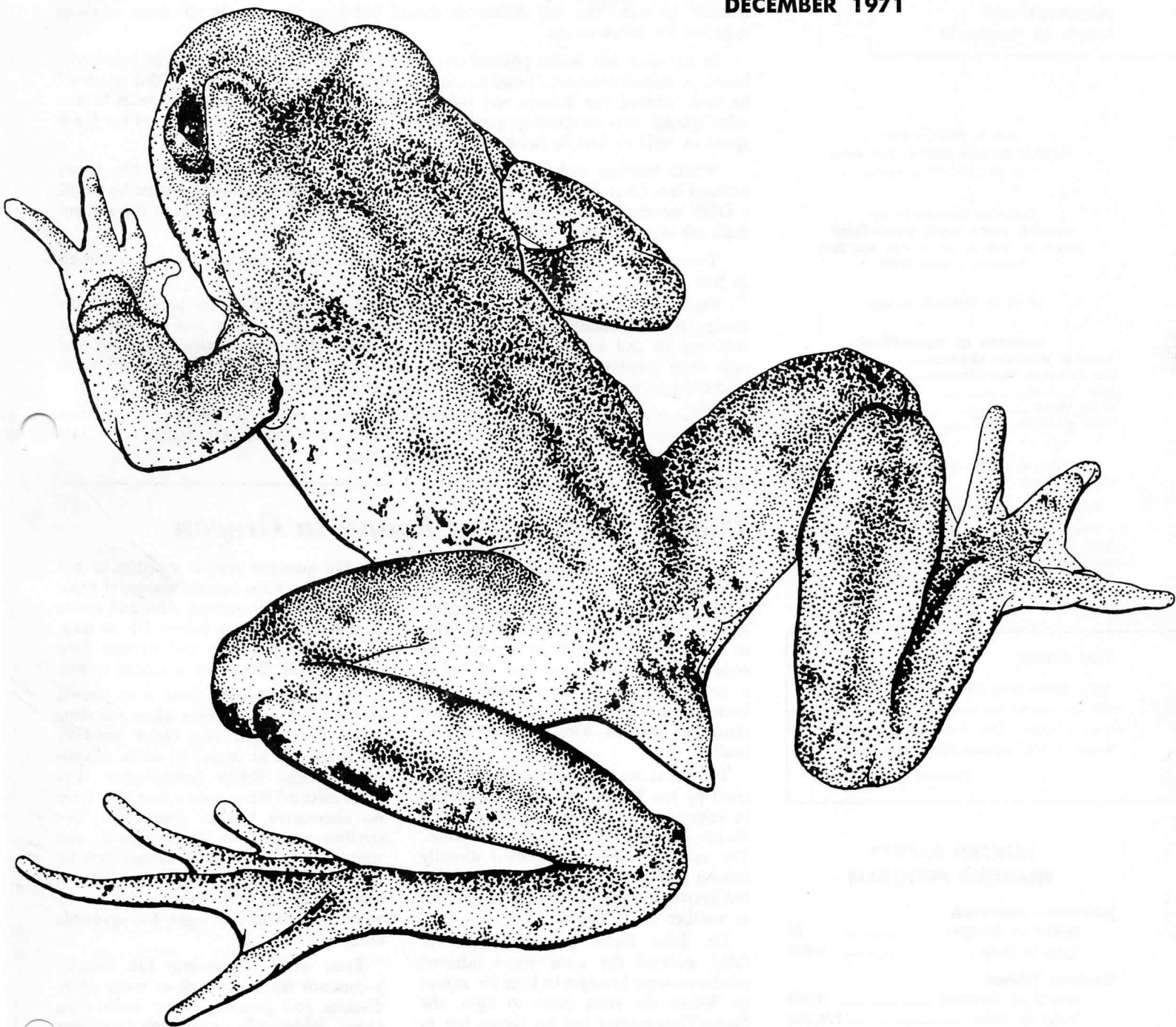


OREGON STATE
GAME COMMISSION

BULLETIN

DECEMBER 1971



OREGON STATE GAME COMMISSION BULLETIN

DECEMBER 1971
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The Cover

The Tailed Frog. One of the species of reptiles and amphibians protected by Game Commission action. Our feature article by Dr. Storm of OSU explains about these species.

Drawing by Pat Hansen

HUNTER SAFETY TRAINING PROGRAM

Instructors Approved

| | |
|------------------------|-------|
| Month of October | 28 |
| Total to Date | 2,548 |

Students Trained

| | |
|------------------------|---------|
| Month of October | 3,038 |
| Total to Date | 176,305 |

Firearms Casualties Reported in 1971

| | |
|----------------|----|
| Fatal | 2 |
| Nonfatal | 32 |

FISH AND WILDLIFE SERVICE URGES UNITY AMONG CONSERVATIONISTS

While pro-hunting and anti-hunting conservation groups argue about the best way to protect our nation's wildlife, the real enemies of wildlife are escaping unnoticed, warns Dan Saults, chief of information and education for the U. S. Fish and Wildlife Service.

"The danger today is that these two groups will get so emotional arguing for or against hunting that they'll not unite against the real threats to wildlife—*pollution* and *habitat destruction*," Mr. Saults said.

"Whether a person chooses to hunt wild animals or not is a matter of personal choice," he said. "But this difference should not keep the two groups from working together for conservation."

In addition, Mr. Saults pointed out that much of the sentiment against hunting is based on misinformation. "Legal hunting is not a threat to any species in this country," he said. "Indeed, the hunters and fishermen of the U. S., through money from license sales, special taxes on sporting goods and individual contributions, pay most of the funds spent on wildlife and its habitat."

While hunting endangers no species, pollution is threatening scores, Mr. Saults pointed out. Over 40 species of birds are threatened by shell thinning caused by DDE, a DDT metabolite. Pelicans, the bald eagles, 13 species of hawks and even the mallard duck are seriously affected.

Twenty states have closed rivers and lakes to fishing because of mercury levels in fish.

Our estuaries, the cradles of the sea, each day give ground to the onslaught of the dredge and the bulldozer. Chemical wastes, detergents, oil, sewage and exhausts pour into our air and waters daily. Each year brings the discovery of new pollutants and new facts concerning old ones. It will require the cooperative efforts of all those interested in conservation to stem the flow of this poison.

"This is not the time for conservationists to attack each other but to join together in bold new programs to defeat the real enemies of wildlife," Mr. Saults said. "Lest we forget, if wildlife is in trouble, so are people."

Deadly Trout Virus Found In Oregon

A deadly trout virus found in a private fish pond recently has prompted the Game Commission to issue a stern warning to pond owners that it is unlawful to transport live fish from one body of water to another without first obtaining a permit to do so. Additionally, fish brought into Oregon from out of state must be certified with a clean bill of health.

The virus was discovered in rainbow trout by Joe Wetherbee, district biologist in Salem, in a private fishing pond which drains into the North Santiam system. The rainbows were transported illegally from a private fish hatchery in Washington known to have the disease in addition to another deadly virus.

Dr. John Fryer, fish pathologist at OSU, isolated the virus when infected rainbows were brought to him for autopsy. When the virus came to light, the Game Commission had no choice but to eradicate all trout and sterilize the pond.

Chris Jensen, who heads the Commission's fish hatchery program, said

the big question now is whether or not some of the virus escaped the pond prior to sterilization to remain alive and active in the stream system below. Up to now, he said, Oregon lakes and streams have been free of these two salmonid killers.

