

A black and white photograph of a fishing boat deck. A large, conical fishing net is the central focus, brimming with a catch of fish. The net is suspended by ropes and has several dark floats visible at its base. In the background, a man in a light-colored jacket stands on the deck, looking towards the net. The boat's structure, including masts and rigging, is visible. The foreground shows the dark, choppy water of the sea.

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Speaking About vs.

Speaking For Wildlife

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The Cover

The hake, now known officially as Pacific whiting, is an abundant ocean resource off Oregon which is only now beginning to be sought by U.S. fishermen. Mike Hosie's article in this issue takes a look at this potentially valuable fishery.

Photographer unknown

HUNTER EDUCATION PROGRAM INSTRUCTORS APPROVED

Month of October15

Total Active.....1,559

STUDENTS TRAINED

Month of October2,064

Total to Date260,892

HUNTING CASUALTIES REPORTED IN 1978

Fatal.....4

Nonfatal.....32

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A Guest Editorial by W. Donald Dexter
Assistant Director
Wyoming Game & Fish Department

Editor's Note: We are passing along a portion of an editorial that appeared in Wyoming Wildlife magazine in October of this year. Though the writer was speaking in terms related to Wyoming, we feel his concept and the points he makes are equally applicable here in Oregon. He opened by giving a brief history of fish and wildlife laws in Wyoming. Here in Oregon some of the first fish and wildlife laws were enacted in the late 1800s, about the same time it occurred in Wyoming. The editorial continues from that point.

From early efforts the wildlife statutes and management programs of today gradually evolved. For the most part this evolution was accompanied by controversies of varying magnitude. While the intervening years have witnessed dramatic changes in public attitudes and wildlife management techniques, the conflicts over the continued existence of wildlife, even though of a different nature, are probably as prevalent now as at any time in history.

The primary difference between the turn of the century and today is that problems confronting wildlife are far less obvious. Earlier, market hunters ranged the State from border to border, taking animals by the tens of thousands primarily for their hides, and in the case of elk, "tusk hunters" were an additional threat. There were fishing and bird hunting expeditions where wagonloads of these forms of wildlife are reported to have been taken. In view of these conditions and the fact some species were actually threatened with extinction, it was evident the State needed to gain control over when, where and how fish and game resources were to be harvested and provide a means to enforce the statutes. Even this was no easy task as the State was large, making enforcement most difficult, and for a time there was a great deal of resistance and lack of support by the general public.

Attitudes about restrictions gradually changed, however, and unfortunately are viewed by many today as the solution to any and all wildlife problems. While this is so where the harvest rate on a given species exceeds their reproductive capability (as was occurring at the turn of the century), wildlife managers are now confronted with the more subtle problem of a shrinking habitat base.

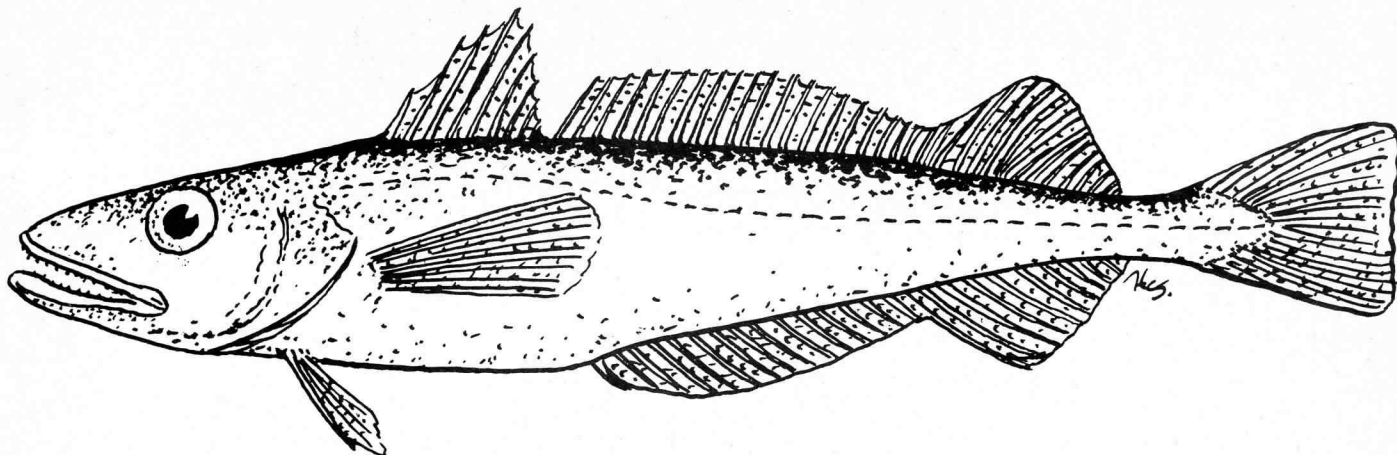
(continued on page 11)

COMMISSION MEETINGS

The Fish and Wildlife Commission will meet two days in general business meetings on December 14 and 15. Both meetings will begin at 9 a.m. in the conference room at Department headquarters, 506 SW Mill Street in Portland.

Informational reports on the hunting seasons, a discussion of the eastern Oregon bobcat pursuit season, and discussion of elk management are on the December 14 agenda. On the 15th the Commission will consider a Crow Zellerbach application for a private salmon hatchery permit, accept a gift of land along the Santiam River, and consider other business as may be scheduled.□

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What the Hake is a Pacific Whiting?

by Michael Hosie
Groundfish and Shrimp Management Biologist

The Pacific whiting or hake is one of the most abundant fish off the west coast. Recent estimates by U.S. biologists place the Pacific whiting population size at from about one to two billion pounds, with approximately one-half of this off Oregon.

