New Jersey Outdoors

February 1971

Feeding the Birds in Winter
Rewards and Responsibility

Winter is the hard time for wildlife, particularly in our northern counties. Food sources that were abundant during the warmer months become scarce when the temperature drops, even scarcer when snows blanket the landscape. During the growing seasons, nature constantly refills the larder for her wild creatures. When this summertime supermarket shuts down in winter, however, what remains on the shelves must last until spring renews production. When it doesn't last, our outdoor neighbors may not either.

Of course, some wildlife solve the problem by other means; such as the southern migration by many birds; the true hibernation of some mammals, reptiles, and amphibians, and the semi-hibernating snooze of the bear. Among the remainder who neither hibernate nor head south are many of our song birds. And providing supplementary feed for these in wintertime is a praiseworthy pastime of many nature lovers. The rewards are two fold: a dependable supply of food for the birds when other sources are depleted, and the pleasure of not only helping but observing our feathered friends in close proximity. Attached to the rewards, however, is a responsibility, one that should be taken seriously. Once you begin feeding birds during the cold weather, you assume the obligation of continuing until spring.

For once you begin feeding, you will actually attract additional birds to your area. You may also encourage migrating birds to stop off and stay rather than continuing southward. They then become dependent on your cold weather commissary. Consequently, if you stop feeding in mid-winter, the local birds may not be able to find an alternate supply, and it may be too late and too cold for the migrators to change plans and make it south.

The most preferred feed for the seed-eating birds, such as sparrows, cardinals, and juncos, consists of the 'wild bird seed' mixtures of sunflower seeds, millet, hemp, and cracked corn. Birds definitely prefer this kind of fare to simple cracked corn or commercial chick scratch. Cracked corn, though, is excellent for those who don't want to attract migrating birds but merely provide emergency winter feed for local birds. Beef suet is a popular winter meal for insect eaters such as woodpeckers and warblers. Make it even more attractive by packing it with raisins, millet, rice and chopped peanuts. Leftover bread, rolls, oatmeal, cereal, and crumbs should never be thrown out but saved for the birds.

This refers to song birds. Feeding game is not recommended.

Bird feeding and watching offers satisfying rewards to both you and them. But remember not to run out on your contract. Once you open the store, keep it stocked all winter. #

New Jersey Outdoors

New Jersey Outdoors is published by the State of New Jersey Division of Fish, Game, and Shell Fisheries of the Department of Environmental Protection in the interest of the natural resources of fisheries and wildlife and the betterment of hunting and fishing in New Jersey.

In This Issue

Cover—"The Gray Fox"—*Harry Grosch*

The gray fox is quite common throughout most of New Jersey and seems to be able to hold its own despite the state's dense population and high degree of development. The gray fox usually prefers more heavy cover and brushier woods than the red fox. Rather oddly, the gray fox is an adept climber for a member of the dog family.

Vol. 21, No. 5 **February, 1971**

Publication Office: The Division of Fish, Game, and Shell Fisheries

P. O. Box 1809, Trenton, New Jersey 08625
Editor: R. Adams

Second-class postage paid Trenton, N. J. 08608, and additional mailing office.

Published monthly, except July, August, and September, this volume.

Subscription: $3.00 a year, by check or money order, payable to New Jersey Outdoors. Cash is forwarded at senders risk. No stamps please.

Change of address: Should be reported directly to the Editor. Send both old and new address. The Post Office will not forward copies unless forwarding postage is provided by subscriber. Copies not delivered through failure to send change of address six weeks in advance cannot be replaced.

What Is Wildlife?

By Dan Saults

And, prithee, what is Wildlife? Wildlife's but a mirror wherein gunner and angler make faces, mope, and pull each other's hair until—crack!—time's blow shatters the glass, and the biological desert shows beneath.

That awkward paraphrase from Percy Mackaye's generation-old play "The Scarecrow" leads into an aging man's troubled thoughts on wildlife's specialized specializations for specifics, plus a mounting fear that "wildlife" is no longer distinct from economic livestock. If a species hasn't market value in permit sales, few worry about it except do-gooders, who are interpreted as people that don't understand a budget, (They often *don't* understand that fish and game agencies have got to sell enough licenses to stay solvent.)

