



OREGON WILDLIFE

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The Cover

Don Kirkpatrick, our feature article author, checking over a few of the many thousand eggs handled at the E. E. Wilson game farm.

Photo by Ken Durbin

HUNTER EDUCATION PROGRAM

Instructors Approved

Month of April 20
Total to Date 3,380

Students Trained

Month of April 844
Total to Date 208,061

Firearms Hunting Casualties Reported in 1974

Fatal 0
Nonfatal 4

Guest Editorial DOLLARS FOR WILDLIFE

Historically, management of Oregon's wildlife resource has been financed primarily by angling and hunting license and tag fees. A long-standing federal excise tax on angling and hunting equipment has also been a dependable source of revenue. **NO STATE GENERAL FUND MONEY HAS BEEN ALLOCATED FOR THIS PURPOSE.** Periodic changes in license or tag fees and in the licensing structure have occurred over the years. Many of these have had a positive impact on revenue; others have had the effect of reducing revenue.

Planning for the future of the resource and for public opportunities to utilize the resource must, of necessity, incorporate a reliable and adequate revenue base. The Commission has reluctantly concluded that it cannot meet its obligations to the resource and the public without a substantial increase in revenue. There is no acceptable alternative. The dramatic increase in the cost of doing business combined with greater and more diverse responsibilities, many of which are of broad public interest, are the two major factors influencing the unfavorable financial situation, although there are others that have contributed to the problem.

There are several potential routes to follow in obtaining additional revenue for wildlife purposes. An increase in license and tag fees, although likely to cause a temporary downturn in the number of licenses and tags issued, is the most dependable source. Other possibilities such as a general fund appropriation, volunteer contributions, recreation bond issues, or special tax assessments are fraught with uncertainties. The most logical approach is one which would combine a reasonable increase in license and tag fees with a general fund appropriation, the latter to be used to finance Commission activities of broad public concern such as environmental protection and management, nongame wildlife developments and, to some degree, enforcement.

The Commission will also carefully review its current operations to determine where further efficiencies and savings can be made. Major cutbacks, which could only have the effect of reducing recreational opportunities, appear unlikely.

In the next several months an effort will be made to acquaint the public with the problems faced by the Commission in terms of financing a viable wildlife management program. The Commission is confident that when the public has the facts and recognizes the importance of maintaining this resource in a healthy and productive condition for all Oregonians to enjoy, it will enthusiastically support an increase in revenue.

R. C. Holloway
Chief, Information & Education Division

UPLAND BIRD PROPAGATION

By
DON KIRKPATRICK
Superintendent, Wilson Wildlife Management Area

Which came first — the pheasant or the egg? In Oregon the answer is simple. Chinese ringneck pheasants were successfully introduced into Oregon in 1882 as adult birds after at least two previous shipments were lost in the process of transporting them from mainland China.

The Oregon Wildlife Commission (then the Oregon State Game Commission) entered the pheasant rearing business in 1911 when it leased a privately owned game farm near Corvallis and retained its owner, Mr. Gene Simpson, to initiate a pheasant rearing program for this state. It was this writer's privilege to have worked under Mr. Simpson from 1936 until his death in 1940. The basic principles of upland game propagation that were developed by Mr. Simpson through his many years of experience were used by some Oregon game farms as late as 1956. These principles were based on the use of broody chicken hens to incubate and hatch the pheasant eggs and rear the chicks to between 6 and 7 weeks of age when they would be on their own. In the

late 1940s, however, a marked decrease in the availability of broody chicken hens necessitated experimental work using incubators and a brooder system to replace the hen as a foster mother.

In 1951 an incubator with a 10,000 pheasant egg capacity was purchased and construction was begun on a brooder building which was to be heated with hot water and similar in design to numerous turkey brooder buildings used in western Oregon at that time. Basically the same methods are used today as in 1952 though there have been changes in temperature controls, minor changes in brooding methods, and increased efficiency in the incubators. Under the present program, the Wilson Wildlife Management Area produces approximately 21,000 ringneck pheasants and 1,900 chukars annually.

