

**OREGON
WILDLIFE**

AUGUST 1974

OREGON WILDLIFE

AUGUST 1974
Volume 29, No. 8

RON E. SHAY, Editor
HAROLD C. SMITH, Staff Artist

Oregon Wildlife is published monthly by the Oregon Wildlife Commission. Earlier volumes of the publication were entitled the Oregon State Game Commission Bulletin.

OREGON WILDLIFE COMMISSION MEMBERS
FRANK A. MOORE, Chairman Idleyld Park
DAN CALLAGHAN, Vice Chairman Salem
MRS. ALLEN BATEMAN Klamath Falls
ALLAN L. KELLY Portland
JAMES W. WHITTAKER Pilot Rock

JOHN W. McKEAN, Director

All correspondence should be sent to:
OREGON WILDLIFE COMMISSION
P.O. Box 3503
1634 SW Alder Street
Portland, Oregon 97208

Permission to reprint is granted; credit would be appreciated.

Oregon Wildlife is circulated free of charge. Please report change of address promptly giving both new and old addresses and zip codes.

Second-class postage paid at Portland, Oregon.

The Cover

A Western Oregon Rattlesnake

Photo by Ken Durbin

HUNTER EDUCATION PROGRAM

Instructors Approved

Month of June10
Total to date 3,400

Students Trained

Month of June421
Total to Date 208,939

Firearms Hunting Casualties Reported In 1974

Fatal0
Nonfatal5

Guest Editorial

Angler Access—A Critical Need

One day recently I had an opportunity to take a look at about a mile of stream bank along an important north coast steelhead stream. The present owner allows angling by permission. The land may be sold with no assurance that the new owner would continue the same policy. If the Commission could obtain a perpetual easement for access to this stretch of stream, the public would be assured of a continuing opportunity to angle there. But that costs money and it will cost more money as times goes on.

Obtaining adequate public access to fishing waters throughout the state is one of the most critical problems facing the Commission. The number of anglers will continue to increase and may well double by the turn of the century. Where are they going to find a rock to stand on?

Several years ago the Commission conducted a survey to develop a statewide master plan for angler access. When completed, the master plan embraced a total of 78 subplans covering stream and lake basins. Information obtained revealed that an additional 493 miles of streamside access to western Oregon streams would be needed to accommodate angler needs within the next 20 years. At the current average cost of \$5.43 per lineal foot this figures out at about \$13,575,000. Add around \$6,000,000 for needed eastern Oregon developments and the figure approaches 20 million dollars. And that isn't all. That figure includes only stream or lake bank access and does not include about \$670,000 to provide an additional 182 boat launching facilities that would allow boat access to about 936 miles of stream in western Oregon.

How much can the Commission afford to budget for angler access currently? The answer is about \$100,000 annually on the average. This is obviously completely inadequate to do the kind of job that needs to be done. To stretch these dollars to the maximum the Commission has participated in cooperative access acquisition with other entities of government and with private organizations.

To avoid losing an angling opportunity such as I described on the north coast stream and which could be duplicated on many streams and lakes throughout the state, it is essential that more resources be directed to angling access developments as quickly as possible. This is one of the important reasons why the Commission will request an increase in revenue in the 1975 session of the Oregon Legislature.

R. C. Holloway

OREGON SNAKES

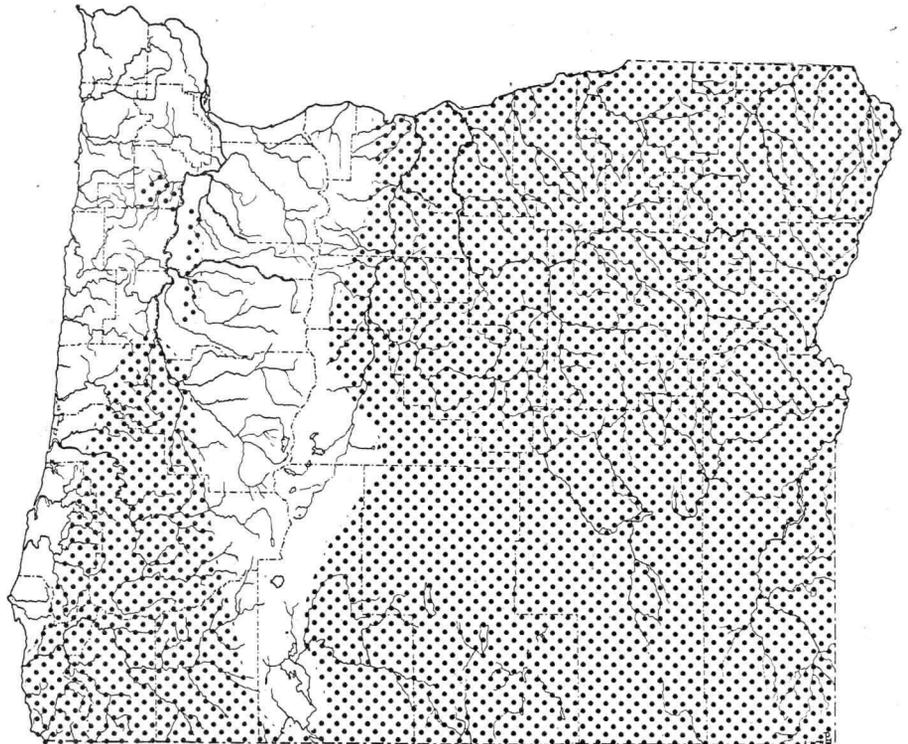
By Dr. Robert M. Storm
Zoology Department
Oregon State University

Mention the word "snakes" around certain people and you are likely to be told in no uncertain terms to change the subject or leave. On the other hand, most people are willing to at least talk about them and it is to that majority that this article is directed. To know snakes is not necessarily to love them, but some knowledge can certainly increase one's appreciation of these unique and often frightening creatures.