Jensen advised that there is no known cure for either. Outbreaks where the virus exists have wiped out entire hatchery stocks as well as caused havoc in adjoining streams. When hatcherymen find virus-infected trout, even a few, they have no alternative but to destroy all fish, sterilize ponds and water supply, and start all over again. Both viruses may lie dormant for long periods of time, only to pop up again with devastating results when conditions are right for epidemic outbreaks.

Even with such serious fish diseases a constant threat, as well as many other diseases and parasites, some individuals either deliberately or through ignorance continue to illegally import live fish into the state or place live fish in waters where they don't belong.

RARE AND ENDANGERED AMPHIBIANS & REPTILES



By ROBERT M. STORM, PhD
Zoology Department, Oregon State University

Within the boundaries of Oregon there occur 70 kinds of amphibians and reptiles. The amphibians include 21 salamanders and 11 toads or frogs. The reptiles include 2 turtles, 14 lizards and 22 snakes. The great variety of topography and consequently of climate and vegetation in Oregon furnish many different types of habitats for such creatures thus enabling so many forms to exist here. Amphibians tend to be more numerous in western Oregon, with its many streams, warm wet winters and heavy forests. Reptiles predominate in dry open regions east of the Cascades. An additional factor contributing to a greater number of these species is Oregon's geographic position. It is, in a sense, a place where northern and southern types can meet. Our mountain forests are continuous with the forests of Washington and southwest Canada. Our eastern Oregon deserts continue southward into Nevada and California. These, then, are some of the reasons for our state's above-average supply of amphibians and reptiles.

All of these animals are now considered "wildlife" in the sense that it has become the responsibility of the Oregon State Game Commission to watch over their welfare and assure that all of them remain a part of the Oregon fauna. As pointed out in last month's Bulletin, six amphibians and four reptiles are now protected by statute or regulation and cannot be indiscriminately collected. The forms are protected for somewhat different reasons and the main purpose of this article is

to clarify these reasons. Three of the protected species are forms which reach the limits of their ranges within our state but have fairly large populations outside our boundaries. One such is the Black Salamander (*Aneides flavipunctatus*). In spite of its name, specimens from Oregon are black beneath but greenish above. Attaining a length of about 5 inches, they are part of a group of salamanders known as "lungless." Unlike most amphibians, lungless salamanders live their entire lives in

damp places on land, even laying their eggs on land, and acquire oxygen through their moist skins and mouth linings. The Black Salamander is fairly common in the forested mountains of northwestern California but has been found at only one locality in southwestern Oregon, in spite of repeated searches for other sites. It is surely rare within the state and merits full protection while we learn more of its distribution, numbers and habits.

(Continued on Page 4)



BLACK SALAMANDER

EDITOR'S NOTE

We are indebted this month to two members of the staff at Oregon State University for articles concerning their area of expertise. The feature article, in addition to being written by Dr. Storm, is illustrated with photos provided by him.

In light of the study being undertaken by the Game Commission concerning winter feeding of big game, we asked Professor Church to do a summary of some of the problems inherent in such operations.

Lizards

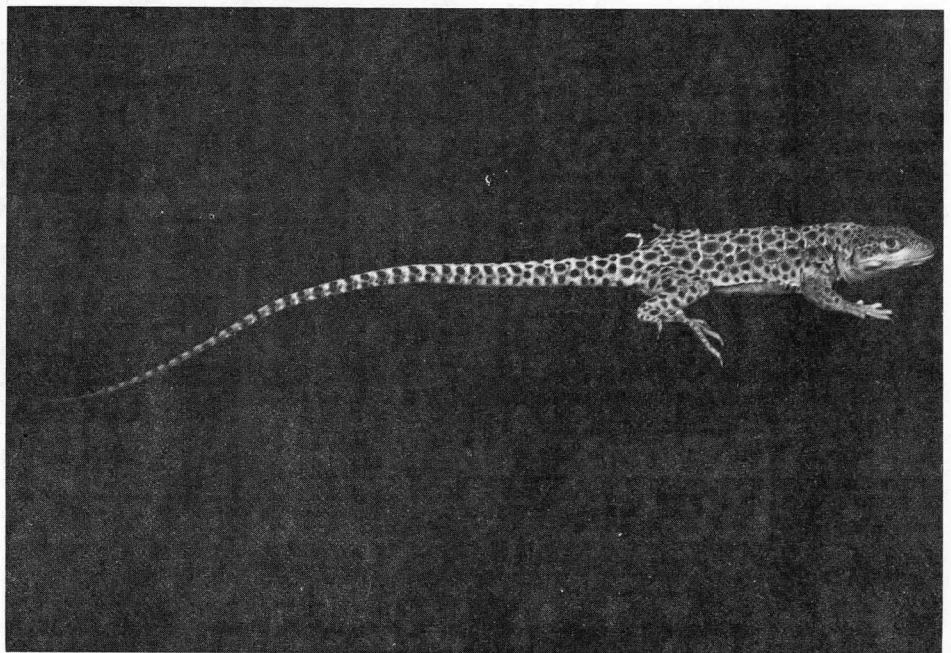
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The Collared Lizard (*Crotaphytus collaris*) ranges throughout much of the southwestern part of the United States but extends only into the extreme southeastern part of Oregon. Here it lives among boulders on the sloping walls of desert canyons. Male lizards are territorial and require boulders upon which they can perch and overlook a territory. They then attempt to chase other males of their species from this territory. They only occupy certain canyons and seem to be nowhere common. Since they are fairly large, quite colorful and easily caught, they are frequently sought by amateur collectors in spite of the fact that they do not survive well in captivity. This typical desert animal deserves protection in view of its limited occurrence in our state.



COLLARED LIZARD

The Leopard Lizard (*Crotaphytus wislizeni*) is likewise a wide-ranging lizard in the American Southwest. It extends somewhat farther into eastern Oregon than the previous species and occupies an entirely different habitat. Leopard Lizards are most likely to be found in extensive alkaline flats, grown to greasewood, shadscale and other assorted shrubs. This too is a fairly large lizard species, reaching a total length of 10 or 11 inches. Females acquire much brilliant orange coloring during the breeding season in May and early June. The Leopard Lizard is at present considerably more abundant than the Collared, but it occupies a habitat that has several possible uses for man. Thousands of acres of southeastern Oregon have been cleared of brush and planted to grass in an effort to improve the range. To what extent this has encroached on Leopard Lizard habitat is not yet clear. With growing human populations everywhere, it is not beyond the realm of possibility that large alkaline flats may some day be wanted for industrial sites, desert condominiums or even commuter suburbs in an air age. However desirable these things may be, it is wise to keep a protective eye on this impressive desert lizard.