There are three distinct liberation periods. The spring liberation of about 3,000 adult birds consists of culled surplus breeders and the remaining breeders after all necessary

eggs have been gathered. The summer liberation consists of around 8,800 eight to ten-week old cocks and the fall liberation, which takes place just prior to and actually during the hunting season, is made up of approximately 9,200 adult cocks. Birds are classed as liberated once they leave the Wilson Area although some 2,900 of the 8,800 summer group are placed in holding pens on other management areas and then released at maturity during the hunting season.

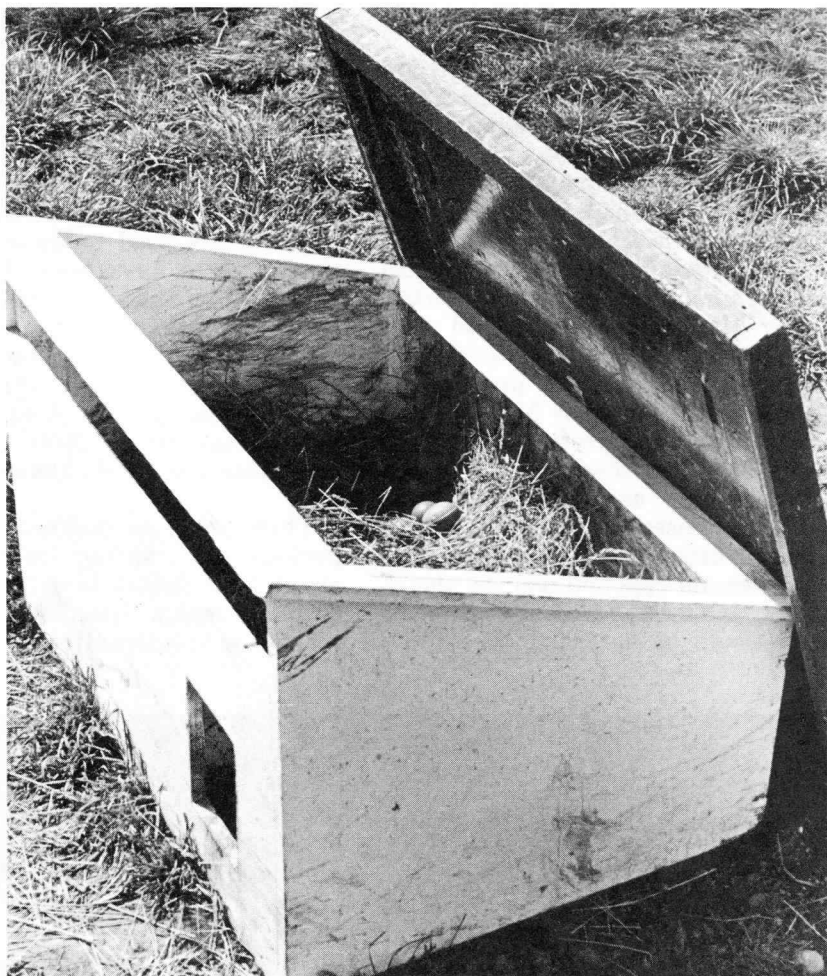
The propagation program operates on a calendar year basis so the seasonal cycle commences at the beginning of the year with approximately 3,200 adult pheasants on hand; 500 cocks and 2,700 hens. Around the first of March, 1,816 hens and 259 cocks are selected as breeding stock and are placed in four fields varying in size from one-half acre to over two acres. A cock-hen ratio of 1 to 7 is maintained. For 20 years all the breeding stock was blood tested for pullorum, a bacterial disease widespread throughout the world's

(Continued on Page 6)





The adult breeding pheasants are held in open pens during the laying season. A leather wing brail keeps them from flying out. Though many eggs are laid on the ground, the nest boxes make collecting somewhat easier. The entry allows a hen to pass, but not the cock.