Within the boundaries of Oregon are found 15 kinds (or species) of snakes, of which only one species is poisonous. This is of course the rattlesnake, most properly known as the western rattlesnake. One hears in various parts of the state of "timber" rattlers and "desert" rattlers, of "sidewinders" and of the "little kind" and the "big kind." The fact remains that we have but one species, the western, here and the above "kinds" are color or age variations of this. Rattlesnakes in wooded areas often appear very dark, whereas those of open country are often extremely light. The accompanying map shows in a general way where rattlesnakes occur in Oregon. Most of the Coast Range and considerable portions of the Willamette Valley are free from them, but be a bit wary if you are scrambling around on the south side of a rocky hillside. Rattlesnakes spend the winter in rock cracks and crevices below ground. Such areas are called dens and a single den area may winter one or two hundred snakes. Their local distribution is largely controlled by suitable winter dens and if a person lives more than six or seven miles from any rocky areas, he is not likely to encounter rattlers on his place.



All of our snakes, including the rattler above, have largely beneficial feeding habits. Most of their food consists of items we consider menacing to our gardens, lawns, or crops.



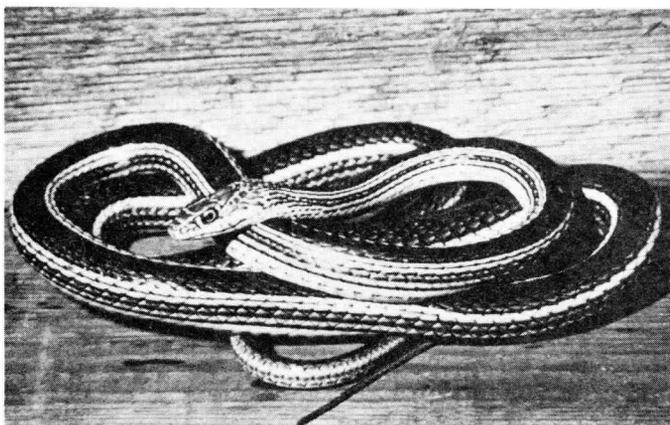
Range of the rattlesnake in Oregon. See article for details.



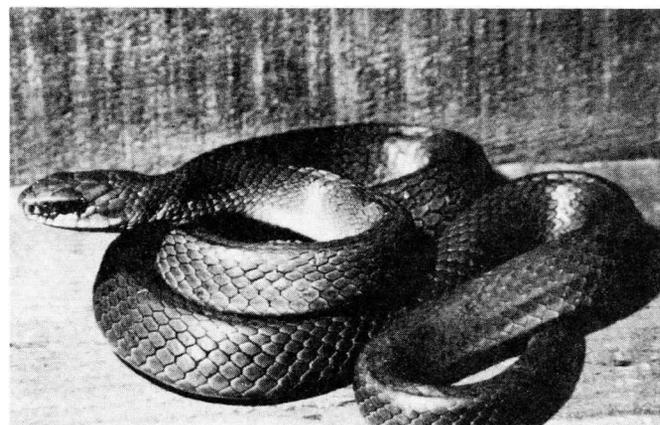
GOPHER SNAKE

A snake which unfortunately closely resembles the rattlesnake is the harmless gopher snake. Gopher snakes are light tan to brown snake, with a row of darker blotches down the back — a pattern very remindful of that of a rattlesnake. The gopher snake adds to its “rattler image” by an impressive display of coiling and striking, meanwhile hissing loudly and rapidly vibrating its tail. The frightened and unknowing observer usually ends this display with a shovel or other handy weapon. If he had taken a few moments to observe the snake closely, he would have noticed the narrow head, the shiny scales and most of all the long tail, tapering gradually to a sharp tip. He would have then spared the life of one of our most effective mouse, rat and gopher catchers.

Gopher snakes occur throughout the lower elevations of Oregon, except for the coast and are among our largest snakes, sometimes reaching almost five feet in length. They are exceeded in size lengthwise by a “stringbean” of a snake, the striped whipsnake, found in rocky areas of eastern Oregon. This fast-moving animal often exceeds five feet and can move at the rate of a man’s fast jog. The whipsnake and its close relative, the western racer, are mainly day-hunting snakes, prowling alertly through the rocks or over the ground and feeding to a great extent on lizards and smaller snakes. Racers seldom exceed three feet but, like the gopher snake, range widely at lower elevations in the state.