LEOPARD LIZARD

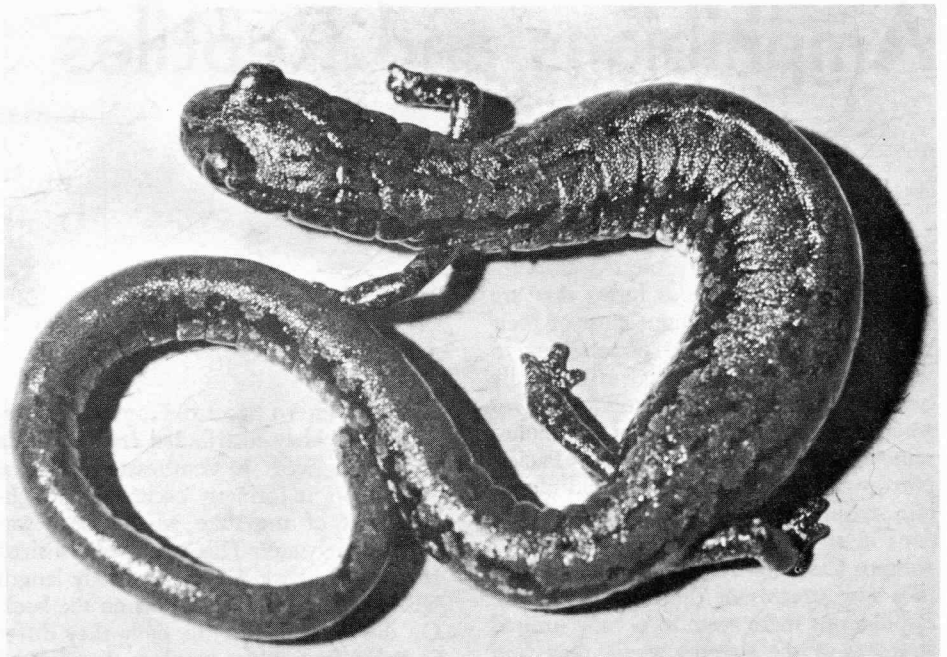
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In a second category are amphibians or reptiles that occur almost entirely within the state but are rare or endangered for one reason or another. The Oregon Slender Salamander (*Batrachoseps wrighti*) is found at middle altitudes (1,500 to 4,000 feet) on the west slope of the Cascades from the Columbia River south to the area above Oakridge. This species is likewise a lungless salamander as are the following two forms (Oregon has 10 species of this highly interesting family). The Slender Salamander is small (to 4 inches), has a chestnut red band on the back, and is almost black beneath with abundant large white flecks. The west flank of the Cascades was formerly an almost solid mature fir-hemlock forest but this aspect has been drastically changed by logging. We have some evidence to indicate that the Oregon Slender Salamander has adjusted to this change, but feel that it should be protected until biologists can be certain of this.

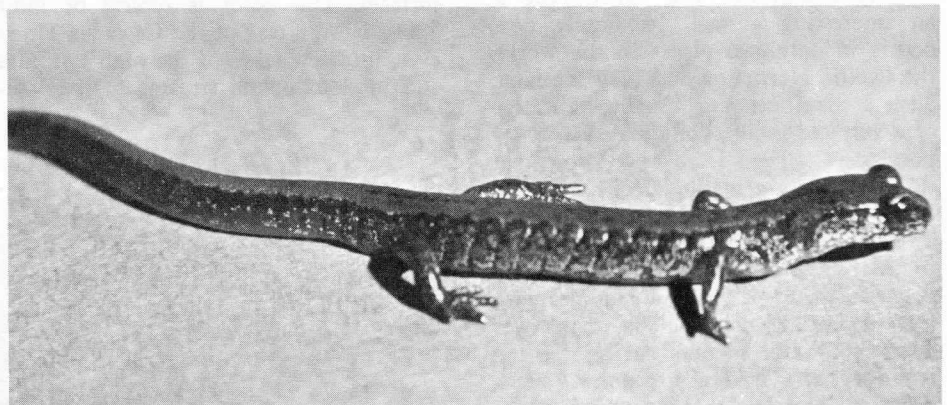
The Larch Mountain Salamander (*Plethodon larselli*) occurs in a very limited part of the Columbia Gorge, mainly on the Oregon side, but with at least one population on the Washington side. This small animal (to 3½ - 4 inches) was originally discovered and named by a Portland high school boy. It closely resembles the widespread and common Red-backed Salamander of western Oregon but differs in having reddish underparts and one less bone in its fifth hind toe. It must be considered rare because of its very limited range, for when an animal occurs in so limited an area, any drastic alteration of its environment (spraying programs, logging, extensive construction, etc.) could reduce its numbers dangerously.

The Siskiyou Mountain Salamander (*Plethodon stormi*) is found at a few localities along the upper Applegate River. Discovered and named as late as 1965, this is perhaps the most nondescript of the salamanders discussed. It is essentially a dark brownish-black animal with scattered small light flecks and reaches a length of about 5 inches. The Siskiyou Mountain Salamander seems very sensitive to climactic conditions, quickly retreating underground when moisture and temperature conditions are not to its liking. Consequently, collectors to the area of its occurrence are frequently disappointed. This is fine for the welfare of the animal, but has limited our knowledge of the limits of its occurrence and of its total numbers. In view of its apparently restricted range and uncertain status, it should definitely be protected as perhaps one of the rarest of our local vertebrates.

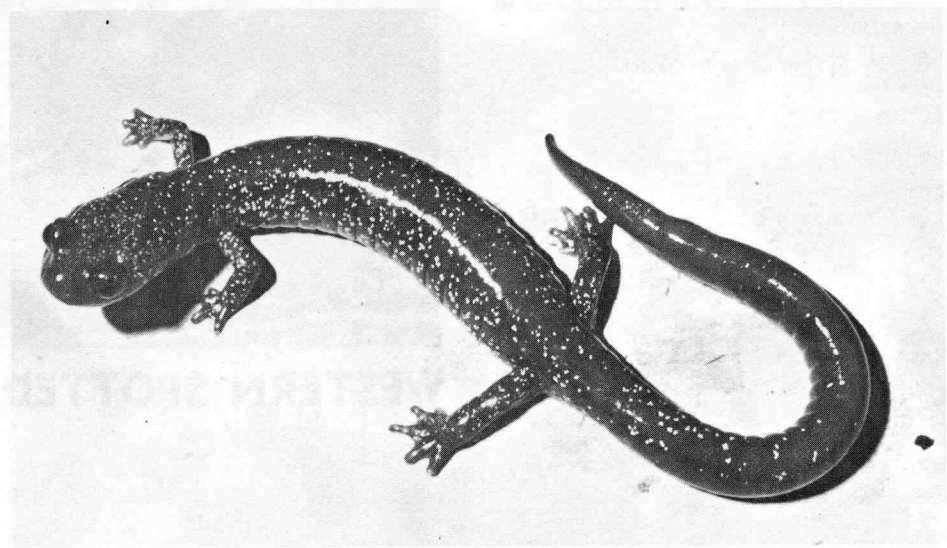
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SLENDER SALAMANDER