On the left, sorting peeping chicks from their recent eggshell homes. The chicks are sexed as soon as they are out of the hatcher. The males have a small "eye field or cheek patch" as shown on the left below. The females have no such patch as the chick on the right below.



poultry population, which is transmissible through the egg, causing a very high mortality rate in chicks under three weeks of age. Pullorum has never been found in any pheasant in Oregon, so the testing was discontinued two years ago. At the time the breeders are being selected the brail strap, a small leather harness which had been placed on one wing to prevent the bird from flying out of the open topped fields, is checked to assure it will remain secure during the laying season. Brails are removed from all surplus birds which are then placed in wire covered pens until their release in late March.

In the fields where the breeding stock has been placed, there are water troughs and feed boxes and numerous covered nest boxes. These boxes are about 24 inches square with an opening which permits the hen to enter but which is too small to admit the cocks. Nearly 70 per cent of the eggs collected come from the nest boxes with the remainder dropped at random all over the fields requiring a regular Easter egg hunt each afternoon. The egg gathering process has three stages. Each morning when the birds are fed breeder pellets, any eggs seen are placed in the nest boxes. In the early afternoon all the eggs in the nest boxes are collected as well as any that are noticed on the ground. The last thing in the afternoon, as the birds are fed grain, a thorough walking of the fields is done, checking each square foot in an attempt to gather every egg. First eggs appear around the 10th of March and peak production is reached shortly after the first of April when over 1,600 eggs per day are gathered. This peak activity is held for about three weeks and then the number and quality of the eggs begin to diminish as a higher number of culls are laid. This tendency is understandable since about 58 eggs are taken during a 70 day period from a bird that would normally produce between 10 and 16 eggs for the season if laying naturally in the wild. By about the 20th of May approximately 105,000 eggs will have been gathered and the last incubator setting has been made. The pheasant breeding stock is then liberated, completing

the spring liberation. A portion of the released hens will nest in the wild and rear a brood of pheasants to finally complete a job they started around the middle of March when the first eggs were produced.

After the eggs are gathered each day they are taken to an egg storage room where they are cleaned and culled. The eggs are actually washed in water if they are extremely dirty. This washing apparently has no effect on hatchability since there are days when almost every egg needs to be washed and other days when very few

need it and hatches show no appreciable difference. Culling consists of sorting out ill-shaped eggs or those with thin, metallic, porous, or rough shells.

The good eggs are then placed in padded boxes, about 300 per box, which are kept on shelves slanted at a 30 degree angle. The boxes are tilted end for end three times a day to exercise the eggs to prevent the yolk from settling to one side which lowers the hatching percentage. Normally eggs are not kept over 10 days before putting them in an incubator. There are



After sexing, the young birds are placed in small pens covered with cedar shavings. Under the walkway there are warm water pipes providing necessary heat for the youngsters. As they grow older, they are allowed to roam over a wider area with less heat.

a total of seven settings made during the course of the incubation season. At the peak of the incubator operation we have approximately 27,000 pheasant eggs and 2,000 eggs from chukars and other exotic species either incubating or in the process of hatching.

Because of limited brooder house facilities, all the eggs gathered cannot be set. There is a 17 day period between the second and third settings and a 13 day period between the fifth and sixth settings when all the eggs are not utilized. It is during these times that surplus eggs are furnished to families interested in rearing pheasants. There are some 35,000 surplus pheasant eggs available each year.

Each pheasant egg setting consists of 6,840 eggs from which an 80 to 85 per cent hatch is expected. As soon as these chicks are removed from the hatcher they are sexed. This is done by the "eye field or cheek patch" method. With experienced workers, accuracy will average about 92 per cent on those chicks classed as cocks and about 98 per cent on those called

hens. The lower percentage for cocks is due to the fact that any chick about which there is any doubt is placed with the cocks.

