the mountain streams of Oregon lives one of the world's most unique frogs. This is the *tailed frog*, found in cold, well-aerated streams of the Coast Range, Cascades, Siskiyou and Wallowas. The males of this small (two inches) frog have a small tail-like projection at the rear of the body, which serves as a reproductive organ to introduce sperm into the cloaca of the female. It is the only known frog that has this method of internally fertilizing the eggs. Likewise remarkable is the fact that the closest relative of the tailed frog, which is confined to the Pacific Northwest, occurs in New Zealand. This probably indicates a very old frog group that was once more widely distributed. Tadpoles or larvae of the tailed frog possess a large, sucker-like mouth part which enables them to cling to and move on stream-washed rocks, from which they scrape off algae for food.



PACIFIC TREE FROG



LEOPARD FROG



Another small species is the most widespread, common and heard-from frog in the state. This is the *Pacific tree frog*, which is liable to be found almost anywhere, except for the high mountains. Tree frogs are easily recognizable by their enlarged toe tips or pads, which enable them to climb vertical surfaces. They come in a variety of colors, most often some shade of green, but also brown, gray, reddish or golden. Whatever the color, all have a black line extending from the side of the nose through the eye to the shoulder, on each side. Tree frogs move to water for egg-laying from late fall to early summer depending on the location, and especially the elevation. The males sing loudly to attract females, and populations of singing tree frogs produce the loud trilling choruses so familiar to Oregonians during winter and spring nights. One can enjoy this sound on the Coast in November and hear it again in July, high in the Cascades.

There remains one Oregon frog to discuss. This is the *leopard frog*, so common in other parts of the United States. Oregon, however, is barely within the range of this widespread frog, for it occurs only in the Nyssa-Adrian area along the Snake River, extending to some extent up the Malheur and Owyhee Rivers. Rumors of its introduction in the upper Rogue River Valley have never been verified. Leopard frogs are greenish-brown with large black spots on the back, each spot having a narrow light border.

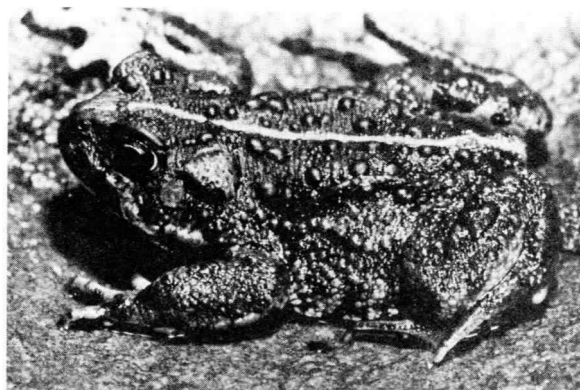
The remaining species are usually referred to as toads, although the terms "toads" and "frogs" are not as different as frequently thought. The name "toad" is usually applied to all members of a family group called bufonids, to which two Oregon species belong. Furthermore, toads are usually thought of as having drier-looking warty skins. The *western toad* occurs over most of our state, being mysteriously absent from most of the Willamette Valley. Western toads fit the general picture of toads very well. They get to be fairly large (to near five inches) and their wart-covered skin comes in shades of brown, green and gray, usually with a light line running down the middle of the back. Toads spend most of their adult lives in land situations, retreating into burrows or other moist cool spots dur-

ing the day and emerging at night to feed. They move to egg-laying waters in the spring, producing long strings of eggs. The tadpoles hatched from these have a tendency to aggregate in large swarms, so that one may see thousands of these milling about in a comparatively small area. By early fall, the tadpoles are metamorphosing and leaving the water, and most late campers in the high Cascades have experienced the phenomenon of hundreds of tiny toads moving everywhere in the vicinity of lake shores.