LARCH MOUNTAIN SALAMANDER



SISKIYOU MOUNTAIN SALAMANDER

Amphibians and Reptiles

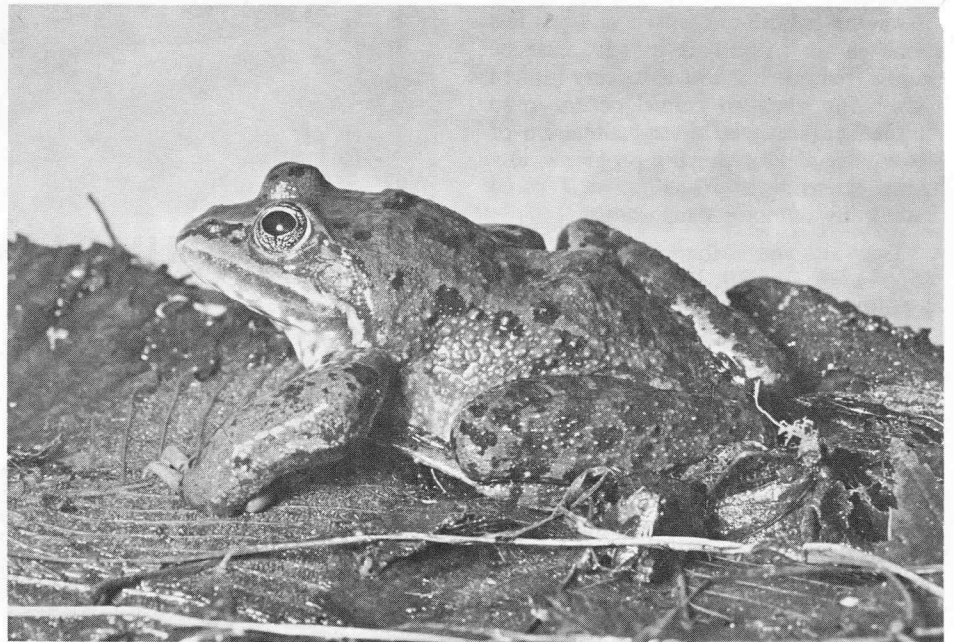
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A final category of protected amphibians and reptiles includes forms that are fairly numerous throughout most of their range but have isolated populations in various parts of Oregon that might easily be obliterated. The Tailed Frog (*Ascaphus truei*) occurs through much of the mountainous forested parts of the Pacific Northwest. It lives in or near cold mountain streams and in Oregon is most abundant in streams of the Coast Range and western Cascades. However, it also occurs in a few streams of the high Willows. Populations there seem to occupy limited stretches of the streams where they find suitable cold water temperatures, well-aerated water and the proper stone-boulder stream-bed. The Tailed Frog is an interesting animal. Its family now occurs in only two places in the world, the Pacific Northwest and New Zealand. Such a distribution is usually indicative of a very old group. Only male *Ascaphus* possess a "tail" and we now know that this is actually a mating device whereby the male transfers sperm into the body of the female. The large pale eggs are laid in rosary-like strings under rocks where they hatch into pale yellow tadpoles with large sucker-like mouths. They move over rocks with this suction device, feeding on algae and gradually acquiring dark pigment. Certainly this unusual frog deserves protection, especially in the Willows. Any sustained change in water temperatures there could be disastrous to its survival.

(See Cover for Sketch)

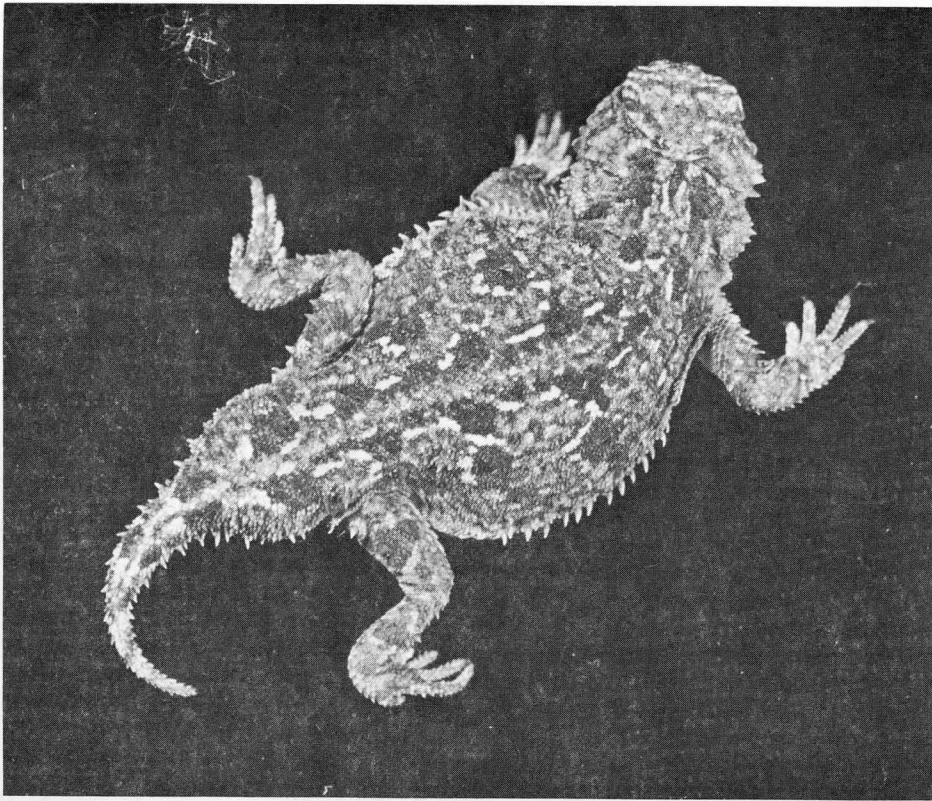
The Western Spotted Frog (*Rana pretiosa*) is widely distributed from Nevada and Utah north to southeastern Alaska. In Oregon, it formerly occurred throughout most of the state where there was permanent water. This is a medium-sized frog, up to about 4 inches in body length with fuzzy-edged black spots on the back. On the underside of the body they differ in color from place to place. In most of their range, they are yellow to orange on the lower abdomen and concealed leg surfaces. This color is typical of most Spotted Frogs east of the Cascades. However, in a few lakes of the high Cascades and in sloughs and streams of the Wil-

lamette Valley, they are (or were) bright red. During the 1930s, Bullfrogs were introduced in western Oregon and found the waters preferred by Spotted Frogs much to their liking. Apparently, because Bullfrogs are highly predatory on other frogs, they have steadily and effectively eliminated Spotted Frogs from western Oregon. This means that possibly the only remaining populations of "red-legged" Spotted Frogs are those in certain high Cascade lakes (Davis Lake for one). Since we are not entirely certain that there are no other "red-legged" populations, it seems wisest to protect all Spotted Frogs within our boundaries.



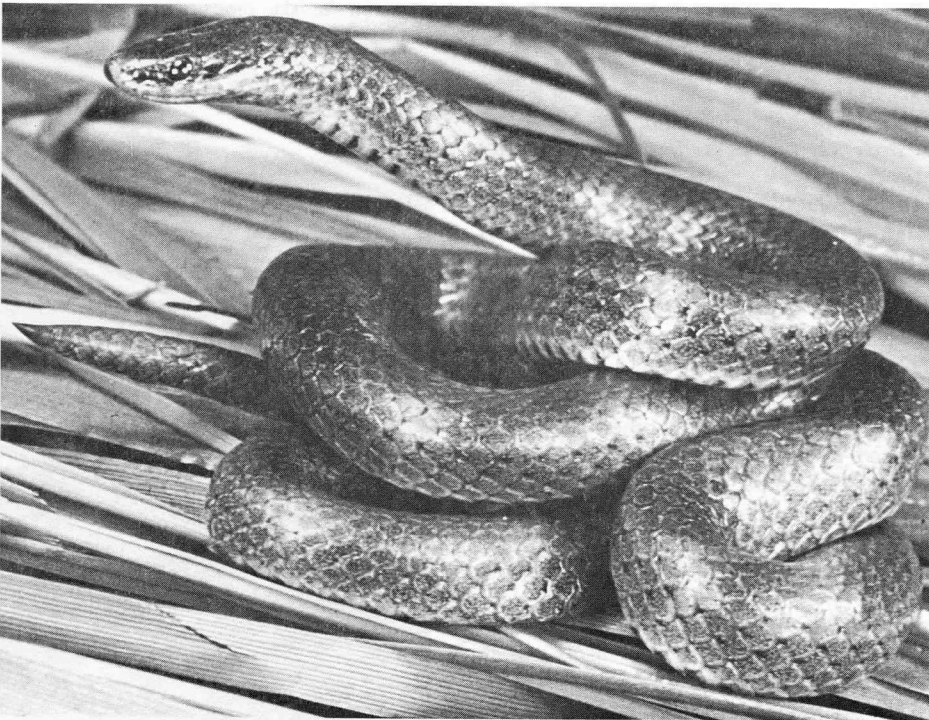
WESTERN SPOTTED FROG

(Continued on Page 7)