In the early 1960s, after a thorough study of liberation histories, it was determined that every place in the state capable of supporting pheasant breeding stock had been stocked several times and that all the land suitable for pheasants was maintaining established breeding populations. It was also determined that when a population becomes established in a given area, the stocking of additional birds for breeding purposes does not increase the supply of birds in that particular area because they tend to seek their own level of saturation. The primary advantage then, to using a sexing program to raise cocks only, for the major part of the liberation, is to provide more of the game farm pheasants for the hunter's bag. With sufficient holding pen facilities, it is possible to make smaller liberations during the season and provide better hunting for a longer time in some of those areas where there is a concentration of hunters.

This eliminates the one big surge on opening weekend and then poor hunting for the rest of the season. A full sexing program has been in operation on the Wilson Area since 1965.

All of the female chicks, except those from the first hatch that are kept as breeders for the following year, are available to families interested in rearing pheasants. All of the available 15,000 day-old female chicks have been distributed under this program annually.

All of the chicks from the first hatch and the cocks from all the other hatches are placed in a brooder building in small pens where they have access to a hover area where a temperature of 95 degrees is maintained. They are confined to the building for the first six days and then are given access to an outside run. Since they start flying at about eight or nine days of age, all runs and holding pens are covered with poultry netting. At 18 days of age the chicks are moved to another building which does not have a hover area and has a much larger outside run. As they are being handled each chick is debeaked by cutting approximately $\frac{1}{8}$ inch off the end of the upper beak to discourage cannibalism.

The cooler temperature and larger outside area of the second building has a tempering effect so that at six weeks of age the birds can be placed in larger holding pens with no building protection. As the birds are transferred to the larger pens, the debeaking process is repeated. The birds are left in these holding pens for about two weeks if they are scheduled for summer liberation, for 13 or 14 weeks if they are to be held for breeding stock, or up to 20 weeks if they are for fall liberation as adult cocks.

Early in September a brail strap is placed on one wing of all those birds from the first hatch that are to be kept as breeding stock for the following year. They are then placed in an open top 12-acre field to be held there until the next March when another season is started.

The final releases during the hunting season complete the cycle. Winter at the game farm is a time for cleaning and reconditioning facilities, care of the brood stock of birds, and preparation for spring when the cycle starts again. □



One of the chukar partridge at the game farm. Though the main product of the farm is pheasants, approximately 2,000 eggs from other species are hatched.

ROLE OF THE GAME FARM *by Bob Mace*

Chief, Wildlife Division

Don Kirkpatrick's description of game farm operations in an accompanying article sets the stage for discussing the changing role of artificial propagation over the years.

The game farm has long been recognized as an important tool in upland bird management. Operating one or more game farms has been a continuing activity of the Wildlife Commission since 1911. At one time, four farms were in operation producing upwards of 75,000 pheasants yearly but production today has been curtailed with 20,000 birds being raised at one facility.

Reasons for the changed emphasis are primarily economic. The game farm's most useful role has been in producing birds for initial stocking. Without the game farm, the pheasant and chukar would not have been established in Oregon. After establishment, however, continued stocking has proved both uneconomical and ineffective. The game farm product has proved unable to survive in competition with naturally produced birds and returns to the hunter have been limited. Even during peak years when 75,000 pheasants were released, those surviving to reproduce or be available to the hunter represented but a small portion of the take during the hunting season. The importance of natural reproduction as related to the game farm contribution can best be appreciated when we look at 1958, when the estimated pheasant harvest totaled nearly 500,000 birds. Obviously, game farm releases had little impact on this return.

While artificially propagated birds cannot substitute for natural propagation, the game farm remains vitally important for three reasons. First, there is need to retain a source for stocking areas depleted by winter losses or other natural catastrophes.