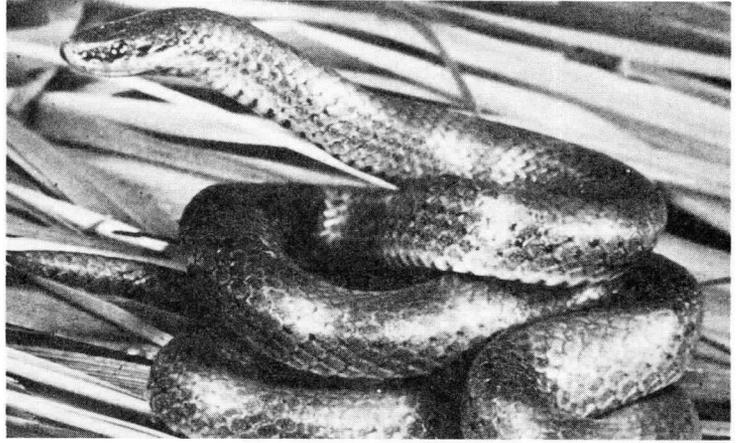


STRIPED WHIPSNAKE



WESTERN RACEI

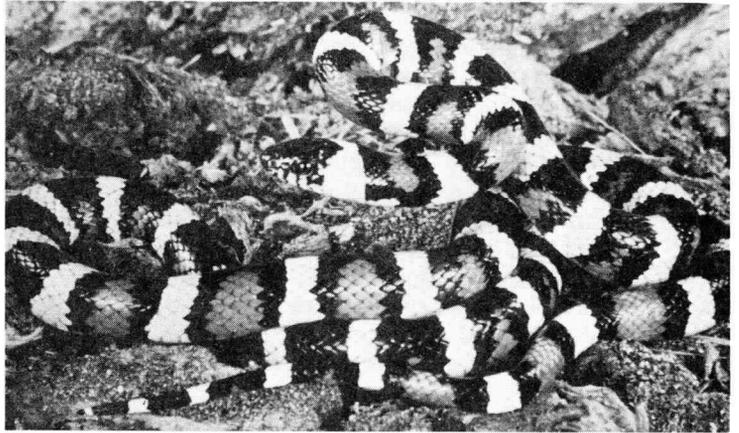
**SHARP-
TAILED
SNAKE**



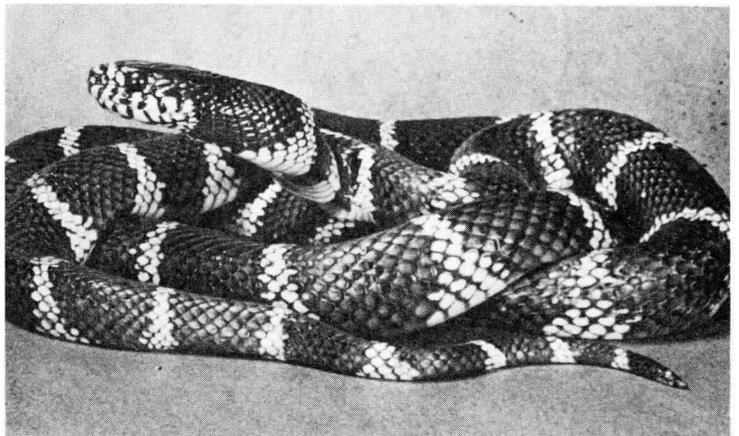
**BANDED
GROUND
SNAKE**



**MOUNTAIN
KINGSNAKE**



**COMMON
KINGSNAKE**



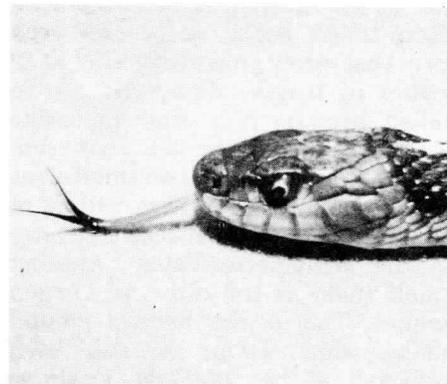
Oregon has rather small snakes too, and at the other extreme is the little sharp-tailed snake, a seldom seen form that rarely grows beyond 11 or 12 inches in length. Sharptails are so called because of a tiny spine-like scale on the end of the tail. They seem to feed to a great extent on small slugs and occur in the southern valleys of western Oregon and at scattered sites in the Willamette Valley. Another small snake is the rarest of Oregon snakes. This is the banded ground snake, which so far has only been collected at two or three localities near the headwaters of the Owyhee Reservoir. Ground snakes are handsomely colored, with a row of black saddle-like blotches down the back, separated by a reddish color. They may cause some people to believe that they are looking at a poisonous coral snake, but these do not occur in Oregon, nor anywhere near it. Somewhat similarly colored, and a good candidate for Oregon's most colorful snake, is the mountain kingsnake. This species exhibits a circular pattern of red, black, and creamy yellow bands which are organized so that red and cream bands are always separated by black. These snakes attain a length of about three feet and occur mainly in the Rogue River Valley. The other Oregon kingsnake, the common kingsnake, ranges somewhat farther, occurring in both the Rogue and upper Umpqua Valleys. This snake, which may attain four feet in length, exhibits an alternating pattern of brown to black and cream to white circular bands. Kingsnakes feed on a variety of live prey, but are somewhat partial to other reptiles, particularly lizards. They also have a somewhat exaggerated reputation for seeking out rattlesnakes as food. Actually, they do feed on a variety of snakes, including rattlers, and are known to be at least somewhat immune to rattlesnake venom.

A most difficult group of snakes for the beginning snake fancier to learn is that composed of the garter snakes. Oregon has four species and eight subspecies or varieties of these and at least one kind is likely to be encountered anywhere, although in eastern Oregon, they usually occur near water. The details of separating garter snakes are probably beyond the scope of this article, but some progress can be made in this respect. In the Willamette Valley, two kinds are common. The red-spotted garter snake occurs near water, usually ponds or sloughs, and always appears as a black snake with reddish head, red spots along the sides and a conspicuous yellowish line down the back. Elsewhere in Oregon, a subspecies of this form is known as the valley garter snake. Oddly enough, this is the only snake to be seen around lakes in the mountains. It lacks the red head, but has red side spots. In addition to the light line down the back, valley garter snakes have a light line low down on each side. Both of these varieties reach almost four feet in length and both feed largely on tadpoles, frogs and other items they find near water.