SHORT-HORNED LIZARD

The Short-horned Lizard (*Phrynosoma douglassi*) is widespread in much of the open country of eastern Oregon. It is actually a small horned lizard or "toad," but has almost no horns at the back edge of its head. Populations of this lizard occur at fairly high elevations in the central Cascades, particularly in the Santiam Pass area. A record at about 7,000 feet on Mt. Washington indicates the elevations at which Short-horned Lizards may occur. Unlike most Oregon lizards this species gives birth to live young rather than laying eggs. It is quite possible that the fact that the pregnant female can move about and keep her developing young in warm sunny places is related to occurrence at cooler high altitudes. Known Cascade populations exhibit some differences from those of lower altitudes. They average smaller in size and are frequently almost black in color, matching the black lava sands upon which they live. Little is yet known of their life history, ecology or general distribution. Since populations occur near well-travelled roads and since horned "toads" are always tempting to young collectors, protection of these little-known lizards is highly desirable.



SHARP-TAILED SNAKE

The Sharp-tailed Snake (*Contia tenuis*), along with several other species of reptiles, seems to have moved north into Oregon some 6,000-8,000 years ago during a period that scientists call the "altithermal," a time when temperatures averaged 2 or 3 degrees higher for several hundred years. As temperatures dropped toward today's averages, these species moved southward again, often leaving small "relict" populations in warmer areas. Most of the range of the Sharptail is in the northern half of California and southwestern Oregon, but isolated populations occur in the southern part of the Willamette Valley (from about Salem south). These small snakes, seldom reaching 12 inches in length, are quite harmless and seem to feed largely on small slugs. They are an interesting bit of evidence of earlier climates and an unusual part of our present-day reptile fauna.

As Bob Mace pointed out last month, it will take full cooperation from the people of Oregon to adequately protect nongame wildlife. The forms I have discussed here are not highly visible nor spectacular, but they are an intrinsic part of our fauna. I have tried to show that each has its interesting, even fascinating aspects and fully deserves our protection as part of Oregon's native wildlife.

Brood Fish Yield Eggs At Game Commission Hatcheries in Oregon

Oregon citizens who would like to observe an interesting operation are invited to drop in at almost any Game Commission fish hatchery in the next few months, or perhaps take a side trip to one of the Commission's egg-taking stations.

From now through the winter months these fish-producing stations will be busy places as hatchery crews strip eggs from various species to produce the more than 25 million offspring destined for Oregon's lakes and streams this coming year.

Crews recently wrapped up the egg-take from spring chinook at Rock Creek on the Umpqua, Butte Falls on the Rogue, and Round Butte Dam on the Deschutes. Fall chinook eggs will be obtained from the Fish Commission. Well over 2½ million chinook smolts will be released from Game Commission hatcheries in the coming year.

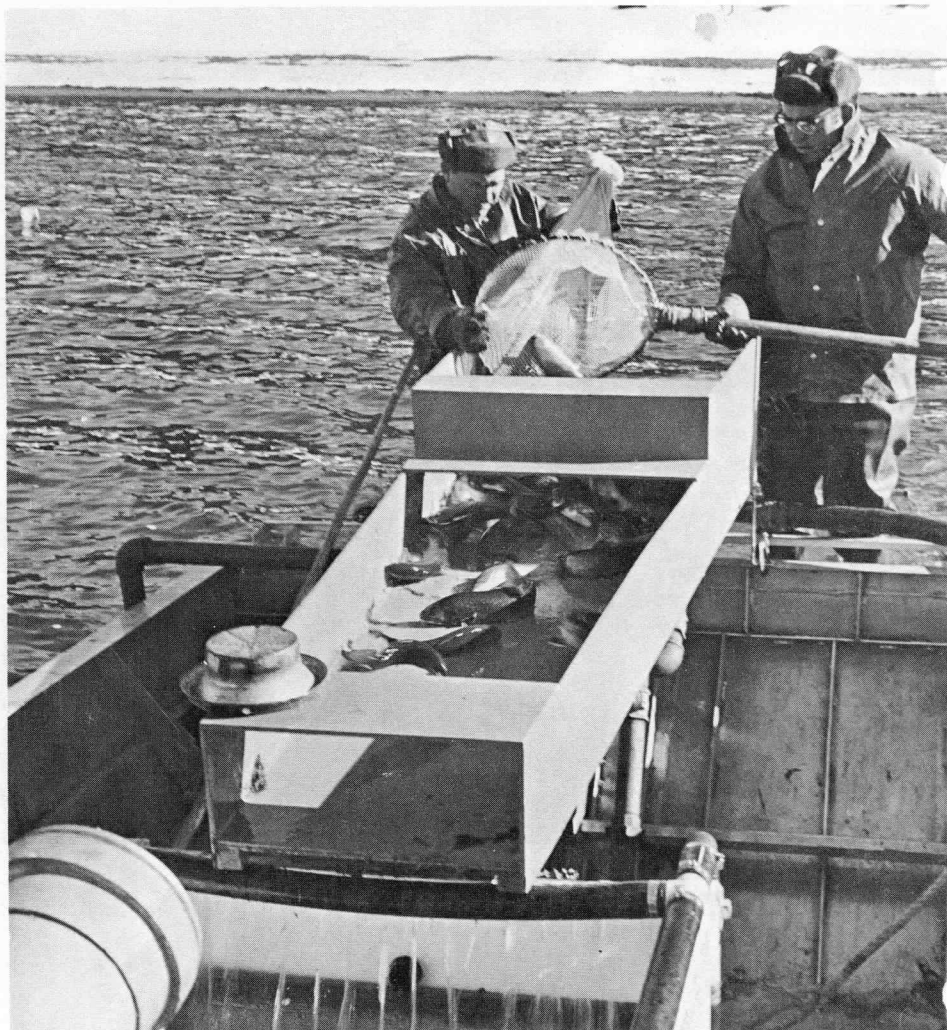
About a half-million eggs were taken from kokanee at Suttle Lake. Crews are expected to renew their efforts at Suttle later on as more kokanee mature and move into Link Creek. About 1½ million eggs will be obtained from Montana and Colorado.

The brook trout egg-take is well underway. Crews bucked blizzard and cold weather conditions at East Lake to complete the egg-take there and moved to Big Lava to fill the more than 3 million egg-take quota. Other highly prized game fish scheduled to spawn shortly are Atlantic salmon and cutthroat trout.