Secondly, game farm birds released before or during the hunting season can provide substantial recreation near population centers where natural production is limited. This is the major function today and most pheasants are released for hunting purposes. The third important contribution is to serve as a base for experimental production of exotic species which may have some potential for transplanting purposes.

Recognizing that the success of any wildlife species depends on ability to survive under natural conditions, the Wildlife Commission has emphasized habitat improvement as a major objective. Considerable effort is expended in developing food and shelter for upland game and encouraging landowners to consider wildlife needs in management. Saving the remaining habitat, particularly for upland game which do best on more productive lands, is proving most difficult as competing uses intensify with increased population pressures. Land use planning is the most vital activity to emphasize, for without such planning, all wildlife forms face a discouraging future. Despite the problems, the Wildlife Commission plans to exercise leadership in assuring a place for upland game in the future and urgently seeks the support of all concerned citizens toward that end.

The game farm will continue to function as a specialized activity although the results may not be as spectacular as in the past when new species were being established in the state. Adjustments based on experience and changing times have been necessary in the past and continued flexibility will be necessary in the future. Such flexibility will assure that artificial propagation plays a vital role in Oregon's upland game management program. □

Environmental Events

Support was given to three changes to the Forest Practice Rules and Regulations. If adopted, these would protect bogs, seeps, wet meadows, and similar water sources; provide the same definition for "waters of the state" as occurs in the State Environmental Code; and strengthen the rules governing road drainage and water pollution.

Study methods needed to determine Columbia River minimum flow requirements are being developed by a team of Wildlife Commission and other agency technicians.

Vandalism resulted in some 10,000 gallons of stove oil being lost from an orchard heating system near Medford. Although the oil did reach the Rogue River by way of Bear Creek, the preliminary investigation did not reveal fish loss or serious habitat damage. Staffs of the Wildlife Commission, Department of Environmental Quality, State Police and Coast Guard are cooperating in further investigations.

The Wildlife Commission will do a portion of the Oregon Coastal Conservation and Development Commission's Coastal Zone Fish and Wildlife Study. Other segments are to be done by the Fish Commission and SRG Associates.

The Fish and Wildlife Commission staffs prepared a joint report of potential impacts from geothermal energy exploration and development in Oregon.

A plan to offset Scoggins Reservoir (Tualatin River drainage) wildlife impacts was approved by the Bureau of Reclamation. Several tracts of project lands are to be improved by planting and fertilization to allow increased winter wildlife use.

After modification, approval was given to the proposed 700 boat marina on Yaquina Bay. Additionally, it was asked that angler access be permitted on all marina breakwaters. □

Wildlife Management Area Set Up In Baker County

The Oregon Wildlife Commission recently signed a 20-year agreement with Baker County for the management of some 1,578 acres of county land in the Sumpter Valley for wildlife production.

Dick Scherzinger, the Commission's habitat manager for the Northeast Region, says the area turned over by the county consists of wastelands created by gold dredging in the 1930s and again in the 1950s. Some 45 miles of narrow, shallow ponds have filled in between the dredge tailings, and four miles of the Powder River run through the center of the project.

Over the years the area has gradually begun recovering some of its ground cover and has become a home for many forms of wildlife, especially waterfowl and water mammals. Some 200 broods of ducks and 10 to 15 broods of Canada geese are now produced on the area each year. The shoestring ponds create an estimated 90 miles of edge effect, so important to many wildlife species. Here abundant willow and cattail growth has provided food for expanding populations of beaver and muskrat.

Effective management practices will make the area more attractive for wildlife and also expand its recreational potential. Scherzinger says management plans include the development of a number of small fishing ponds which will be stocked with rainbow trout. Food crops will be planted to supply wildlife forage in the areas where there is sufficient topsoil. Trees and shrubs will be planted for wildlife cover and to provide streamside shade for the Powder River. Scherzinger says earthen dams will be constructed to deepen some of the ponds and to provide others where none now exist. By altering the water flow through the area it should also be possible to improve some of the stagnant water areas.