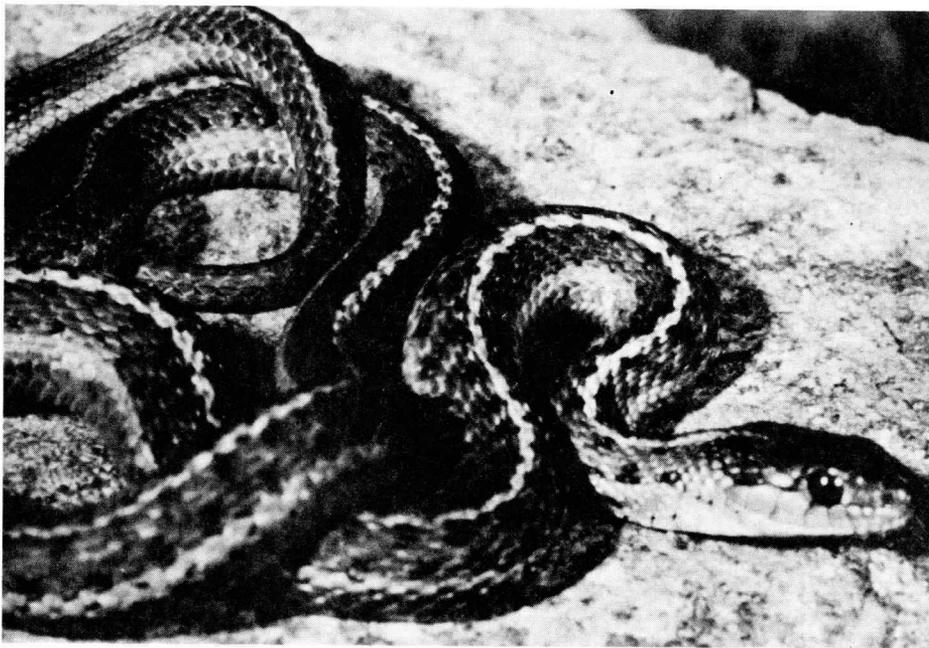
The other Willamette Valley species is the northwestern garter snake, which likes to live in brushy fields or at the edge of clearings. They occur throughout much of the rest of western Oregon. These are usually less than two feet in length and display a rather bewildering array of color patterns. Their basic color ranges from tan through brown or reddish to black. They may or may not have a back stripe and when present the stripe is white, yellow, orange,

reddish, green, tan, or something between these. Northwestern garter snakes are highly beneficial in that they feed to a great extent on slugs and other soft-bodied garden pests. A third kind of garter snake, known as the wandering garter snake, is partial to streamsides and pond or lake edges through much of eastern Oregon. It is usually gray to brown with a slightly zig-zag appearing light line down its back. Usually less than 30 inches in length, this snake is semi-aquatic and feeds on water insects, fish, frogs and mice. If one is willing to get close enough to a snake, all garter snakes can be identified as such by the fact that all of their back scales have a little longitudinal ridge or "keel" on them.