Those who would like to see giant rainbows running 10 to 20 pounds should journey to Roaring River, Leaburg, Willamette, or Oak Springs Hatcheries. Brood rainbows held at these stations began yielding eggs in November and produce some 20 million eggs for the hatchery system. Spring-spawning rainbows will yield another 3 million.

Beginning in February and extending through April, both summer and winter races of steelhead will mature for the egg-take. Adult summers were trapped in June and July and are being held at several fish hatcheries until they mature in the spring. In the next several months adult winter fish will be trapped from several streams as they come in from the sea.

Commission biologists expect no problem in capturing enough salmon, steelhead, and trout to meet the egg quotas

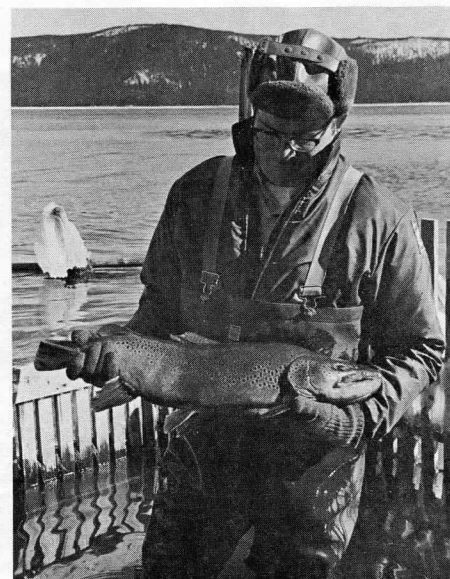


Taking eggs at East Lake. Fish are dipped from trap nets set in the lake, then sorted and the ripe ones spawned. After spawning, the fish are returned to the lake unharmed. The operation takes place on a barge out in the lake.

except perhaps for summer steelhead. Plenty of summers were captured but poachers managed to get into the wire-enclosed holding pond at Soda Springs on the Umpqua and make off with 50 of the big fish. This means a reduction in the summer steelhead egg-take at that station by well over 100,000.

While visiting one of the Commission's 15 fish hatcheries to observe the egg-taking operations, individuals might also enjoy seeing the many other fish being reared. Steelhead and salmon yearlings which will smolt in the spring fill many ponds. Well over 3 million rainbows are growing rapidly for release as 10 to 12-inch catchables next summer. Other growing fish include Atlantic salmon, cutthroats, brooks, and golden trout.

Persons interested should drop a note or call the Game Commission and request a folder which tells all about its fish hatcheries. The folder lists all stations, their locations, species of fish generally raised, and the approximate time for egg production.



A nice male brown trout used during the East Lake egg-take and returned for anglers to seek next year.

National Environment Report

Washington, D.C.—America's environment continued to deteriorate during 1971 according to the National Wildlife Federation's third annual Environmental Quality Index published in the October-November issue of National Wildlife Magazine.

Air pollution remains the nation's most serious environmental problem. National standards required by Congress give some hope things may begin to improve as 1975 approaches, but the trend in air quality continues down. As in the past, automobiles, electrical generating plants and coal-burning industries are the main culprits.

The nation's water is still incredibly foul but the bottom may have been reached. The 1971 EQ Index shows no decline from 1970 levels. More and better sewage treatment plants and industrial clean-ups are given credit for holding the line against further water degradation. Industry remains the largest water polluter with 65 percent. Municipal sewage accounts for 20 percent and agriculture 15 percent. America continues to exploit mineral resources without sufficient regard for the future so the Mineral EQ Index is down from 1970. Users are outrunning explorers and known reserves of many vital metals will not outlast the

20th century. Recycling, though beginning to spread, saves only a small fraction of the nation's minerals.

Man's growing population and its pollution has put additional stress on wildlife and the Wildlife Index continued its downward trend in 1971. **Loss of habitat is the major danger for wildlife with chemical pollution of air, water and land a close second.** Some 101 species are listed on the endangered species list.

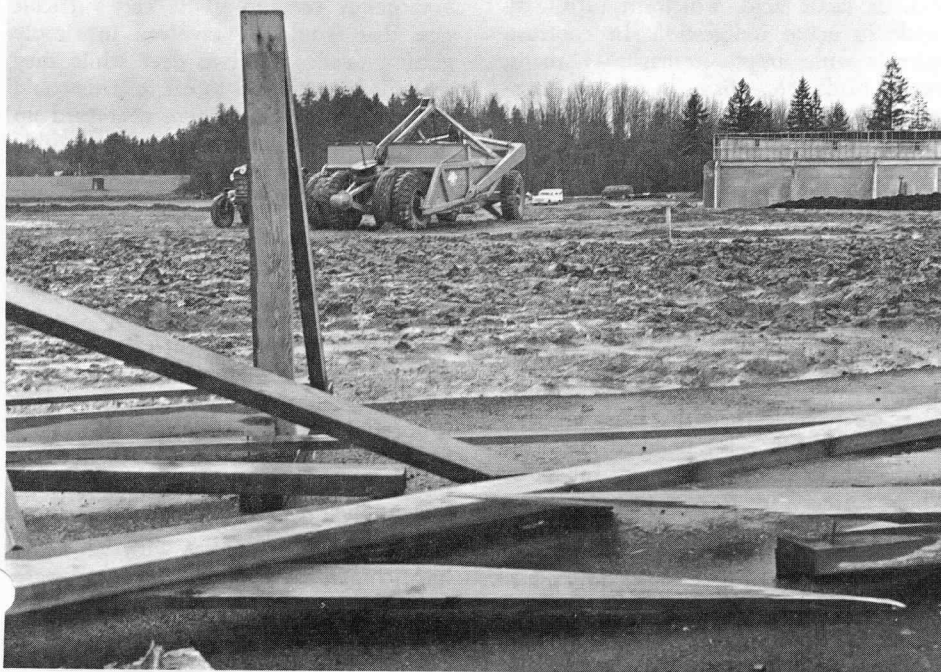
Population concentration near the two coasts in tense, polluted cities has pushed the EQ Living Space Index down during 1971 and trend appears to be headed further down. Until a sound national land use policy and public transportation systems become reality the EQ says living space problems are going to get worse.

Due to an 87 percent harvest of allowable cut in the National Forests last year, the Timber EQ Index is up slightly over 1970. But the upward trend is shaky in the face of pressures for increased cutting and losses from burning and disease.

Soil quality, highest on the EQ Index, has slipped from 1970. Bulldozing, over-fertilization and erosion continue to destroy America's valuable soil resources.

Full details of the survey appeared in the October-November issue of National Wildlife Magazine.

The 3rd Environmental Quality Index published by the National Wildlife Federation points out that man's growing population and its pollution has put additional stress on wildlife. Loss of habitat such as shown is the major danger for wildlife.



Angling Regulations Set For 1972

Oregon sport fishermen will have three trout season openings in 1972, restricted gear and bag limits on the Deschutes River from Mecca to Dant, and additional salmon and steelhead angling opportunities on the Willamette and a number of coastal streams.

These and other measures were adopted by the Oregon Game Commission Saturday, November 6, following a packed-house public hearing in Portland. Much of the public testimony, both pro and con, centered around establishing trout streams with reduced bag limits and fly fishing only or other gear restrictions.