Yet until recently Oregon and other west coast commercial and sport fishermen haven't tried to catch Pacific whiting. They called it a trash fish, cursing this soft-fleshed, snaggle-toothed interloper that took their hook or fell into their nets. Although a nutritious mild-flavored fish, Pacific whiting flesh gets soft if not processed quickly. It has been outdistanced by glamour fish like salmon or fish such as sole which do not have to be processed quickly.

In the mid-1960s, large foreign trawlers began reaping bountiful harvests of Pacific whiting within a few miles of Oregon's coast. This foreign fishery frequently interfered with traditional American fisheries. There was nothing Oregonians could do about this except stand on their pitching decks, shake their fists and complain bitterly to fisheries officials, who also could do little. Negotiated agreements with the U.S.S.R. and

Poland who were fishing for Pacific whiting, helped somewhat. Little effort was made by Oregon commercial trawl fishermen or processors to target on Pacific whiting due to the need for immediate processing, few markets, and no guarantee of priority over the foreign fleets in harvesting the resource.

Then in 1976 Congress passed the Fishery Conservation and Management Act, creating the 200-mile fisheries conservation zone off the U.S. coasts. The act says foreign fishermen will be given permits to fish only if American fishermen are incapable of harvesting and processing the entire total allowable catch of a species of fish. The act assures American fishermen that the Pacific whiting population will not be overexploited. Thus, a domestic Oregon foodfish trawl fishery on Pacific whiting has begun to develop since 1977. In concert with this, an effort has been made to use the market name of Pacific whiting rather than Pacific hake which this fish has been called for years. This is being done because few fish are sold as "hake", yet almost all species of fish called "hake" are actually marketed as whiting. Calling the "hake"

caught off Oregon a "Pacific whiting" would allow fair market competition with other whiting yet still identify it to species. This market name change to Pacific whiting has been supported by numerous groups and agencies, including the Oregon Department of Fish and Wildlife. The states of Oregon, Washington, and California have done everything legally they can to support the market name change. A petition to legalize the market name Pacific whiting has recently been adopted by the U.S. Food and Drug Administration.

Why has the disinterest in Pacific whiting changed? What do these changes mean to Oregon? Because of its great abundance, Pacific whiting offers great promise for increasing the catch of Oregon's commercial trawl fishery, which is reaching near capacity in traditional groundfish fisheries. There is also the possibility of increasing Pacific whiting in the marine fish sport catch. In the Atlantic Ocean off the east coast of the United States a related soft-fleshed "whiting" (silver hake) provides much recreational opportunity for marine sports anglers. In 1975, for example, 100,000 U.S. sports anglers caught



Until recently Oregon fishermen did not fish purposely for whiting, considering them a nuisance species to be discarded. Oregon trawl fishermen concentrated their effort on flatfish and rockfish.

over 2 million pounds of "whiting" (silver hake) in the northwestern Atlantic. Increasing Oregon's Pacific whiting landings would provide more jobs in Oregon's coastal communities as well as additional recreational opportunities.

Distribution and Biology

The scientific name of Pacific whiting is *Merluccius productus* which translates to "drawn-out sea pike". This aptly describes the species which is elongated and pike-like, with a large mouth, large eyes, and silver color. The Pacific whiting is one of eleven species of whittings in the genus *Merluccius* found in the world, all of which are similar. Whittings, along with ocean walleye pollock, and haddock are in the cod family.

Pacific whiting occur in abundance from Baja California to southern British Columbia. Studies suggest a single population inhabits the oceanic region. A distinct offshoot population, not discussed here, exists in Puget Sound, Washington. Pacific whiting often is classified as a bottom-dwelling species, but its distribution and behavior suggest a largely mid-water existence.

Pacific whiting grow quickly during their first four years. At about 16 inches total length and 4 years of age Pacific whiting mature. Mature fish

on the average weigh about 2½ pounds and are about 21 inches long. They reach a maximum weight of about 10 pounds, a length of over 36 inches, and a maximum reported age of 16 years.

Adult Pacific whiting make extensive annual north-south migrations along the west coast of North America. From spring through fall they feed northward along the coasts of northern California, Oregon, Washington, and British Columbia. Northwest wind patterns cause "upwelling" to provide a rich food supply. In late fall when the winds shift and come from the south, upwelling stops and adult Pacific whiting begin a southward spawning migration to southern California and northern Mexico.

About half the adult Pacific whiting population has been found off Oregon from April-October in large schools. Most of these schools form over the continental shelf from 3 to 40 miles offshore in bands which parallel depth contours. The distance above the seabed varies during the time of day and with the season. Schools may persist for several days. Length of schools varies from 200 feet to 12 miles. Usually schools range from 1/6 mile to 2 miles wide, but widths as large as 8 miles have been recorded. Most schools are 18 to 60

feet deep. Large schools can also occur close to one another in "aggregations". One aggregation of schools surveyed by National Marine Fisheries Service biologists in September 1975, occurred on the southern Oregon continental shelf from Florence to Coos Bay and was estimated to contain about 206 million pounds of Pacific whiting!

Pacific whiting exhibit during this spring-fall period a daily vertical movement associated with nighttime feeding activity. During the day, they usually are in schools near the seabed and feed little. Vertical movement begins at dark and by 11 p.m. the schools have dispersed into mid-water. These scattered whiting feed during the evening, primarily on euphasids (small shrimp-like organisms), shrimp, and fish. By dawn, whiting descend and begin to regroup in schools near the seabed, usually in the same area where they were the day before.

In late fall-early winter Pacific whiting leave Oregon and begin their southward spawning migration. Spawning occurs primarily from January-April. Whiting spawn in mid-water at depths of 100-300 fathoms. Each female releases from 33,000-496,000 eggs depending on body size. The eggs are fertilized externally by the males. Eggs average about 1/25 inch in diameter and hatch about three days after spawning. March appears to be the peak spawning month. Off southern California-northern Mexico Pacific whiting larvae are very numerous, out-ranking all but Northern anchovy in abundance. Whiting larvae assume a juvenile stage and slowly move inshore to the continental shelf and become more closely associated with the seabed. Immature 1- to 3-year-old whiting are found in near shore waters off California and southern Oregon and Pacific whiting less than four years old are found only rarely north of Cape Blanco in southern Oregon.