A nature trail will be constructed through part of the area to provide better opportunities for public viewing of wildlife and for educational use, Scherzinger says. Hunting and fishing will also be major attractions.

□



Photo above gives an aerial view of the gold dredge tailings in the Sumpter Valley. The ridges of gravel were left after the dredges moved through taking out the gold. Since the working in the 30's and 50's, nature has softened the effect and the Commission is using the water and edges to produce wildlife habitat. The photo below shows a Canada goose nesting box erected amongst the rubble.

Photos by Dick Humphreys



This and That

compiled by Ken Durbin

Poaching in Russia can be hazardous to your health, according to a report in *Colorado Outdoors* magazine.

The hunting season had ended on the waterfowl marshes of the Oka River when three unarmed wardens arrived to investigate reports of shotgun fire. Two armed men fled. The wardens pursued and in a confrontation with the poachers two of the wardens were shot, one fatally. On being apprehended, the killer was tried and promptly executed by a firing squad.

*

Cornell University researchers have found a partial answer to a question that has baffled scientists for years. What subtle sensory cues enable a bird to navigate its way to an unseen site and then home in with spectacular accuracy?

Researchers at the New York State College of Agriculture and Life Sciences, Cornell, have found for the first time that birds can sense small changes in air pressure, equivalent to a drop in altitude of less than 20 feet, and can "see" polarized light. (Polarized light is characterized by having all its energy waves vibrating in one direction.)

Although Kreithen and Keeton have not yet determined to what extent birds use these newly discovered sensory powers, they speculate that the ability to sense polarized light and barometric pressure changes would be of major value to birds, both when flying and on the ground.

The ability to sense air pressure changes, for example, may help birds to select the best time for committing themselves to marathon migration flights when favorable winds and weather would speed their flight. The ability might also help them locate thermal updrafts and air turbulence.

The Cornell researchers also said that the ability to sense polarized light would be a prime navigation aid to birds, since the plane of polarized light in blue sky is related to the position of the sun. The detection of sky polarization could be used as a navigation cue when the sun, which provides compass cues, is obscured by clouds.

These and other findings have yielded only a rudimentary explanation of a baffling mystery — why a bird's ability to navigate excels that of any device conceived by man.

From Conservation News

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In Pennsylvania, Game Commission personnel removed 25,634 whitetail deer killed by vehicles on roads in the state last year. This is about 800 fewer than the record 26,435 killed on Pennsylvania highways in 1972. The figure is conservative and includes only those animals removed by Commission personnel.

The number of deer killed by vehicles in Pennsylvania exceeds the number of whitetails harvested by hunters in 35 other states.

From Pennsylvania Game News

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Last month we indicated in this column that Golden Eagle Passports, which provide admission at national parks and recreation areas, could be obtained at first and second class post offices. We have since learned that the post offices will not carry them this year. In Oregon they may be obtained at the Portland offices of the National Park Service and the U.S. Army Corps of Engineers. They are also available at Corps of Engineers offices in The Dalles, Foster, and Lowell; U.S. Forest Service offices at Eugene; and at Crater Lake National Park and Fort Clatsop National Memorial.

*

The 3,492 gray whales counted off the California coast from December 18, 1973 through February 4, 1974 represents the highest total since the count began seven years ago, according to the Wildlife Management Institute. The annual census is taken by the National Oceanic and Atmospheric Administration near Monterey, California during the animals' southward migration.

The annual census is the most reliable indicator of the population trend of gray whales. The count, of course, is not accurate but is a good index of relative abundance. The gray whale is on the U. S. endangered species list along with the finback, sei, sperm, bowhead, blue, humpback, and right whales. It also is protected under the International Whaling Convention.