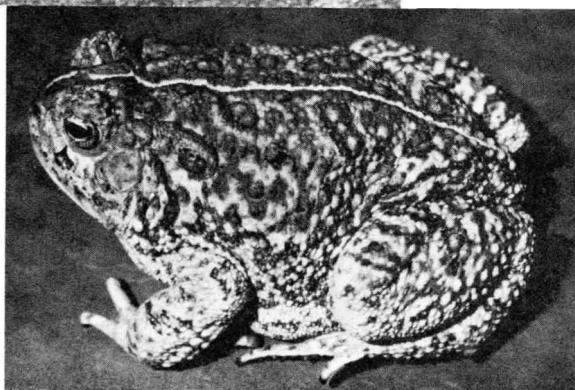
The other typical toad of Oregon is far more restricted in range. *Woodhouse's toad* occurs in the lower Owyhee and nearby Snake Rivers, and in an area along the Columbia River near Hermiston. Woodhouse's toad is marked and colored much like the western toad, but differs in having two back to back L-shaped ridges between and behind the eyes, known as cranial crests. During the breeding season in ponds or marshes, male Woodhouse's toads give a call which has been compared to an infant's cry or the bawl of a calf! Western toads chirp when picked up, but have no breeding call.

The *Great Basin spadefoot* is also referred to as a toad, but has a smoother skin with fewer warts. In addition, spadefoots get their name from a sharp black spade-like projection on each hind foot. By doing a sort of slow hula dance, a spadefoot can fairly rapidly dig himself out of sight in soft soil. Spadefoots occur in the open dry areas of eastern Oregon. They survive in part by being able to utilize very temporary rain pools for egg-laying and larval life, and these stages can be passed through in as little as three weeks. Breeding usually occurs from April into July, following fairly heavy rains. During dry periods, spadefoots are capable of spending months deep underground in an inactive state. Stretches of eastern Oregon highways may be littered at night with hundreds of these little (2-3 inches) toads, during or after rains.

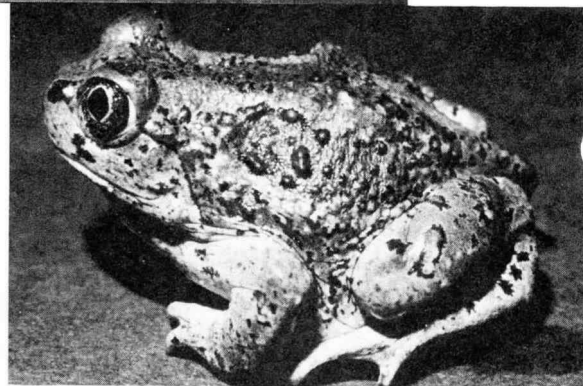
In discussing the toads, the horned toad, found in various parts of Oregon, has purposely been omitted. Despite its name, it is not a true toad but instead belongs to the lizard family.



WESTERN TOAD



WOODHOUSE'S TOAD



GREAT BASIN SPADEFOOT

If you become interested in observing some of these interesting creatures more closely, a bit of caution is appropriate. Most toads, including our western and Woodhouse's, have a weapon in their skin. Along with the red-legged frog, these species can secrete a rather strong, milky fluid that is very irritating to the mucous membrane of animals. This acts as a strong repellent to animals that might like to dine on one of the frogs or toads and can also be a problem if, after handling one of the creatures, you pass the fluid into your eyes or mouth. While not deadly, it can be very irritating — but it does not cause warts!

These, then, are Oregon's turtles, toads and frogs. They are tied together by a necessity for standing or running water during at least part of their lives. They feed upon one another to some extent, but this has only become a serious problem in the case of the bullfrog. The majority of frogs and toads feed almost entirely on live insects and are consequently of value for that reason alone. In addition, some of them supply us with "music" that gives us hope of another spring on its way; and who can deny that generations of small boys have had perhaps their first exciting encounter with nature as they succeeded in capturing a friendly toad or an elusive frog? □

Beaver

Editor's Note: A recent national television program told of beavers becoming extinct in a certain area of Canada. Such is not the case in Oregon. Following early exploitation, the beaver was protected for a number of years. After good populations were reestablished statewide, a controlled season was again opened and for a number of years Oregon trappers have sold some 10,000 pelts annually.