The Fishery

Until recently Oregon fishermen did not fish purposely for whiting, considering them a nuisance species to be discarded. Oregon trawl fishermen concentrated their effort on flatfish and rockfish which could be held

in ice for 1-4 days aboard their boats even though they caught and discarded large quantities of whiting. When fishermen tried to preserve whiting in the same manner they found its flesh quickly became unacceptably soft. This softness is due to a high level of proteolytic enzyme in the whiting flesh that can break down the muscle structure quickly. The enzyme can only be held in check by quick handling and chilling down to 32° F or below within 4-6 hours. Most U.S. fishing trawlers were ill-equipped and did not have the capital nor market to concentrate on whiting. An exception was in 1966-68 when a federally subsidized fish meal fishery took place off Washington. In mid 1968, however, the subsidy ended and the fishery quickly folded.

Then in March 1966 a large fleet of Russian trawlers and accompanying support vessels showed up off the Oregon coast to fish on the virtually untapped Pacific whiting resource. Declining production of other fish, including other whiting species, on traditional fishing areas caused the U.S.S.R. to seek grounds off the California-British Columbia region for the first time. Initially, the Soviets used side trawlers about 150 feet in length with a crew of 22-26 to catch whiting. They then transferred the catch to a mother ship for processing and storage. Gradually the side trawlers were replaced by larger factory stern trawlers, each with an 80-100 person crew, where the entire processing was done.

Other foreign nations have also participated in the Pacific whiting fishery including Japan (1970-76), Poland (1973 to present), the German Democratic Republic (1973-76), Federal Republic of Germany (1975), and Bulgaria (1976). This foreign fishery peaked in 1976 when over 100 vessels, from five nations, mostly Russian, caught 508 million pounds of Pacific whiting off California, Oregon, and Washington.

Fish are located with sophisticated electronic equipment. Trawl catches are large, up to 200,000 pounds per tow. The trawl full of fish is brought up a stern ramp and dumped directly into a dry storage bin on older trawlers or a refrigerated seawater tank on newer vessels.

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If placed in a dry bin, the fish are held not more than 4-6 hours before processing. Fish can be held up to 48 hours prior to processing in seawater tanks. The whole whiting are removed below decks from the initial storage area and transferred by conveyor belts through the factory. Processing on most of the Russian vessels includes heading, eviscerating, washing the headed and gutted product, and freezing. The processed fish are placed in shallow pans, about 30 per pan, and frozen into blocks. After freezing, the blocks are removed from the pans and packaged in cartons to be stored in freezer holds.

The newer Russian and other foreign trawlers are equipped with mechanized fillet lines. On these vessels only the small whiting are headed, eviscerated and frozen in trays. Most of the catch is filleted, placed in fillet block molds, and frozen. Blocks are then placed in cardboard containers and stored in freezer holds. Heads, viscera, and any whiting not suitable as a fresh-frozen product are delivered to shipboard meal and oil plants for reduction. In addition, some of the foreign vessels save the livers and eggs for human consumption. Most of these foreign-caught whiting are used in the Soviet Union or Europe. The headed and gutted fish are sold individually to consumers in markets. The fillet

blocks are cut up frozen into fish sticks or fish sandwiches and repackaged for consumers. Some of the Polish whiting blocks are thought to have been off-loaded in Mexico and brought into the United States to be sold as "Whiting". The whiting fish meal has reportedly been used in chicken feed while whiting oil has sometimes been used in margarine in the Soviet Union.

Since inception of the 200-mile law off the U.S. the foreign Pacific whiting fleet and its total catch has been substantially reduced. Foreign fishermen are allowed to take on a permit and poundage quota basis only those species of fish, such as Pacific whiting, which U.S. fishermen are not harvesting or are substantially underharvesting.

There is an annually adjusted Total Allowable Catch (TAC) figure, based upon abundance of age groups in the population, set for Pacific whiting. This TAC allows an adequate harvest by fishermen without overexploiting the resource.

Most biologists believe the population size of Pacific whiting ranges from about 1-2 billion pounds, based on detailed population surveys, with a "safe" TAC harvest of 336-441 million pounds. Since its beginning in 1966, the foreign Pacific whiting fishery annual catch exceeded this 441 million pounds in five separate years. Whenever this occurred, signs of



In order to avoid softness, whiting must be processed on board or on a factory ship within hours after death. If held in seawater tanks, processing can be delayed up to 48 hours.

stress, including increased proportion of immature fish and substantially reduced pounds caught per hour occurred. Hence, it appears the Total Allowable Catch of Pacific whiting will probably rarely exceed 441 million pounds per year in the future.

Only three foreign nations have been allowed to fish for Pacific whiting off the U.S. since the 200-mile law took effect. Both the U.S.S.R. and Poland were allowed to fish for Pacific whiting off the U.S. in 1977 and 1978. They were allocated quotas totalling 276 million pounds in 1977 and 265 million pounds in 1978. They only used 35-45 vessels during each of these two years, down substantially from 1976 — the year before the 200-mile law went into effect. Mexico was given permission to fish for Pacific whiting in 1978. In return it allowed U.S. fishermen to fish for shrimp off Mexico. However, Mexico chose not to fish for Pacific whiting, apparently because it geared up its vessels too late in the season.