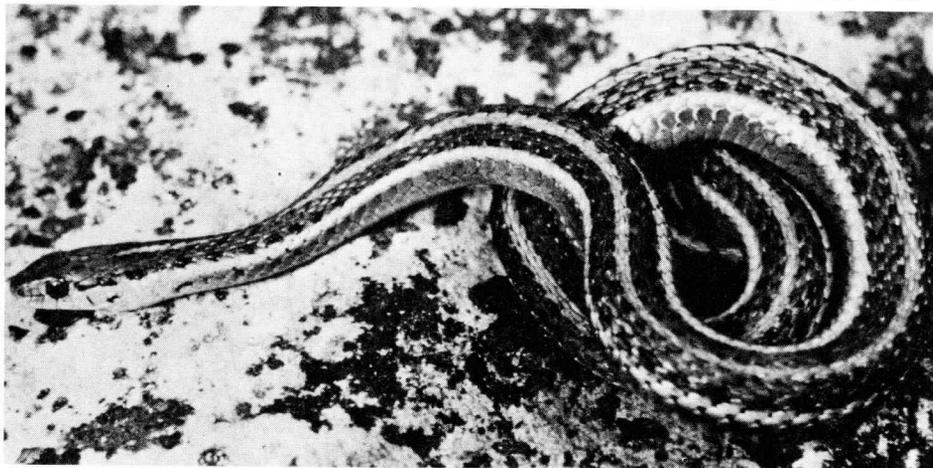
RED-SPOTTED GARTER SNAKE



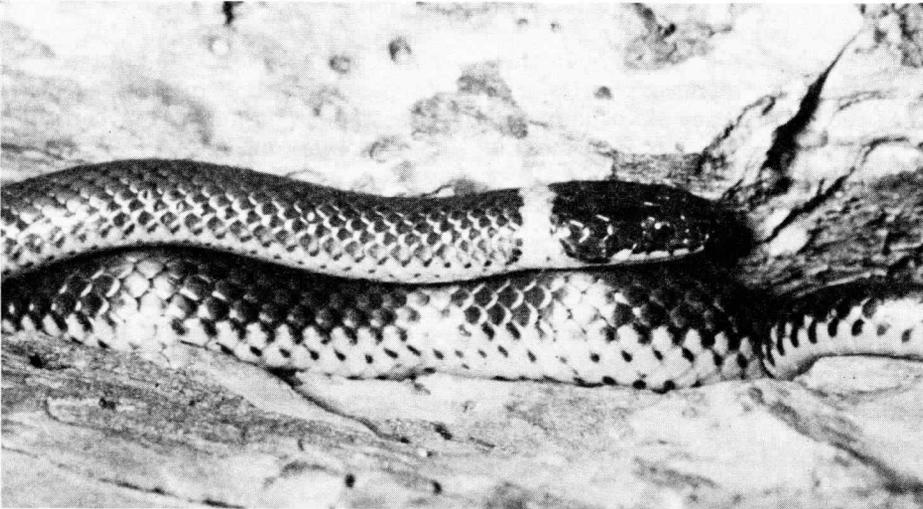
WANDERING GARTER SNAKE



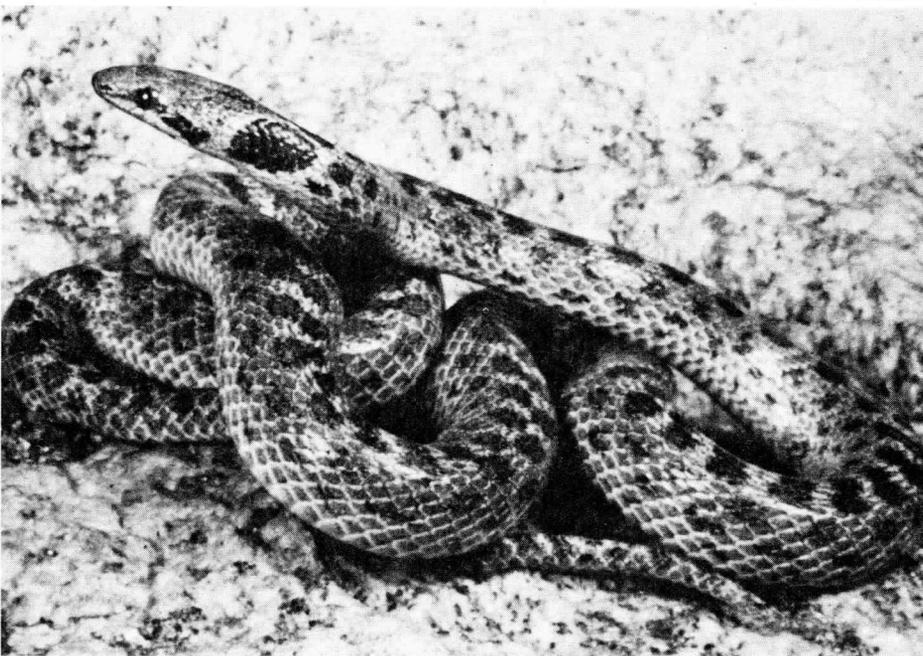
NORTHWESTERN GARTER SNAKE



RINGNECK SNAKE



NIGHT SNAKE



Among the less familiar Oregon snakes is the ringneck snake. This attractive species ranges through the drier parts of western Oregon valleys and may also be found in the lower Deschutes and John Day Valleys. Colored an olive or blackish above and bright yellow to orange beneath, this snake sports a neck ring of the same color as the underparts. It attains an unusual length of two feet and feeds mainly on salamanders, frogs and small lizards and snakes. Perhaps even less well-known is a denizen of rocky areas in eastern Oregon, the night snake. Night snakes are usually small, less than 20 inches in length, and do their hunting and moving about at night. Herpetologists (those who study amphibians and reptiles) find night snakes by slowly driving black-top roads in the early hours of night, following a hot day. This species exhibits a row of brown blotches down the back, which upon close examination appear to be double blotches. They have a large dark blotch at the back of the head and have conspicuous copper-colored eyes with narrow vertical or cat-like pupils. Vertical pupils are characteristic of night-hunting snakes as opposed to the more rounded pupils of the diurnal species. Night snakes feed largely on lizards, which they subdue with the help of a poisonous saliva, worked into their victim by means of slightly enlarged and grooved back teeth. They are harmless to man.

There remains only one species to round out a list of Oregon snakes. This is the rubber snake or rubber boa, which is actually in the same family with the giant boas and pythons of tropical climates. Our form, however, is exceptionally large at 30 inches. Rubber boas are slow-moving secretive snakes that inhabit well-drained partly forested areas of western Oregon and the Blue Mountains. They are an unmarked brown above and yellow below, with a short tail ending in a bluntly rounded tip. Rubber boas have very small eyes with vertical pupils. Their food is almost entirely small mammals like shrews and mice.

I have used up most of my allotted space for this article in discussing the

individual kinds of snakes in Oregon, stressing ways of giving each a name and saying a little about their food habits. As a group, Oregon snakes must be admired by man for their feeding habits, for most of their food consists of items that we consider menacing to our gardens, lawns or crops, or of items that are of little value to us. Some do occasionally clean out bird nests or capture a young trout, but these occasions are very much in the minority.

There are many items of snake lore for which there is not enough space here. Snakes grow throughout their lives, but grow increasingly slower as they get larger. They are usually able to reproduce at three or four years of age and may live for ten years or

more. Females produce young either by laying eggs or by bearing live young. Live-bearers among our species include the rubber boa, the garter snakes and the rattlesnake. All the others lay eggs, which they usually deposit underground in some area where the sun's heat will incubate them.

I would like to close this article by again reminding you of a few facts. In Oregon, only the rattlesnake is dangerous to man. All of our snakes, including the rattler, have largely beneficial feeding habits. Our snakes make up a colorful and interesting group, and although you may never love them, perhaps you can now respect them a little more. □