Despite the regular taking of a number of animals, damage from beavers continues to increase. It varies widely from burrowing in dikes to chewing on the understructure of houseboats. Recent problems have included beaver logging operations on flowering trees and shrubs in the Westmoreland area not far from downtown Portland. In this article our author tells in a bit more detail about the situation in Hood River County.

by Jim Reeher

Wildlife Biologist, The Dalles

The beaver is an ambitious, gentle-natured vegetarian, which played an important role in the exploration of the Pacific Northwest. Its dam building, tree cutting, and canal excavation make it a fascinating wildlife species. The pools it creates benefit many forms of wildlife, such as trout, kingfisher, mink, raccoon, to name a few. The pools also act as catch basins for silt and reduce stream erosion.

With so many positive attributes, people find it unbelievable that beaver are anything but beneficial. One does not work in the wildlife management field long before he realizes that in few instances can beaver and man's activities be compatible. A few examples may illustrate common types of conflicts. Beaver cut trees for food, dam material and to keep their constantly growing teeth worn down to the proper level. Their indiscriminate cutting of streamside brush is usually acceptable. When they leave the stream and move into a commercial



fruit orchard, there is an immediate conflict. One orchardist in Hood River County had 14 mature pear trees cut or girdled in less than a week. Only one tree was used by the beaver for food.

Large shade trees around farmsteads and along streams are very valuable in the tree-scarce portions of Oregon. When beaver start to fall or girdle these trees, the landowner usually decides he would rather have the shade than the beaver. Such decisions are sometimes based on the fact that if the tree is cut, it will probably fall on the house or other farm buildings.

Both beaver and man block streams with dams—one to protect the entrance to its lodge, the other to divert water into irrigation ditches. The conflict develops in deciding who controls the water flow. Man wants the water in the irrigation ditch. The beaver wants the water in the stream channel and sets about to prevent this "needless" loss by constructing a dam across the ditch. The landowner can remove these dams but they are usually replaced overnight.

Beaver will usually try to dam streams where they are most constricted which, in some cases, means through a culvert under a road. Given proper material, a few beaver can plug a large culvert in one night. Unable to flow through the culvert, the water will either seep through the fill or flow over the road, causing damage. People traveling in the area immediately become more concerned with the maintenance of the road than the welfare of the beaver.

Other lesser problems with beaver have included their severely pruning

to ground level ornamental shrubs and flowers from yards which border streams. One beaver developed a fondness for chewing styrofoam floats supporting a boat dock. This was bad enough but when it chewed through the mooring ropes, the situation was more than the dock owner could tolerate.

In years past, when conflicts developed between the activities of beaver and man, the offending animals were live-trapped and released into unoccupied habitat. This practice has generally been discontinued mainly because there are few suitable areas left. For instance, it does little good to trap a problem beaver in Hood River County, transport it 50 miles in order that it can become a problem beaver in Wasco County.

Under certain conditions the landowner can protect the trees and shrubs with wire cages. If many plants are involved the cost in labor and material becomes prohibitive. Deer repellents and oil placed on tree trunks may discourage cutting. Repellents will lose their effectiveness with age and eventually the trees will become vulnerable.

Kill permits or trapping permits issued to the landowner give him the legal authority to destroy the problem animals. However, the beaver is not an easy animal for the amateur to trap.

The foregoing solutions may help solve the conflict after it develops. A more logical solution is to prevent the problem from developing by having trapping seasons that will keep the beaver populations at a compatible level with other land uses. Many urban dwellers view trapping as an outdated activity left over from our frontier days. They view it as cruel and inhuman. From a resource management viewpoint, trapping is a logical and necessary type of population control. It is better to have a portion of the resource harvested when the pelts are usable than have the animals destroyed during the summer by the landowners.

The beaver can continue to be an interesting part of Oregon wildlife resource. However, the citizens of Oregon need to realize that the activities of man and beaver are not always compatible. Population control will be necessary. □

This and that

compiled by Ken Durbin

A Growing Sentiment

"Like the winds and sunsets, wild things were taken for granted until progress began to do away with them. Now we face the question whether a still higher 'standard of living' is worth its cost in things natural, wild and free. For us of the minority, the opportunity to see geese is more important than television, and the chance to find a pasqueflower is a right as inalienable as free speech."