Each foreign country must pay a poundage fee, license fee, and U.S. observer costs for the privilege of fishing inside our 200-mile zone. Presently, foreign fishing for Pacific whiting is only allowed north of north-central California and only from June 1-October 31 (or until poundage quotas are reached). Each vessel must also keep a detailed logbook and fish only in midwater with trawls having meshes large enough to discourage catching immature whiting or other juvenile fish. In the two seasons the 200-mile law has been in effect, there has been less conflict between foreign and U.S. fishermen than in previous years, although problems still occur.

U.S. groundfish trawl fishermen and processors are gradually beginning to get into the Pacific whiting foodfish fishery, especially as traditional groundfish fisheries near their maximum yield. Approximately 500,000 pounds of Pacific whiting for human consumption was landed in Oregon in both 1977 and 1978. This was more than any previous year. It was primarily caught by one vessel out of Astoria which machine processed the fish quickly at sea. Other Oregon trawl fishermen were eager to get into the Pacific whiting fishery. However, they had neither vessel equipment for processing at sea nor

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Pacific whiting is now available in some markets as fish sticks or fish patties and is beginning to be used for "fish and chips" in some restaurants.

wanted to wait for shoreside processors to gear up for whiting. Hence, in September and October 1978 three Oregon trawl vessels caught and delivered via a "net-swapping arrangement" well over one million pounds of Pacific whiting caught off Oregon to two Russian stern trawlers for processing. This "joint-venture" involved a U.S. corporation called Marine Resources Incorporated, made up of the Russian government and a U.S. cold storage plant. The corporation bought the whiting from Oregon fishermen, processed them on the Russian vessels and plan to market the products throughout the world.

When first proposed in 1977 this venture alarmed U.S. shoreside processors. They were cautious of investing money in whiting equipment unless they were assured a priority over joint-ventures in obtaining whiting from fishermen. This processor priority was assured in August 1978 when an amendment to the 200-mile law was passed by Congress and signed by President Carter. Oregon shoreside processors are now slowly gearing up to process whiting. Full production will probably not occur until sometime in the 1980s. In the meantime, some Oregon fishermen can develop the necessary mid-water trawling gear and skills needed to

catch Pacific whiting by delivering their catch to a foreign vessel in a "joint venture" arrangement.

Consumer Use

As the infant U.S. domestic fishery for Pacific whiting grows, the average Oregon consumer will see more of this species in the market. Presently, you can obtain Pacific whiting through a few restaurants in Astoria and a few supermarkets in southern Oregon. You can also buy it mixed with shrimp in a product called "Shrimbo's", developed by the Oregon State University Seafoods lab in Astoria.

Where can you get "whiting" today in your own neighborhood if you want to taste some? Numerous Oregon grocery stores sell "whiting" from foreign countries and the U.S. east coast as packaged pre-cooked "batter fried" fish sticks or fish patties. In 1977 the U.S. imported over 30 million pounds of whiting. This influx began in the late 1960s and has been increasing each year due to demand for a mild, inexpensive highly nutritious fish.

For those who want to catch and eat their own Pacific whiting, here are some recommendations for processing, and two recipes. Fillet the fish as soon after catching as possible, at maximum within 4 hours of capture. (Editors note: Because of bag

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limit restrictions on bottom fish, the law requires you land the carcasses with the fillets for species identification). Caution must be taken when filleting to get out the "pin bones", which are vertical ribs behind the head. Hold the fillets on ice until ashore and promptly refrigerate. Whatever recipe is used, the important thing is to cook the fish fast, preferably in a very hot oil. Steaming, simmering, slow broiling and baking are methods that will allow an enzyme present in as many as 40% of whiting fillets to destroy the texture. The effect is like an overdose of meat tenderizer. Avoid problems by quickly filleting, chilling, and cooking Pacific whiting. The result will be a mild highly nutritious addition to your seafood diet.

FRIED PACIFIC WHITING

Cut fillets or steaks of fish. Soak in milk for a few minutes if fresh, for 24 hours if frozen (keeping it in refrigerator). Drain, dry with paper towel. Dip in beaten egg, then quickly in seasoned flour. Do not let set in flour. Then deep fry for about 6 minutes. Put on paper towels to drain excess oil. Serve with lemon and parsley. Frozen whiting is soaked in milk to make it more tender and fluffy.□

OKHA RYBATSKAJA

(Russian Fisherman's Fish Soup)

4/5 POUND PACIFIC WHITING
8 CUPS BOUILLON OR FISH STOCK
2 POTATOES, QUARTERED AND SOAKED IN WATER
2 ONIONS, WEDGED
4 MUSHROOMS, SLICED
2 STALKS GREEN ONIONS, CUT INTO 1-INCH STRIPS
1½ TABLESPOONS BUTTER
SALT AND PEPPER

Cut the fish into 12 pieces and pass quickly through boiling water. Pour bouillon into a sauce pan, add the fish, potatoes and onions. Bring to boil, lower heat and add mushrooms, cook for 20 minutes. Skim scum occasionally. Season with salt and pepper, ladle into a heated bowl. Sprinkle surface with green onion and float a piece of butter on surface. Serves four, good as course before fish dinner.□

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Oregon Fish and Wildlife Commission Meetings — 1979

January 18	Thursday	Compact Meeting — General Regulations and Winter Season
January 19	Friday	Opening Dates for 1979 Hunting Seasons
February 16	Friday	General Business
March 15	Thursday	General Business
March 16	Friday	Ocean Salmon Season — Troll and Sport
April 23	Monday	Compact Meeting — Spring Chinook Status Report — <i>Washington Host</i>
April 24	Tuesday	General Business
May 4	Friday	General Business
May 5	Saturday	1979 Game Mammal Regulation Proposals
May 24	Thursday	General Business
May 25	Friday	1979 Game Mammal Regulation Hearing
May 26	Saturday	1979 Game Mammal Regulation Decisions
June 22	Friday	General Business
July 26	Thursday	General Business
July 27	Friday	Compact Meeting — August Gillnet Season and Indian Fall Season
August 16	Thursday	General Business
August 17	Friday	1979 Waterfowl, Upland Bird and Furbearer Regulation Hearing
September 6	Thursday	Compact Meeting — Late Fall Gillnet Season <i>Washington Host</i>
September 14	Friday	Compact Meeting — Indian Fall Season Adjustments
September 21	Friday	General Business
September 22	Saturday	1980 Angling Regulation Proposals
October 19	Friday	1980 Angling Regulation Hearing
October 20	Saturday	1980 Angling Regulation Decision
November 16	Friday	General Business
December 14	Friday	General Business