From Conservation News

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Less than one-half of one percent of your federal taxes go toward environmental and natural resource expenditures. According to economist-columnist Sylvia Porter, a person earning \$13,000 a year pays out \$3,623 in direct and indirect federal taxes. Only \$17 is used for controlling air and water pollution, managing natural resources, for parks, wildlife, recreation, and many other programs. Agriculture and rural development get three times as much, \$57. The largest share is for health and income security, \$1,382 or 38.15 percent of the total, and national defense spending consumes \$1,058 or 29.21 percent.

From Texas Parks & Wildlife

*

Skunks destroy more insects than all other mammals combined. A study on an 8-acre tract in Canada estimated that skunks ate 115,000 white grubs in a relatively short time. During an outbreak of the range caterpillar in New Mexico, skunks made this pest 60 to 90 per cent of their diets.

Skunks are protected in New York because they effectively control the hop grub, a serious pest in hop fields. So, next time you drink a beer, drink one to a friend—the skunk.

Incidentally, they don't eat game birds' young or their eggs. A study of 1,700 skunks revealed no trace of game birds or their eggs.

From Scoreboard West □

Scientists Call For Broad Conservation Effort

WASHINGTON — An intensified broad-based conservation effort must be mounted if the diversity of the world's species and habitats, and the earth's ability to support man, are to be preserved.

This was the conclusion of twenty scientists gathered by the World Wildlife Fund-United States Appeal and the Smithsonian Institution to a two-day symposium on the biotic impoverishment of the earth concluded April 6 at the Smithsonian's Belmont Conference Center. The symposium was supported by the Ford Foundation.

The scientists, renown for their work in ecology and biology, stressed the urgency of countering the most rapid deterioration of the earth's life support systems ever witnessed in evolutionary history. Noting one estimate that the rate of extinction has risen alarmingly from 10,000 species per century to the prospect of at least one million in this century, they urged World Wildlife Fund and the conservation community at large to launch a two-pronged campaign: escalating current habitat preservation efforts; and developing new strategies to address the larger problem of changing man's exploitative approach to his natural environment.

Their suggestions will be analyzed by the World Wildlife Fund-U.S. to determine how it can best serve these conservation goals.

Dr. George M. Woodwell, chairman of the projects committee of the World Wildlife Fund-U.S. and Senior Scientist, Department of Biology of the Brookhaven National Laboratory, approved the proposed shift in emphasis to habitat preservation. "The species by species approach of the past is inadequate," he said.

Professor G. Evelyn Hutchinson, recipient of the Tyler Ecology award, noted the loss of diversity of habitats and species in the world not only closes man's options for practical use of these resources in the future, but removes the tools a scientist needs to

serve humanity. Without natural ecosystems the scientist will be unable to unlock the natural laws that may be critical knowledge for man's future.

The current prospect of losing the original tropical rain forests of Latin America, with perhaps one million of the earth's species, was underscored by Dr. Peter Raven, Director of the Missouri Botanical Gardens, who stressed the urgency of a comprehensive habitat preservation program for this area in which so little is known.

Dr. Roger Payne, discoverer of the long-distance communication of the humpback whale, and Dr. Daniel Janzen, tropical ecologist and associate professor of zoology at the University of Michigan, proposed a Museum of Natural Habitats be established — a world-wide collection of wild places and natural spectacles. They asserted this might capture the public imagination, justifying it with the same aesthetic principles supporting the preservation of art in museums — preservation for man's cultural enrichment.

But ultimately, the scientists realized, isolated islands of pristine wilderness will not solve the larger problem of conservation — convincing man that his activities are resulting in irreversible consequences to the earth's ability to support him.

"It's as simple as a colony of bacteria in a test tube," observed Dr. Thomas E. Lovejoy, projects administrator for WWF-U.S. "You can only grow so far until you begin to poison your environment."

Many scientists emphasized the efforts of conservationists will be lost if the governments of the world do not accept the message that conservation is synonymous with survival.