—Aldo Leopold

*

Endangered Plants

We hear a great deal about endangered species nowadays but never — or, at least, rarely — anything about rare plants.

Now, however, the Smithsonian Institution has compiled a list of endangered plants which, almost unbelievably, numbers about 2,000 species and accounts for almost 10 percent of the plants in the United States.

Botanists from all across the country helped the Institution with the list which will be published in full this year under provisions of the federal Endangered Species Act.

*

Symposium Proceedings Available

Proceedings from the Symposium on Endangered and Threatened Species held last year in Washington are available for \$4 from the Wild Canid Survival and Research Center, P.O. Box 16204, St. Louis, Missouri 63105.

*

New Group Defends Rights Of Sportsmen

A new national organization has formed to protect sportsmen's rights.

The National Society for Conservation and Animal Protection (NASCAP) incorporated late last year and already has members in many of the eastern states.

Lewis J. Batt, a dentist in Bethlehem, Pennsylvania, is one of the founders of the organization, which he said was formed to fill a vacuum that existed in the sportsmen's world.

"Too often, when anti-sportsmen's groups go against sportsmen in federal courts, government attorneys seem to be passive while the anti's have the best counsel they can hire," said Batt. "We want to supply the legal arm to take a more active role in these court cases. The government's cases are based on the government's rights, not the sportsmen's."

Batt and others serve without pay in the organization, with all funds going toward legal costs, costs that the anti-hunters can meet with funds obtained throughout the country.

Batt said information about membership is available from NASCAP, Box 3129, Bethlehem, Pennsylvania 18017.

There are many national organizations that perform valuable lobbying services for sportsmen, but sportsmen still need an effective national legal arm to represent them in anti-hunting and anti-trapping cases, Batt said.

*

\$4 Million Voted for Waterfowl

When 1975 ends, the waterfowl of North America will be \$4,000,000 richer in habitat, thanks to Ducks Unlimited, the international conservation group.

The record \$4 million allocation will be used to create, develop, and maintain drought and flood "proof" wetland habitat in Canada where more than 70 percent of this continent's waterfowl are reared annually. In addition, budget allocations were also voted, earmarking \$100,000 for wintering habitat work in Mexico.

Since its founding in 1937, DU and its 130,000 members have created over 1,250 "duck factories" which support over 300 game and nongame species of birds, mammals, and fish, many of which are on the U.S. Government's endangered species list. At the completion of this fiscal year, Ducks Unlimited will have spent more than \$32,000,000 on waterfowl nesting and breeding habitat projects in Canada.

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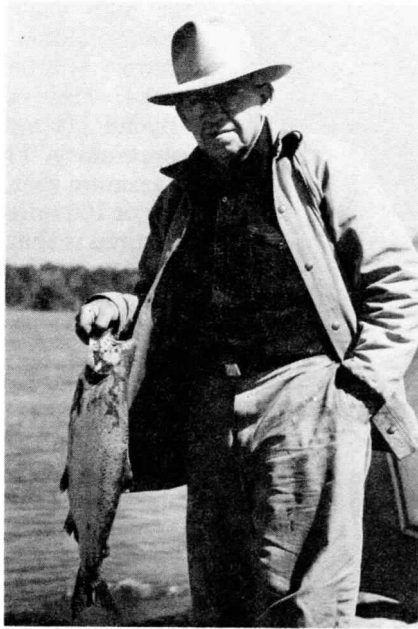
Turkey Hunters Fare Well

In spite of blustery cold weather during much of the nine-day April turkey season, hunters reported fairly good success. At magazine deadline, 129 hunter report cards had been received from the holders of 250 tags issued by the Wildlife Commission. They reported taking 26 tom turkeys, a substantial increase over the 14 reported in a similar season last year. Of the 26 turkeys bagged, 25 were taken in the Wasco Unit and one in the Sled Springs Unit near Enterprise. Most hunters reported sighting and/or hearing other turkeys during their hunt.