Unless otherwise noted, all meetings will be held in the COMMISSION ROOM, Oregon Department of Fish and Wildlife, 506 S.W. Mill Street, Portland, Oregon. If you have questions, please call Judie Neilson, 229-5406.□

Duck Stamp Data Book Available

The latest revision of "Duck Stamp Data", a 50-page looseleaf booklet which pictures and describes each of the federal duck stamps that have been issued annually since 1934, has been published by the U.S. Fish and Wildlife Service. The colorful stamps constitute the longest-running, annually-issued series of stamps in revenue or postage stamp history.

Duck stamps, officially known as Migratory Bird Hunting and Conservation Stamps, are required of any person 16 years of age or older when hunting migratory waterfowl. "Duck Stamp Data" is of interest to philatelists, sportsmen, and other conservationists. It reviews the origin of the duck stamp, reports on how money

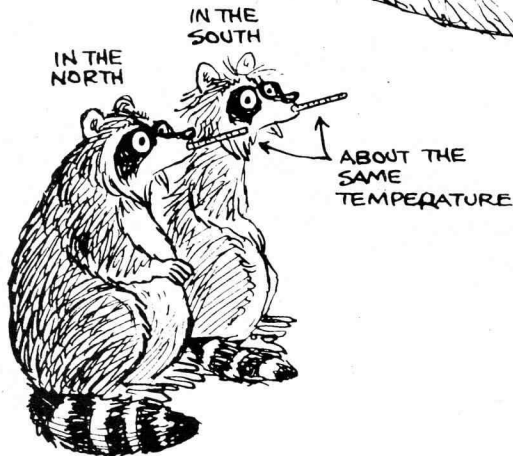
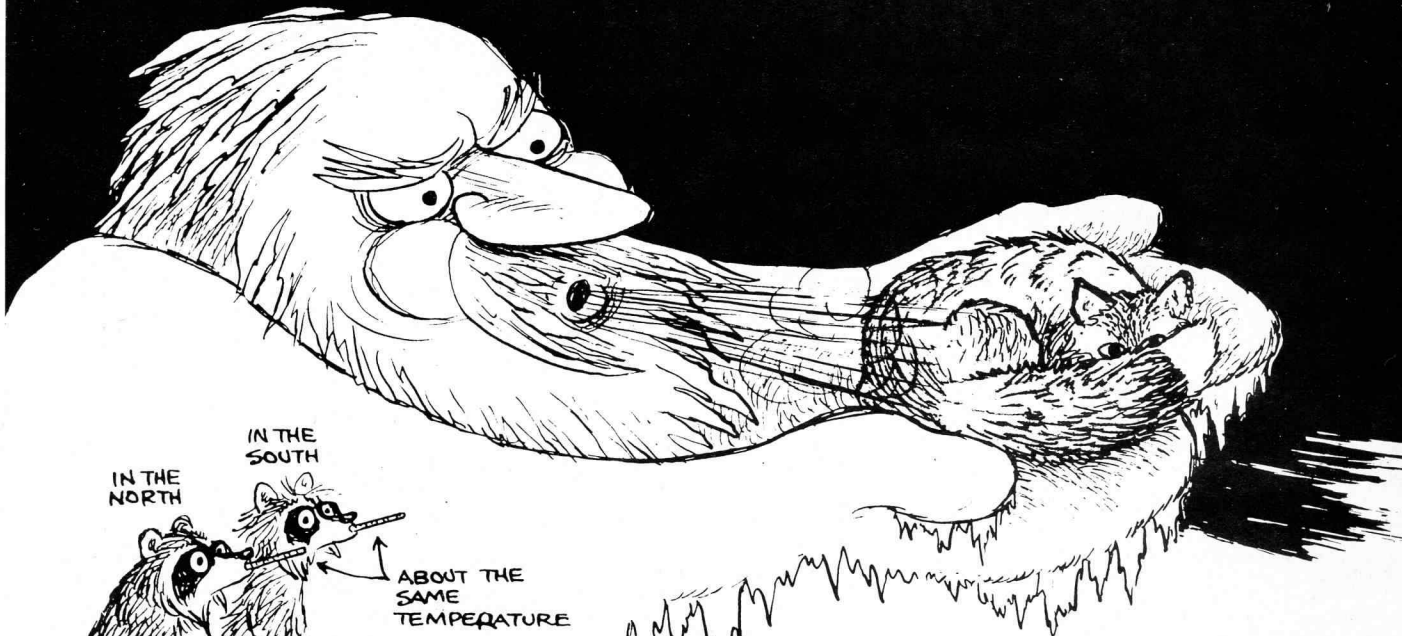
from stamp sales is spent, and explains how a new stamp is selected each year. Since the first stamp was issued in 1934, more than 72 million stamps have been sold. Funds derived from the sale of duck stamps are used to purchase, develop, and manage national wildlife refuges for migratory waterfowl. Since 1934, over \$200 million in revenue has been collected and used for the acquisition of 2.1 million acres of prime waterfowl habitat.

"Duck Stamp Data", also known as Fish and Wildlife Circular III, is available for \$2.50 from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Orders should specify GPO Stock Number 024-010-00455-0.