RUBBER BOA

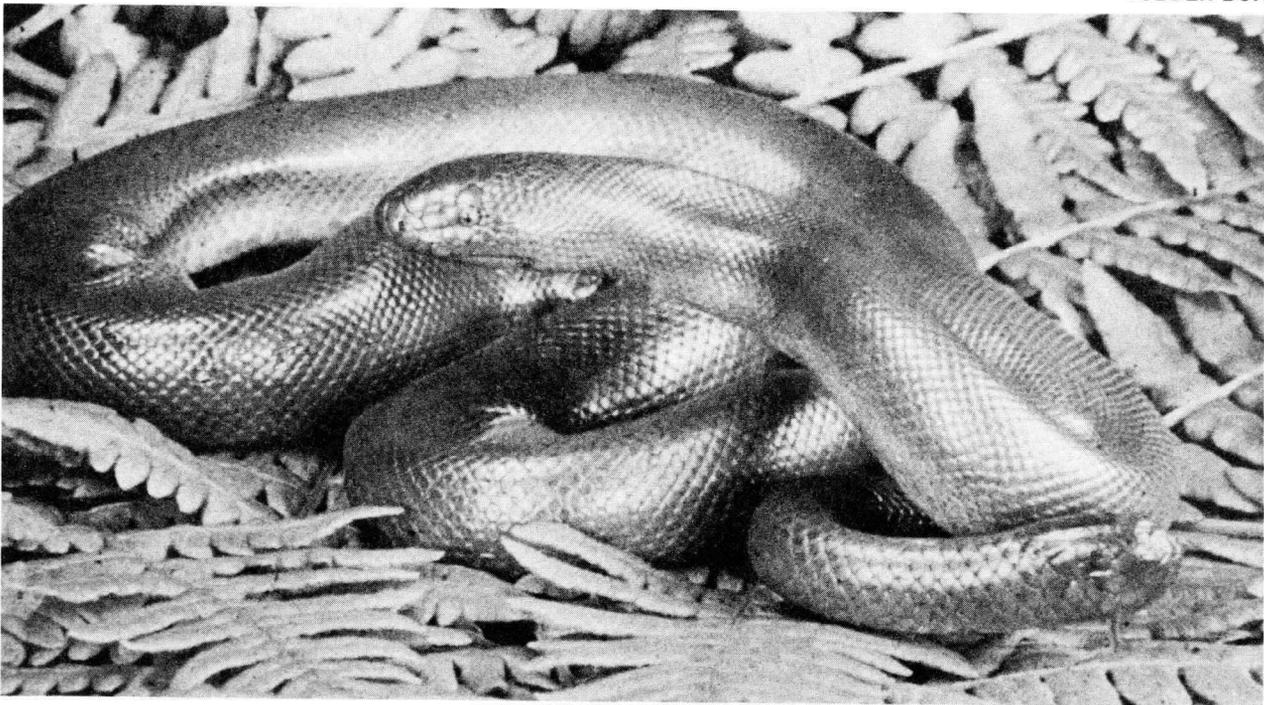


Photo credits:

- Page 3 - D. Walker
- Page 4 - Gopher Snake - R. Storm, Whipsnake and Racer - E. D. Brodie, Jr.
- Page 5 - Sharp-tailed Snake and Kingsnake - N. Cohen, Ground Snake - R. Storm
- Page 6 - Garter Snakes - R. Storm
- Page 7 - Ringneck - R. Storm, Night Snake - N. Cohen
- Page 8 - Boa - N. Cohen

Beware of Vampire-Killers

from United Nations Journal

Those of you who watch old television movies know what a vampire is. It's a reasonable guess that many of you who love vampires will take the opportunity of the World Population Conference in Bucharest to make a sentimental journey to nearby Transylvania. There it was that the vampires came nearest to national independence with their leader spreading his wings in Dracula's castle during the last century. But now, not only the independence but the very existence of the vampires is threatened by, as usual, progress.

Many of the vampires found that life in South America offered scope. In particular, they found in the beef cattle industry on the pampas something they could really get their teeth into. Unfortunately, the drive to maximize cattle yields has caused advanced veterinary technology to be mobilized against them in a most devilish way. The poor creatures are already afflicted with rabies and are forever being smoked out of the caves, which is the only abode they can find. They have no possibility of mobilizing public opinion on their behalf (except for those distorting old horror films) and only the International Union for the Conservation of Nature (IUCN) has raised a voice in their defense.

IUCN, in its excellent bulletin, describes some of the ingenious tricks employed against vampires. The bats have a low tolerance for the anticoagulant drug heparin. Scientists tried mixing this in petroleum jelly and smearing some captive bats. Because they are intrinsically fastidious creatures (they can't help having rabies and don't like it any more than you or I), they groom each other and lick their hair to keep it in place. Thus, they eat the heparin which kills them by causing internal bleeding. Another devilish trick was to inject the heparin into the cows who are so big they don't feel a thing. A little sip of blood by the sensitive vampire is, however, more than enough to send it to the vampires' happy hunting grounds.

Professor Jean Baer has protested that these methods are not, as claim-

Environmental Events

The tussock moth control spraying has been completed in northeastern Oregon. The treatment was made to about 80 percent of the originally planned 190,000 acres as the moth larva population was not as widespread as originally expected. More areas than had been anticipated were sprayed in Idaho, however.

The Wildlife Commission is making a survey to determine the attitudes of all state and provincial conservation commissions relative to wilderness and intermediate use classifications for public lands. The information will serve as a basis for the International Association of Game, Fish and Conservation Commissioners' federal legislative program.

Industry, port officials, and resource technicians have conferred about proposed developments in Yaquina Bay. It appears inevitable that industrial fills on certain tideflats will have serious impacts upon the bay's biological productivity.

Some of the commercial sand and gravel operations along the Willamette and South Santiam Rivers were reviewed by resource technicians and the industry to determine possible operational revisions to further protect the stream channel habitat. □

ed, "ecologically sound". Killing off one regional population only opens up the possibilities of bats flooding in from somewhere else within six months. And who wants foreign vampires anyway?

The ultimate danger is that the vampire (at least *Desmodus rotundus*) may be exterminated. Now if you're thinking — and good riddance, too — you should remember that science values all creation. Sometimes this point of view may be difficult to understand immediately, but in the case of vampires it's quite simple. In fact, cooperation between vampire and scientist may win for the latter (nobody cares about the former

Camas Swale To Be Sold, Regulations Hearing Set

The Oregon Wildlife Commission has made a final decision to sell its Camas Swale Wildlife Management Area near Eugene. The 2,500-acre tract will be advertised in one piece for a minimum price of one million dollars or in three parcels for minimums totaling \$1,107,000. Bids will be opened at 2 p.m., August 12.