□

What's a Jack Salmon?

By "Rik" Riikula
District Fishery Biologist, Gold Beach



If you listen to a conversation among salmon anglers, it is only a matter of time before the subject of jack salmon appears. The "jack" is probably less understood and more maligned than any other fish in the trout and salmon families.

Many anglers think of the jack salmon as a distinct species or race of fish. Actually, it could be in any one of several species. In Oregon, jacks are commonly found as part of the chinook and coho salmon populations and occasionally in groups of steelhead. Contrary to the used-car buyer's slogan of "It isn't the age; it's the mileage that counts", with jack salmon it is the age that is the deciding factor. A chinook, coho or steelhead that matures 1 to 2 years earlier than normal is considered as a jack. For example, a chinook salmon that reaches maturity at the end of its second or third year of life rather than the normal fourth or fifth year is a jack salmon. Jack salmon, like most living things, are found in a variety of sizes. The Synopsis of Oregon Angling Regulations uses a length of 20 inches to divide jack salmon from adult salmon. This 20-inch length includes the majority of jacks found in the

state. However, it is not uncommon to find jacks as long as 23 or 24 inches, particularly in the southern coastal streams.

The reasons that some salmon mature early and return as jacks are not completely understood. Following their life history by reading growth rate on their scales, indicates that young salmon entering the ocean at a larger size than average will likely return as jacks. The amount of food available and the rate that it is consumed seems to be a key factor in producing jacks. Hatchery-reared salmon have often returned with a high ratio of jacks when released at a large smolt size.

As the name implies, jack salmon are usually males. Female salmon rarely mature early. A sportsman could easily spend his angling career without seeing a single female jack salmon or, more appropriately, a "jill". Male salmon, including jacks and adults, tend to mature earlier in the spawning season than the females. Many anglers have observed that salmon taken during the early part of the season are predominantly males.

Although the jack salmon matures earlier than the average pattern, it is fully capable of spawning. Observations taken on the spawning grounds show jacks to be as active as full-sized males. However, unless there is a shortage of big males, the jacks seldom have a chance to spawn. The larger, dominant males usually chase jacks away from the spawning area. On the few occasions that jacks have been observed taking an active part in spawning, no increase in the resulting jack ratio has been found. There is no evidence at the present time to indicate that jacks reproduce jacks. Limited experience in breeding jacks at hatcheries seems to show that offspring from jack salmon usually follow the normal salmon life cycle.

Predation is often blamed on jacks. Actually, most salmon and trout are predators since they feed on other fish and fish eggs. The jack is no better nor worse than other species. During the growth stage of its life, jacks feed heavily on other fish, primarily the "bait fish" such as anchovies, herring and others. When starting the spawning migration, jacks seem to bite on salmon roe more readily than adult salmon. However, adult salmon readily strike lures which are supposed to imitate other fish. Both adults and jack salmon seem to be following an instinctive behavior to take food even though they have enough stored fats to carry them through the spawning cycle. A certain amount of irritability is believed to be expressed in this behavior also. The jack salmon occasionally seen eating loose eggs below a spawning riffle is guilty of no foul deed, since only those eggs lodged in the gravel of the salmon redd will hatch.

In the past, many people believed that jack salmon were on a false spawning migration and would return again the following year as full-sized adults. Examination of thousands of scales has failed to show a single jack that has returned on a second spawning migration. Observations taken over the years in spawning areas show that salmon jacks have completed their life cycle and die after their first spawning run. □

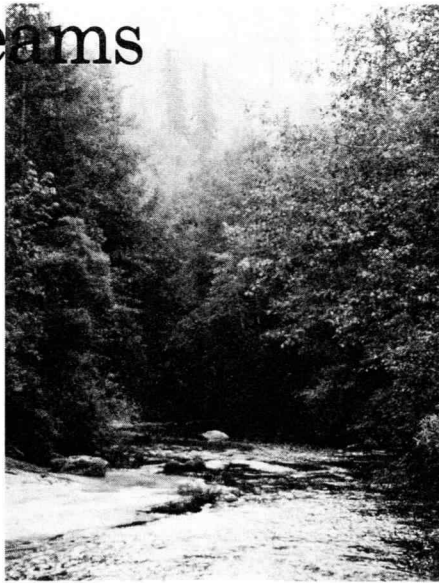
Save Our Streams —Adopt One!