Kansas Fish and Game

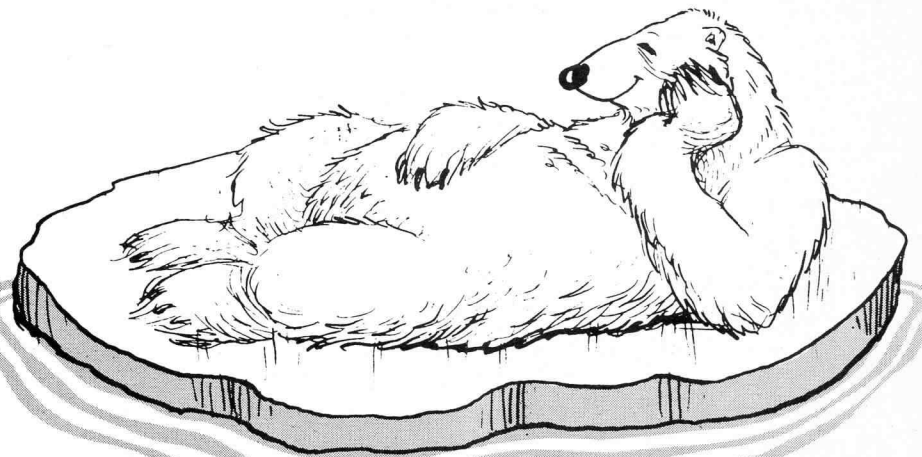
COPING with COLD

How warm-blooded animals are able to exist in the arctic



THE SINGLE MOST IMPORTANT DEVELOPMENT IN WARM-BLOODED ANIMALS FOR SURVIVAL IN THE ARCTIC HAS BEEN **INSULATION**.

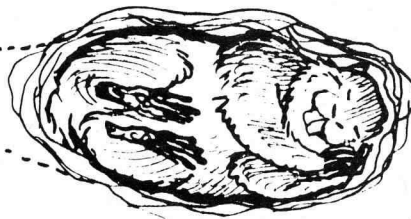
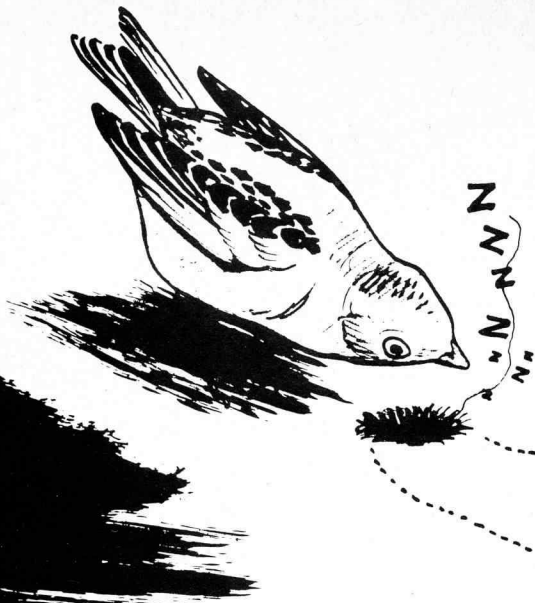
INTERNAL TEMPERATURE OF MAMMALS IN TEMPERATE AND ARCTIC CLIMATES IS NOT MUCH DIFFERENT. THICKNESS OF THE PELT OR FAT (INSULATION) SEPARATES THE COMFORTABLE FROM THE MISERABLE IN THE COLD.



FAT, UNDESIRABLE IN MAN, IS AN EXCELLENT INSULATOR. IN BEARS AND CARIBOU, FAT SUPPLEMENTS HAIR. IN "NAKED" SKIN SEALS, FAT IS THE ONLY INSULATION. FAT HAS TWO OTHER GOOD QUALITIES: IT IS UNCOMPRESSABLE (NICE WHEN LYING ON ICE) AND IT IS A FUEL WHICH CAN BE USED BY THE BODY TO MAKE HEAT.

FOR ARCTIC MAMMALS, BIG IS GOOD. FROM THE SIZE OF A FOX ON UP (WOLF, CARIBOU, BEAR, ETC.) HAIR, THICK AND LONG ENOUGH, CAN BE GROWN TO KEEP WARM IN VERY LOW TEMPERATURES. HOWEVER, THE PEEWEES, SUCH AS MICE, SHREWS AND LEMMINGS ARE LIMITED TO SHORTER HAIR. THEY NEED THE SHELTER OF BURROWS AND NESTS.

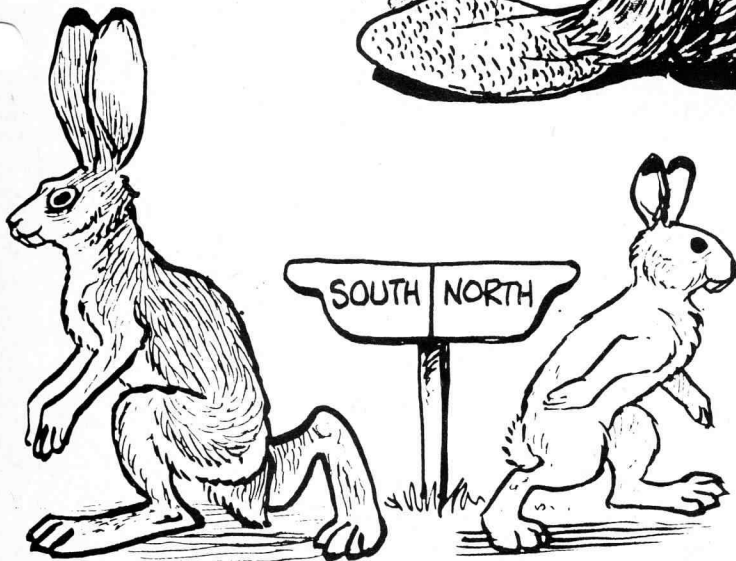
SMALL MAMMALS NEED SHELTER BUT MANY SMALL BIRDS DON'T. BIRDS ARE BETTER ABLE TO WITHSTAND COLD. THEIR EXPOSED PARTS SUCH AS THE HORNY BILL AND TENDINOUS LEGS AND FEET ARE NOT RICHLY SUPPLIED WITH BLOOD SO HEAT ISN'T LOST. OUTSIDE FEATHERS TIGHTLY COVER AN INNER LAYER OF AIR-RETAINING INSULATING DOWN, AN EXCELLENT BARRIER TO COLD AND MADE MORE EFFECTIVE BY FLUFFING.