The general trout season for waters other than those indicated below will open on April 29. Lakes and reservoirs within national forest boundaries in the Cascades, Paulina, and Siskiyou Mountains will open on May 20. Streams in Zone 1 (coastal) and portions of the Rogue and Umpqua Rivers will open on May 27.

Going along with a preponderance of testimony, the Commission restricted trout angling on the Deschutes River from Mecca to Dant to the use of flies and artificial lures with single hook and a bag limit of 2 trout over 12 inches in length, 4 such fish in possession. The fly fishing regulations in effect at Whitehorse Rapids will remain the same. The Commission turned down similar proposals for the Williamson River near Klamath Falls and the Donner and Blitzen in the Steens.

The Commission approved a 3 salmon bag limit on the Willamette and tributaries above Oregon City Falls and also removed the July 1 closure. Tributary streams or portions thereof, such as the McKenzie and Santiam, will close to salmon angling July 15. A special jack salmon bag limit of 10 fish was approved for all coast streams in Zone 1, the Columbia, and the Willamette up to Oregon City Falls.

Siltcoos, Tahkenitch, and Bluegill Lakes and Cooper Creek, Plat I, and Cottonweek Creek Reservoirs were opened to year-round trout angling with regular summer bag limits.

Numerous housekeeping changes were made, mainly to clarify existing regulations. **Regulations adopted will become effective January 1, 1972** and extend through the calendar year. Regulations in booklet form are expected to be available in late December.

To Winter Feed or Not to Winter Feed

By D. C. CHURCH

Professor of Ruminant Nutrition
Department of Animal Science
Oregon State University

The question of whether winter feeding of deer is possible, feasible or advisable frequently comes up amongst different groups and organizations. Interested parties include those concerned with wildlife, range and forest management, hunters, ranchers, and those interested in conservation and wildlife in general. As a result of the wide range of interest coupled with a lack of precise information, a good deal of misinformation is often thought to be fact.

The nutritional problems that confront deer during the winter are similar to those faced by domestic species. Generally speaking, winter browse lacks the nutritional value of that available during the growing season. The variety available is greatly reduced also. While variety may not necessarily be required, a more varied diet is usually more likely to supply needed nutrients than will a limited diet. Coupled with this is the situation where deer simply consume practically every edible food in sight, particularly during heavy snowfalls and in locations where deer concentrate in protected areas during the winter. In such situations outright starvation will take a high toll of the deer population.

Information providing accurate reasons for winter death losses is very difficult to find. It is likely that most death losses occur after a relatively prolonged period of sub-nutrition coupled with added stresses imposed by bitter cold weather, heavy snowfall which may completely cover winter feed, the need to travel in deep snow, etc. Deer in this condition—particularly fawns and bucks exhausted from the rut—are more susceptible to stresses and more likely to die.

The possibilities of feeding deer during emergency situations have not been checked out under controlled experimental conditions. Some attempts will be made to study this problem this winter in research sponsored by the Oregon Game Commission. Field observations indicate that emergency feeding has not been very successful. The likelihood is relatively poor that emergency feeding can be successful for deer that are starving and severely stressed. The reasons for this are partly due to the type of digestive tract that the deer has.

Deer, in common with other wild species such as moose, elk, antelope and goats and domestic species such as cattle, sheep and goats, are ruminant animals. In ruminants, solid food that is swallowed goes first to the rumen, a large organ which is inhabited with a very diverse population of bacteria and protozoa. These microorganisms predigest the food before it passes into the lower alimentary tract where the usual gastric and intestinal digestion takes place.

In ruminant animals, the nature of the diet has a large influence on the numbers and types of rumen microorganisms present. In normal circumstances in free ranging animals, the diet from day to day is relatively similar, although many different species of plants may be consumed. As the season changes and as different plants appear, develop, and die, the diet of the animal gradually changes. However, the change is gradual and make take place over a period of days, weeks or months.

If confined animals are suddenly forced to drastically change their diet, it takes some period of time for the rumen microorganisms to adapt to the change. This particularly applies when the diet is changing from a low quality forage or browse to one with large amounts of readily available carbohydrates—sugars and starches—or highly soluble proteins. Such dietary changes are apt to result in abnormal rumen metabolism with the production of excess amounts of acids such as lactic acid, which in turn may result in acute indigestion. In contrast, animals with simple stomachs—humans, swine, birds, etc.—have a digestive system which is much more adaptable to sudden dietary changes and the unfavorable effects are usually much less severe than in ruminants.

A second reason that emergency feeding might be less than successful is related to food and taste preferences of deer. The physical nature of the food also has a very pronounced effect on consumption. In studies with captive black-tailed deer, we have learned that deer show a marked preference for pelleted grains as compared to grains given in rolled or whole form. With respect to preferences between different feed sources, the black-tails show a high preference for pelleted soybean meal, corn and wheat, but much less for barley and oats. They refused beet pulp, linseed meal, cottonseed meal and peas, all in pelleted form. As a whole,

deer show a pronounced preference for sweets such as molasses and various sugars. Bucks show preferences for bitter and sour solutions, whereas does do not. From this information, it is obvious that the right combinations of feed ingredients would be needed to tempt deer to eat food that is totally foreign to them.

It is not known how severe the problem of overconsumption might be in deer that might be given emergency supplies of palatable feeds. Studies with domestic sheep and goats and with captive deer indicate that animals which have been completely deprived of food for several days are not apt to overconsume. Their rumen microbial population has been drastically reduced, and they tend to gradually build up their food intake over a period of several days when given free access to a food supply. We have carried out such experiments with captive mule deer which were first put on a restricted intake and then completely deprived of food for several days. No particular problems were encountered when the deer were again given access to feeds that could have caused acute indigestion in unadapted animals. Domestic ruminants that are simply very hungry, and which have not been completely deprived of food for some time, are more apt to overconsume and develop acute indigestion. We don't know if this is a likely problem with deer.

A third factor that argues against emergency feeding is the very difficult task that would be involved in simply getting needed food to deer while they are still in condition to eat it. This could be handled in areas where deer yard up in large herds, but would not be feasible at all where deer are scattered over a wide area of rough country.

Another aspect of the winter feeding problem would be to consider feeding as a routine practice with wild species just as man does with his domestic species. While this has many different aspects that require careful exploration, such as the effect on the animal and the range it normally inhabits, the financial aspects, etc., it seems likely that such feeding practices could be developed and successfully applied if it seems desirable to do so.

Deer nutrition studies with whitetails in Michigan have pointed the way toward needs for some of the basic nutrients for both fawns and adult reproducing does.

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WILLAMETTE DOWNSTREAM MIGRANTS GET HELP

On November 9, Governor McCall announced the signing of an important contract with Portland General Electric Company, Crown Zellerbach Corporation, and the Game and Fish Commissions concerning downstream fish migrations at Oregon City Falls on the Willamette River.

The agreement sets forth the jurisdiction of the state fishery agencies and the historic use of the falls area by the companies and brings into being a cooperative program for the enhancement of the fishery resource.

The major breakthrough in the negotiations came when Crown Zellerbach agreed that its 16 production and hydroelectric turbines would be shut down from November 1 through July 31 of each year. Two of the grinder turbines which are on direct water drive may be operated on a limited basis subject to consultation with the state agencies and at times when downstream migration is not heavy.

Portland General Electric will shut down its one Francis turbine for the same period of time. The propeller turbines used by this company can be adjusted to minimize fish loss.