Revenue from the sale of Camas Swale will be put back into an area or areas better suited for wildlife production.

In other business at the recent meeting the Commission authorized acquisition of 1,400 feet of frontage on the Trask River which would provide angler access to a section of river now closed to bank angling. The frontage lies between the mouths of Cedar Creek and Panther Creek on the north bank, about six miles upstream from the Highway 101 bridge.

The next Commission meeting is scheduled for August 16 when the major item of business will be to set the 1974 small game, upland game, waterfowl, and furbearer seasons. The meeting will be held at the Commission's Portland office, Southwest 17th and Alder. All interested parties are welcome to attend and a public hearing will begin at 10 a.m. to receive suggestions from the public. Comments and suggestions may also be sent in prior to the hearing and will be considered by the Commission. □

— that's the point of this note) the most highly prized award in science — the Nobel Prize. The reason is that the vampire holds the key to your kidneys!

When he's sucking blood, his four kidneys and bladder function furiously at the same time. So here is a mammalian kidney on which input-output analysis is easy. Thus, the poor vampire contributes to science and medicine. Those who have the interest of vampires at heart know them to be not only intelligent (you can't fool them with old or frozen blood) but very likeable. The horror movie makers really ought to help — they have a stake after all. □

Editor's note: We usually assume the debate between hunters and anti-hunters is a rather new conflict. George Sura, Editor of *Wyoming Wildlife* reprinted the following article with the suggestion that even though the material is "old hat" to many readers, "... new people unfamiliar with life's disciplines appear before us each day. Hence the teaching process will continue as long as society continues."

Wasted Energy in Wildlife Conservation

by Dr. Rudolph Bennett
Professor of Zoology
University of Missouri

(reprinted from *Wyoming Wildlife*, December 1938)

Volumes have been written on examples of wasted energy in wildlife conservation. The purpose of this paper is to discuss one example which is mentioned all too seldom. I refer to the perennial controversy between those who believe that killing of wildlife is justified and those who do not, between those who wish to harvest an annual crop of game, fur, and fish and those who would like to prohibit all trapping, hunting and fishing. Perhaps at the outset it would be well to set down the basic biological points involved:

1. Under all but emergency conditions (e.g., a wide-spread drought) every species produces a surplus every year.

2. If the carrying capacity of the range (whether land or water) remains unchanged, a number of individuals equal to the yearly surplus must die during each 12 months. This is an inexorable law of nature that was operating long before man appeared on the scene.

3. Therefore, the only way to increase the number of survivors is to increase the carrying capacity of their range. If there is an unoccupied ecological niche (which seldom happens) restocking (or new stocking may be useful. Otherwise these practices, though spectacular, are an outright waste unless there is a simultaneous and proportionate increase of food and cover; and under these circumstances restocking is likely to be superfluous.

4. If the carrying capacity is increased, more individuals live through the year, but also more die because there is a large surplus.

5. There is no biological justification for a kill by man that takes more than the available surplus.

6. There is biological justification for a kill by man that takes only a safe fraction of the surplus, leaving some of it to the factors of natural mortality and preserving for the next year a breeding reserve that can fill the range before the next season of scarcity.

The size of the fraction that man may safely take has been worked out for some species under some conditions; it can and must be determined for the others. We know it can never be the entire annual surplus, because some deaths from starvation, disease, predators, and the elements will and should always occur. In places where food and cover are increasing, or where killing has hitherto been excessive, probably the entire surplus should be spared to fill the range once more. Ordinarily, however, there is a safe fraction and there is no legitimate reason why man should not use it.

7. The reason for the last statement is that the surplus will be killed somehow. In the long run it makes no difference to the survival of a species over a large area how this is done. Among songbirds, nature takes the entire surplus each year; in the case of game man takes part of it; but in both cases the surplus must die. This was forecast by Malthus and established by Darwin; it is part of the natural scheme that every biologist and every informed conservationist knows.

The gist of the biological argument, then, is this: The killing of game, fish, and fur-bearers by man is as legitimate as the killing of the same species by nature, provided always that the combined kill by man and nature does not reduce the breeding reserve below what is necessary to keep the range filled to its carrying capacity.

The wildlife of this country has suffered from two major trends, which on the whole have far surpassed in importance the kill by man:

1. Reduction in the carrying capacity of the range, most of which now supports fewer individuals per unit area than it once did; and

2. Reduction in the actual amount of range. In the face of a situation like this it is folly to argue that the kill by man, huge though it has been, is the most critical factor determining the number of species (except in unusual and special cases) or that absolute prevention of this kill from the beginning would have left us very much more wildlife than we have now.

I do not wish to imply that hunters are the innocent and misunderstood victims of malicious propaganda. They have sinned, and grievously; many of them are as malicious, as intolerant, and as ignorant of the biological basis of hunting as the most rabid protectionist. Nevertheless, within the limits that I have mentioned, biology is on their side of the argument.

Those among the non-hunters, whose interest in wildlife is economic, educational, aesthetic, or all three, who understand the principles of Darwinian survival are not likely to criticize hunters who know when to stop. (There is of course, no good word that anyone can say for the hunter who does not know when to stop.)

No one can be censured for urging complete protection of species that is in danger of extermination or serious depletion. That is only ordinary good sense.