Increasing the conservation movement's political effectiveness will require a major and rapid effort by scientists. They must document claims of the eventual irreversible economic and ecological damage resulting from the destruction of the earth's natural systems, stressed Dr. Woodwell.

One means to accomplish this, suggested by Dr. Raymond Fosberg, Curator of the Department of Botany at the Smithsonian's Museum of Natural History, is to confront decision makers with persuasive models — a series of case histories of the

biotic impoverishment of various islands and its effects on the inhabitants.

Dr. Herbert F. Bormann, professor of forest ecology at Yale University, called for training a "new breed" of conservation leaders and scientists who are able to communicate in the same language as the decision makers. He urged a new institution be established to train biologists with a truly multidisciplinary approach — acquainting them with the social, cultural, economic and political factors affecting governmental response — so that scientists "can answer the question of how to integrate nature into a social system that will meet the needs of the people." Further he suggested the scientific establishment imbue its students with the conservation ethic.

While Dr. Janzen advised that knowledge of a country's culture and politics could be more crucial to conservation efforts than the biological study, Dr. Bormann cautioned conservationists not to abandon support of ongoing scientific research in their concern with the immediate threats to the environment.

Noting the urgency of applying available knowledge to conservation action, Dr. Raven recommended an information retrieval system be established to avoid duplication of efforts by scientists and conservation groups.

Dr. Bormann emphasized the need for a massive educational program to combat the ethic of "growth as progress," which he labelled the crux of the environmental dilemma. Dr. Lovejoy suggested educational seminars for industrialists and political leaders could prove fruitful.

The challenge to conservationists, observed Dr. Frank W. Preston, theoretical ecologist, "is to find a way to involve the short range interest of politics with the long range interest of science and conservation."

Dr. Payne and Dr. Lee Talbot, senior ecologist on the President's Council on Environmental Quality, emphasized that this will only be possible if conservation shifts from its present crisis orientation to one of prevention. Governments must be approached to employ conservation measures before one-tenth of the world's plant and animal species become endangered. □

Spring Chinook Rogue River Study

By Jim Lichatowich,
Research Project Leader

The Oregon Wildlife Commission has initiated a study of the Rogue spring chinook. The study will be centered in Gold Beach and is expected to continue for several years.

The main objective of the study is to evaluate the effects of Lost Creek, Elk Creek and Applegate dams on the Rogue fishery resource.

These three dams are part of a comprehensive project presently under construction by the U.S. Army Corps of Engineers. Included in the corps' project are provisions for enhancement of the fishery. The dams are being constructed so that summer water temperatures may be reduced and summer flows increased.

The Wildlife Commission study will determine if the projected fishery enhancement goals are reached and if the operation of the dams has any adverse effect on the Rogue salmon and steelhead runs.

Another aspect of the study will be the development of a successful hatchery program for spring chinook at Cole Rivers Hatchery.

You may have already noticed the Wildlife Commission crews at work in the lower Rogue near Elephant Rock. These biologists are trying to develop an effective means of capturing spring chinook without causing unnecessary stress to these big fish.

So far two methods have been used. An electro-shocking equipped boat has been operating between Lobster Creek and the port of Gold Beach. This technique employs a gas powered generator mounted in a drift boat. Electrodes emit pulsating DC current which immobilizes the fish.

The other crew is using a conventional beach seine and has concentrated their effort in the Elephant Rock area.



A beach seine is one method used to capture adult salmon. The boat pulls the net across an eddy and back around to shore. Biologists pull the net in by hand. It's tricky business to keep the fish in the net once they sight their captors.

After the fish are tagged, weighed, measured, and scale samples are removed, the fish are held gently in the water until they recover their equilibrium. Then they are released to continue their journey upstream.



Once a fish is captured, it will be marked with a color-coded anchor tag. These tags will not harm the fish. Fishermen are urged to return the tags found in any fish they catch,

along with the date and location of the catch. Prompt returns will aid in our understanding of the spring chinook and the effects of the new Rogue River dams.



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