In addition, PGE has agreed to initiate and fund completely studies to determine a feasible method to improve fish passage out of their Sullivan plant forebay. This study is to be completed by November of next year unless the time is extended by the state agencies. The study findings will be implemented.

Crown and PGE jointly agreed also to contribute 25 percent of the cost of construction of a new fish hatchery and

spawning facility for the Willamette system.

The agreement provides for enforcement of the provision and penalties.

The falls area fish passage has been a point of discussion for over 100 years. In 1870 the legislature was urged to appropriate "... a few hundred dollars, probably not exceeding a thousand at the most" to provide fish passage.

The reason given was to make abundant an available food supply for the people of the valley. In 1882 the legislature appropriated \$5,000, subsequently increased to \$10,750, for building the first fish passage facility. This was in 1885.

By 1888, use of the falls for energy generation was under consideration and in 1889 the turbines turned and the first power was sent from Oregon City.

The current federal license for power generation is held by PGE and provides that not only would the company provide a substantial portion of the cost of upstream fish passage facilities but that downstream passage was also a responsibility. At the time this license was being negotiated the state agreed that downstream problems would not be tackled until upstream passage had been assured.

Construction of an upstream fishway was completed this year with all costs paid by PGE and the federal government.

Early in 1969 the game and fisheries directors of Oregon indicated the upstream passage facility was far enough along so that downstream passage plans should move ahead. On October 9, 1969, correspondence started that culminated in the agreement signed on November 9, 1971.

FROM OUT OF THE PAST

When the settlers first came to Oregon, many of the Indian tribes lacked sufficient hunting equipment to take deer at long range. In order to obtain meat, it was necessary for the Indian to use various devices and gimmicks to get close enough to the animals to kill them with either knife or poorly constructed bows and arrows. One such technique is described in the reminiscences of Louis Labonte as reported by H. S. Lyman in the Quarterly of the Oregon Historical Society.

"The deer were very abundant in primitive times, and during the breeding season the bucks were pugnacious. In order to come near to them the Indians would take the head of a deer, including also the hide of the neck, properly prepared, which was placed over the head of the hunter; and he then, stooping over so as to keep the mouth of the deer head off the ground, as if grazing, would creep up on the lee side of the herd. He would also, so as to more closely imitate the action of a deer, occasionally jerk the head from side to side, as if nabbing flies." "... the Indian, himself, if he chanced to miss his mark, was sometimes so viciously attacked by the deer as to be badly gored or trampled, or possibly killed."

—Jim Harper

A William Finley photo taken in 1908 and printed from the glass plate negative. The bird is a black-crowned night heron photographed at Malheur Refuge.



RARE BEAR BAD

If you plan on eating bear meat, better treat it like pork and cook it well. This is the advice of Dr. Edward Press, Oregon's Public Health Officer.

Citing cases in California, Dr. Press explained that bears harbor *Trichinella spiralis*, the same organism that may cause trichinosis in humans who have eaten rare or uncooked pork.

At least ten recent cases of the disease have been reported in California from eating of improperly prepared bear meat. A group of students were involved, and one ate raw meat while others ate some of the meat roasted over a campfire or made into jerky. All were hospitalized although none died as a result of the incident.

A recent study in northeastern United States revealed that the prevalence of trichinosis among black bears is four times greater than in garbage-fed hogs. The disease presents no threat to humans, however, if the meat being eaten is thoroughly cooked. Temperature of over 150 degrees will make the meat safe for consumption but if a roast is being cooked, a meat thermometer should be used to be certain the interior of the meat reaches the necessary temperature.

Generally, recipes and instructions used in cooking pork would be applicable to the preparation of bear meat to make it safe.

KILL A BEAR?

Would You Like To Know Its Age?

The Oregon Cooperative Wildlife Research Unit, in cooperation with the Oregon State Game Commission, is involved in a black bear study. The study is directed primarily at determining certain characteristics of Oregon's bear population. Success of several phases of the study depends on assistance from the hunter. With your help, this study will provide the Game Commission with information which will assist them in management of the black bear.

IF YOU KILLED A BLACK BEAR DURING THE 1971 SEASON, PLEASE REPORT YOUR KILL ALONG WITH YOUR NAME TO: THE COOPERATIVE WILDLIFE RESEARCH UNIT, OREGON STATE UNIVERSITY, CORVALLIS, OREGON 97331.

If you saved the skull or at least one canine tooth (tusk) from your bear and would like to know your bear's age, please indicate this when you report your kill to the Wildlife Unit. Canine teeth when prepared and sectioned show rings, much like the growth rings in a tree, which indicate the bear's age in years.

The Unit would like to thank those persons that responded to our first request which appeared in the November issue of the BULLETIN.

Fishing Ponds, Access Site To Benefit Anglers

The Oregon Game Commission approved the purchase of two small ponds totaling 8 acres near Ontario in eastern Oregon and a 1-acre section of stream-bank in the Siuslaw drainage, both of which will benefit sport fishermen.

The 8-acre ponds located just outside of Ontario were purchased from the Rogers Construction Company. The company had dug the pits to obtain gravel for its numerous construction projects but the pits are now surplus to its needs. Located on land with a high water table, the excavations have filled from spring water and seepage to within a few feet of ground level. They are expected to remain close to this level the year around.

The Commission plans to develop a trout fishery in the ponds if the fish grow well and can readily be taken by anglers. If the trout fail to respond, the ponds will be stocked with panfish.

The angler access point is located on Lake Creek, tributary to the Siuslaw, near the community of Deadwood. The tract will be developed by Lane County for boat launching. Lake Creek is a popular and productive steelhead stream but has limited boat access.

Winter Feeding Of Big Game

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Here in Oregon, we have maintained young, growing blacktails on supplemental concentrates and alfalfa hay with no other source of nutrients. With this information at hand and with the information that we have developed on acceptability of different feedstuffs, there seems little reason to believe that such practices could not feasibly be developed for some geographical areas. Such practices might facilitate deer management methods. On the other hand, it might well result in extreme overuse of winter ranges. **The current feeling by wildlife people is that routine winter feeding would be neither desirable nor financially practical.** It would, however, be of interest to carry out some experiments of this type with wild deer on a limited scale.

Bighorn Sheep Released Recently In Wallawas

Twenty Rocky Mountain bighorn sheep took up residence on the Lostine River in Wallowa County November 19, the result of continuing efforts by the Game Commission to re-establish these native animals to their original range in northeastern Oregon. The small band included five rams with the remainder being lambs and ewes.

The sheep were obtained at Jasper National Park in Alberta, Canada, through the courtesy of the Canadian Department of Indian Affairs and Northern Development. They were hauled by truck from the park to their release site on the lower Lostine in the Wallowa National Forest.

According to biologists who captured

and transported the animals, all sheep were in excellent condition and extremely alert following their long haul. The entire band hurriedly left the truck and scampered up the mountain slopes to the safety of timber and rimrocks.

This marks the second Rocky Mountain bighorn sheep transplant within the year. In late March the Commission released 20 sheep in Hells Canyon of the Snake with stocks also obtained from Jasper Park in Alberta. The band appears to have summered well in the rugged escarpments of Hells Canyon and is observed regularly by residents along both the Snake and Imnaha Rivers as well as visitors who boat the Snake River or ride the trails of the Snake Divide.



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