Are you tired of seeing our streams treated as sewers, ditches, and garbage dumps? Have you wished there were something you could do to put a stop to this degradation? Well, the Izaak Walton League of America is giving you a chance to save a stream by adopting one. While it is doubtful that you can save a stream single-handedly, you will become the stream's first line of defense — its voice protesting all the indignities it might be subjected to.

The program works like this. When you decide to adopt a stream, or more realistically a portion of one, you or your group may officially register as caretaker and defender of the designated portion. A complete SOS fact pack with registration forms is available for \$2 from the Izaak Walton League of America, 1800 North Kent Street, Suite 806, Arlington, Virginia 22209.

The first task is to complete a stream survey on the forms provided, documenting the good and bad aspects of your stream section. Once its strengths and weaknesses have been tallied, it is time to concentrate on improvement of existing conditions. If litter is a problem, a cleanup day by your own group, a local scout troop, a high school ecology club, an adult conservation club, or all of these is in order. Proper publicity can alert the community that the stream now has a custodian who plans to see that it is treated with respect. If erosion is a problem, properly supervised construction of erosion control structures by the above groups may help check it. A visit with local planners will give some insight into what plans local government has for your stream.

If pollution is a problem, contact the Department of Environmental Quality to determine what steps may be taken to eliminate the problem



and how you can help.

Perhaps poor fishing is one of the stream's deficiencies in spite of good water quality. Advice from your local fisheries biologist can put you on the right track toward improving it. Perhaps fish habitat can be improved with structures constructed in the channel or along the banks. Perhaps improved access would let more people enjoy the stream's resources. The cooperation of streamside landowners and public agencies is essential in developing a stream's potential.

Wildlife habitat or fishing might be threatened by proposed development, a point that can be brought out at public hearings on rezoning or approval of construction permits. Maybe channelization is planned. Perhaps sediment control laws are not being obeyed, or maybe planners need to make more realistic allowance for increased runoff.

You will very soon get to be an expert on your own little section of stream and this firsthand knowledge will go a long way toward giving your comments, if well researched and logical, equal weight with those of experts with more credentials. Each encounter will strengthen your reservoir of knowledge about "your stream". Proper contact with the news media gets publicity for your stream's problems that might not be possible if

your interest in the situation were more casual. The instructions are all there in "A Citizen's Guide to Clean Water" and other publications in the SOS kit.

This should be an excellent project for high school classes, ecology or science clubs, scout troops, church groups, sportsmen's clubs, women's clubs, civic clubs, or just about anyone interested in bettering their community. There is no minimum or maximum area required. It can be 100 feet or 100 miles of stream. All that is required is that you get to know it and give it your best.

If you haven't got the time to formally adopt a stream, it doesn't mean you can't participate. Perhaps you can help by calling stream abuses to the attention of the proper authorities. Perhaps you can organize a stream cleanup or participate in one.

Streams are the lifeline of America's water resources. Since colonial times, an expanding population has caused many streams to undergo serious changes in their hydrological characteristics and water quality. Likewise, their aquatic and streamside communities have been disrupted, often disastrously.

The Save Our Streams program is calculated to restore and protect waterways by encompassing all desirable watershed management practices. Soil stabilization in the watershed, streambank protection, low level stream devices, and a reduction of pollution discharges are a few examples of desirable improvements. These practices will be accomplished through the cooperation of landowners, farmers, conservation organizations, youth groups, community action groups, and governmental agencies. Watershed problem conditions beyond local solution can be referred directly to responsible state and local government agencies for corrective measures.

Streams come in all sizes. All are essential to a healthful and enjoyable environment. Pick one your size and get started doing your part today! □



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