INTERNAL TEMPERATURES NEED TO BE MAINTAINED WITHIN A NARROW RANGE. IF TEMPORARY OVERHEATING OCCURS, BLOOD CAN BE INCREASED TO THE TAIL AND LEGS (THE BARE PARTS) TO COOL THE BODY. CONVERSELY, TO CONSERVE HEAT, BLOOD FLOW TO EXTREMITIES IS REDUCED. UNLIKE SWEATERS AND COATS, FUR AND FEATHERS CAN'T BE PUT ON AND TAKEN OFF.



ADJUSTMENTS IN INSULATION ARE MADE FOR SUMMER WHEN A THINNER PELAGE REPLACES THE HEAVIER WINTER COAT



THERE IS A TENDENCY FOR BODY PROJECTIONS (EAR, TAIL, LEGS AND NECK) TO BE SMALLER IN COLD CLIMATES (ALLEN'S RULE). IN A COMPACT BODY HEAT LOSS IS MINIMIZED.

IN SEVERE COLD, MAMMALS CURL UP INTO A BALL-LIKE SHAPE, WITH LEGS AND FEET TUCKED IN AND MUZZLE COVERED BY THE TAIL (US EFFECTIVELY REDUCING HEAT LOSS BY RADIATION).



SEE EXAMPLE AT TOP OF OTHER PAGE DUMMY!

WARBACH

THIS AND THAT

compiled by Ken Durbin

Dogging Coyotes

Komondors, shaggy, heavy dogs first bred in Hungary to keep wolves from preying on sheep, are the subjects of a \$33,000 U.S. Department of Agriculture experiment to see if they can do the same for western sheep ranchers who claim coyotes are killing their sheep. Weighing as much as 120 pounds and costing anywhere from \$250 to \$500, the dogs may be the sought after alternative to shooting, trapping, and poisoning the clever coyotes. Komondors have already been found to frighten caged coyotes simply by walking past them. The tests, to examine ease of handling the dogs and their effectiveness in repelling coyotes, will be conducted at the Colorado State University in Fort Collins and the U.S. Sheep Experiment Station in Dubois, Idaho.

Conservation News

*

Cage Birds All The Rage

The cage-bird trade booms. Exports globally are around 7.5 million birds a year (1972 figures). Japan alone imports over one million. Of birds now in cages in U.S. homes, 80 percent started life in the wild in foreign lands. They are the "fortunate" ones; the survival rate between catcher and customer is around 20 percent.

Rare species are especially prized. Wild populations are declining alarmingly — at least nine have plunged into the endangered category. Some countries have introduced import controls but most have not.

IUCN Bulletin

Aid to States

Over \$70 million in federal aid funds for sport fish and wildlife restoration and hunter safety programs has been apportioned to the states and territories for use during the first half of fiscal year 1979. This is the first of two installments that will be distributed from excise taxes on sporting equipment collected in fiscal year 1978.

Fish and Wildlife News

Poachers Trapped by Science

Another old poaching trick has been foiled by science. It seems that some of the deer taken during bow-only seasons have actually been shot with rifles. The poachers have been shooting deer with firearms, then placing an arrow in the bullet wound and claiming the animal as a bow and arrow kill.

Fortunately, a chemical test has been developed that can detect lead levels in a wound. Recent court convictions have upheld the value of such tests.

South Dakota Conservation Digest

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New Mexico Tests Public

Last year the New Mexico Department of Game and Fish employed an anonymous "poacher" to test the public.

Nineteen illegal deer kills were made during the year and many more kills were simulated with deer remains but, out of 43 public sightings of the poacher, only once was he reported to the authorities. According to the department estimate, 33,984 illegal deer may be taken in New Mexico each year, amounting to over \$3 million in recreational value lost.

South Dakota Conservation Digest

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Caution: Jogging May Be Hazardous to Your Health!

On May 24 a young man who was jogging near Old Faithful in Yellowstone National Park spotted a grizzly bear following him. When he stopped jogging, the bear came up to him, stood up, and slapped him once on each shoulder. The bear then ran off, leaving the jogger unhurt but surprised. Eleven days later another attack occurred on a man jogging in Kansas City, Missouri. According to an AP report, the 185-pound jogger was knocked to his knees by the attack, which left him with three scratches and four puncture wounds. The jogger described his assailant as a bird with a white underbelly and tail and a wingspread of 5 or 6 feet.

Fish and Wildlife News

Pupfish Presumed Extinct

The Tecopa pupfish, a 1½ inch fish native to the Amargosa River near Death Valley in California, is being removed from the endangered species list — but not because it is no longer endangered. For the first time, the U.S. Fish and Wildlife Service is proposing removal of an animal because it is presumed extinct. Since 1970, FWS has been unable to find any trace of the fish which lived in the highly saline, warm water of the river. It apparently met its match with stream channelization, pollution, and introduction of non-native, competing species, said FWS. "The most depressing thing about this loss of life form is that it was totally avoidable. The human projects which so disrupted its habitat, if carefully planned, could have ensured its survival," said Interior Assistant Secretary Robert L. Herbst. Although not included on the endangered species list, another of the 12 subspecies of pupfish, the Shoshone pupfish of the same area, is also mentioned in the rulemaking as being extinct for the same reasons.