I would like to point out once more that all of us who are interested in wildlife at all, from the dyed in the wool game-hog to the most extreme protectionist, are seeking the same thing whether we know it or not. If we want more wildlife to enjoy without killing it, we can get it only by increasing the carrying capacity of the lands and waters. If we want a larger crop to harvest, year after year, our method must be the same and the objectives of the non-hunter will be attained as well. We all seek a larger breeding reserve. The only difference is that some of us wish to leave the entire surplus to be killed by natural factors; the others wish man to take a fair share of the surplus. □

This and that

compiled by Ken Durbin

According to an article in *Audubon* magazine, the winds which blow across Europe, Asia, and North America could be harnessed to produce at least 20 billion kilowatts of electrical power — 20 times more than the world's present generating capacity. Harnessing of wind power was first used in Persia in A.D. 644 and many countries have been actively working to get better use of this power source.

*

U.S. Fish and Wildlife Service agents have uncovered an Oklahoma ring of 28 traffickers in illegal eagle and migratory bird parts and feathers. Almost two dozen different bird species — including bald and golden eagles and seven kinds of hawks — were involved in an operation manufacturing American Indian artifacts, a market which has boomed in recent years. Included in the haul were three live falcons and about 40,000 feathers, some with fresh meat still attached. The lucrative market currently sees eagle carcasses selling on the black market for up to \$125 each. Wing and tail feathers are used for war bonnets and ceremonial dress. As many as 10 eagles must be killed to make one war bonnet. One fan made solely from the tail feathers of scissor-tailed flycatcher, which sold for \$650, required the killing of 38 birds. Most of the manufactured artifacts are passed off as authentic antique art objects, usually with splendid historical anecdotes attached to each to increase its price.

Conservation News
National Wildlife Federation

Insect pests can spoil any outdoor activity unless protective measures are taken to keep them away. A United States Department of Agriculture booklet deals with this problem and gives information on how to repel mosquitoes, biting flies, gnats, chiggers, fleas, and ticks. Chemicals for repelling the critters as well as mechanical protective devices such as screens and netting are discussed. Another section of the booklet gives advice on treatment of insect bites in case your defensive tactics are not entirely successful. Single copies of Home and Garden Bulletin 200, "Be Safe from Insects in Recreation Areas", may be purchased for 20 cents from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

*

A "new" bird has been discovered inhabiting a 10-square mile area of an Hawaiian rain forest by eight University of Hawaii students. According to the National Science Foundation, the as yet unnamed discovery is a member of the Hawaiian Honeycreeper family. Only about 100 to 200 of the 5¼-inch long, brownish backed and buff undersided birds probably exist and feral goats and hogs in the area probably endanger them. Although the little birds have been around for perhaps thousands of years, the area in which they exist has 400 inches of rain annually, "which may explain why it wasn't previously overcrowded with scientists".

Conservation News

*

A staggering statistic which gives further weight to the need for serious government research on solar energy is that enough sunlight falls on the United States in just two days to provide enough energy to outlast all the country's known reserves of oil, natural gas, and coal.

Conservation News

*

Each year in the United States, more than 20 million tons of sulfur dioxide are pumped into the atmosphere from automobiles and industrial outlets, according to an article in the August-September issue of *National Wildlife* magazine.

Most of it returns in the form of rain, usually within a few hundred miles of its original source. The phenomenon is called "acid rain" because the sulfur dioxide is transformed into sulfuric acid. Its complete effects are not known. But studies have already shown how acid rain diminishes timber and crop production. And it is etching away buildings and monuments.

Accompanying the article are two photographs of a stone statue built in 1702 at Herten Castle in Germany. The first photo, taken in 1908, shows only slight damage to the statue in a time span of more than 200 years. In the other photo, taken some 60 years later, the surface features of the statue are indistinguishable, almost completely etched away by acid rain.

A map compiled to show the extent of acid rain pollution in the U.S. last year shows the Willamette Valley in Oregon to be one of the worst affected areas in the western United States, followed by the Tucson and Los Angeles areas. The project to learn the extent of this problem was conducted last year under the auspices of *Current Science*, an education weekly. □

New Game Planes

by Jim Gladson

Since hunting and fishing regulations were first instituted in Oregon, those people who would violate the laws have usually had the odds of success in their favor. Vast areas of forest and range lands covered by a thin line of enforcement officers have made fish and game laws regrettably easy to ignore.

Now the odds may be taking a big turn, according to Captain Walter Hershey of the Oregon State Police Game Division.

This division of the State Police, which is charged with the job of enforcing fish and game regulations, is taking to the air to stop game poaching, illegal fishing, and a variety of other frequent violations.

With the recent acquisition of two new Piper Cub aircraft, enforcement officers may now patrol wide areas by air that were previously limited to slower and less efficient ground observations.

Captain Hershey estimates the planes can do the patrol work of five cars and ten men. "We anticipate considerable saving in fuel costs, auto and manpower costs, and better enforcement," he said.

Specific uses will include spotting illegal gillnetting on the Columbia River, locating deer and elk "spotlighters" and out-of-season hunters and fishermen, better enforcement of marine mammal laws, and keeping controlled travel areas clear.

According to Captain Hershey, the planes can cover a much broader area, more quickly, than ground units. This is especially true in rough terrain where the plane and trooper can cover in minutes an area that would take a ground vehicle several hours. Working together, the aerial spotter can direct ground personnel to possible violators, thus avoiding wasted time and patrol mileage.

The planes have already shown a



high success rate. Illegal gillnetting on the Columbia has become a risky business. The first four flights of the river netted at least one illegal fisherman each time.

The Oregon Wildlife Commission will also use the planes in its management activities. Early flights have already demonstrated that the slow

flight characteristics of the Piper Cubs make them excellent for game surveys and counts of spawning salmon and steelhead, Captain Hershey said.

The craft may also be used for checking ice conditions on the high Cascade lakes and control of snowmobiles. □



1634 S. W. ALDER STREET
P. O. BOX 3503
PORTLAND, OREGON 97208