Conservation News

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Treaty With Soviets

The Senate has ratified the "United States Convention with the Soviet Union Concerning the Conservation of Migratory Birds and their Environment". The Convention, signed in Moscow in November 1976, provides for the protection of species of birds that migrate between the United States and the Soviet Union or that occur in either country and have common flyways, or breeding, wintering, or feeding areas. The Convention also encourages actions to identify and protect important habitat and to cooperate in protection of endangered migratory birds.

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Oldest Fish Found

Scientists from the U.S. Geological Survey have discovered fossils from the world's oldest known fish, called *Anatolepis*, in northwestern Wyoming. The fossils of the 1-to-3 inch, jawless fish are about 510 million years old, which extends back the age of the earliest known fossils of vertebrate animals by about 40 million years.

Fish and Wildlife News

DECEMBER 1978

Emergency Fishing Closure Set For Trask River

A section of the Trask River including the controversial "dam hole" was closed to all angling last month under an emergency rule adopted by the Fish and Wildlife Commission. Because of excessive snagging problems, a segment of river from the mouth of Blue Ridge Creek downstream to Department markers immediately below the dam hole was closed on November 7 and scheduled to remain closed through December 15.

Rains had caused a brief rise in river flows and many fall chinook salmon entered the river. They congregate in the dam hole area where they create an opportunity for both intentional and accidental snagging. Snagging is the illegal practice of hooking a fish other than in the mouth.

Observers at the dam hole found a high percentage of fish being taken in this way, some inadvertently and others on purpose. They also found a high percentage being killed and kept rather than released as required by law.

Concern that the excessive snagging may deplete fish below levels needed for spawning prompted the closure. Snagging has been a problem for years and one which the Fish and Wildlife Commission has been continually frustrated in its attempts to solve. Extremely complex regulations governing hook and sinker arrangements have been in effect the last couple of years. But they did little to stop the purposeful violator and meanwhile left many honest anglers in fear they were somehow violating the law even though they were trying

not to.

Under angling regulations adopted recently for next year, a different approach has been taken. The rules relating to hooks and weights have been simplified and specific problem areas will either have a single-hook rule in effect or simply be closed to all angling during the salmon runs.

The same section of the Trask closed under this emergency rule, for example, will be closed next year from September 1 through December 15. In discussions among Commission members during public meetings, it has been made clear they are fed up with snagging, frustrated with past attempts to deal with the problem, and will simply handle future problems by closing the areas during critical times.□

Speaking For Wildlife *(continued from page 2)*

Increases in human populations, extensive land use changes, additional water use, vegetation manipulation and accelerated development of energy resources all present a potential impact on fish and wildlife habitat. These changes have, until recently, occurred rather slowly and in fairly modest amounts. The pace has quickened in recent years and is likely to move even more rapidly in the not too distant future, accompanied by the loss of what has heretofore been prime wildlife habitat.

It is the Department's responsibility as the designated wildlife agency of state government to examine many of these proposals, evaluate impacts and recommend ways and means to alleviate or mitigate wildlife and wildlife habitat losses.

Many state laws pertaining to land management and the development and use of natural resources, including water, conflict with one another and especially with the legal responsibilities of the Department to maintain and provide a wildlife resource. Even with the most careful and judicious analysis, the Department cannot always avoid being in conflict with other resource management objectives.

Losses associated with each individual instance are generally not too

great but the cumulative impact on a statewide basis becomes significant. All too often the assumption is made that wildlife, whether it be fish, bird or mammal, will be displaced and can take up residence somewhere else. This is seldom true. More likely than not the habitat niches in that mystical "somewhere else" are already being utilized so a certain number of animals are destined to fade from the scene. The results of these activities are not as dramatic as were thousands of carcasses rotting upon the plains and in the mountains, or wagons heaped with fish and birds, but the end effects are very similar.

Often times by careful planning and a willingness on the part of each interest to compromise, habitat losses can be minimized and occasionally mitigated, but many times it is a prime example of the old admonition that "you can't have your cake and eat it too."

A subdivision extending into deer or antelope range, inundation of a critical wintering area or a free-flowing stream, loss of a sage grouse strutting ground or dewatering one stream may not seem too significant by itself, but multiply each over space and time and the long term effect becomes evident.

It is also the Department's respon-

sibility to advise the public and the executive branches of government on matters concerning wildlife so informed decisions can be made. The demands of today's society will mean a diminishment of habitat for the wildlife resources we are privileged to have now. But it is important that this occurs in an enlightened atmosphere and with the full knowledge of all concerned.

Historically there has been a tendency to compromise the wildlife resource in the face of economic growth accompanied by the promise of increased jobs and a utopian future just around a corner we somehow never quite reach. If we are to continue to enjoy the abundance of wildlife we know today, the habitat base upon which this resource depends must be preserved. But to do this, someone must speak *for* wildlife.□

Zoonappers

Moscow Zoo officials are a little paranoid these days and for good reason. Kidnappers in search of exotic pets have spirited away a deer in a taxi, a 90-pound turtle, and a king penguin that managed to find its way back to the zoo via a subway ride. Could they possibly have their eye on an elephant?

Conservation News

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Golden Eagle

Aquila chrysaetos

The golden eagle is Oregon's most common eagle. It prefers the open shrubby grasslands of eastern Oregon, where it hunts for rabbits, rodents, and other small mammals. Carrion is also readily consumed and golden eagles can often be seen along highways feeding on road-killed wildlife.

Golden eagles are not gold in color as the name implies. Actually they are dark brown and from a distance appear black. The name golden comes from the gold-brown hackles on the head and nape of the neck. The other distinguishing feature of the golden is the feathering on the legs that extends to the toes.

Golden eagles are not limited to North America but are found throughout the northern hemisphere.



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