Anyway, we've got quail specialists, deer experts, bass authorities, and trout theorizers. "Waterfowl" biologists concentrate on either ducks or geese—and then subdivide their family into mallards or Canadas for particular emphasis. In game management, as in other fields, we've kept narrowing the focus until many peer through microscopes but few look at the panorama.

Granted there's *talk* about ecology. But we're drifting into a position where, in Werner Nagel's phrase, we're not only taking the wild out of wildlife, but defining wildlife as immediately shootable prey. Is it true (though understandable) that each wildlife manager has come to know more and more about fewer and fewer animals, and that most research is being done to provide more shooting or angling rather than on wildlife *per se?*

Coyotes and chipmunks, terrapins and toads are just as much a part of the "undisciplined" world as pheasants and phishes. The argument over "predators" has been won only in the minds of a managerial minority; we don't even know much about crows, because that wondrous disturber of the peace hasn't been popularized as "game." He's still a "predator," too.

("A predator," said afore-quoted Nagel, "is that creature which beats us to something we wanted to take ourselves.")

Now this organized concentra-

←— *All these are wildlife. National Wildlife Federation*

tion on "game" rather than wildlife is for good reasons, chiefly dollars. Those creatures which we creatures like to catch or shoot bring in the operating money for agencies charged with managing wild animals; inevitably these agencies become oriented to hunting and fishing. In this less than perfect world, there wouldn't be much research in wildlife except for the special tax paid by those who pursue it, and this body of citizens also provides a political bulwark against commercial extinction, whether by straight exploitation or by destruction of habitat. No biologist should downgrade "sportsmen"—not because those guys pay his salary, but because they foot the bill for studies that are going on.

Can we blame fish and game administrators for a narrow focus? Sure. *But*—they've got to provide the $3 . . . $4 . . . $6 million required for just about any state's wildlife budget these days. Where do they get the money?

Can we blame the public—whatever the public is? That's as pointless as crying "we need more education."

It's useless to assess "blame" or argue about "solutions." Maybe there aren't any devils—nor angels. It could be that we've limited our vision, sought private drawing boards, treated a specialty as the whole tapestry rather than a thread in the major design.

It would seem, in the nature of things (deliberate pun intended) that a biologist ought to take life for his province; that he above all people should try to see things whole, to play the "generalist" role that our society badly needs at this stage. Aristotle's views on Nature may not have been as sound as his philosophical abstractions—but those views "worked" for a long time.

Perhaps we should be seeking only a better way of living with our circumstances, rather than demanding ultimate solutions to species problems. Perhaps we ought to stop blurring our definitions even as we sharpen our research. Possibly—just possibly—the wildlife manager has confused his function of studying life with his byproduct of recreation. By my standards it will be a sorry world when *Homo sapiens* does not pursue with pleasure *Meleagris gallopavo*—but it will be an equally sad universe when there is within it no possibility of some creature (other than man) lurking dangerously in the wilderness.

Perhaps what we need, really, is to revive the ancient ideal of a naturalist-philosopher. Healing begins with the physician. #

Where do you fit in the picture?

Man, Homo sapiens, New Jersey's most common large mammal, contemplates the wild turkey, Meleagris gallopavo, our state's rarest large game bird. Although we do not currently have open seasons on turkey, many hunters have had the pleasure of seeing the grand birds in the woods

Water! Water!

The affects of water on our environment and affects on water in turn

By Hil Zich,
Bureau of Fisheries Management

Part two of a two-part article

The biological and physical domination that man exerts over the aquatic habitat and environment through the management and use of land and water upsets the interrelationships of aquatic organisms and enters the picture commonly with water pollution caused by siltation, chemicals, and sewage. Generally siltation is the most insidious because of its far reaching and lasting effects, chemicals the most dramatic because of massive, localized fishkills, sewage the most subtle because it may represent a questionable benefit.

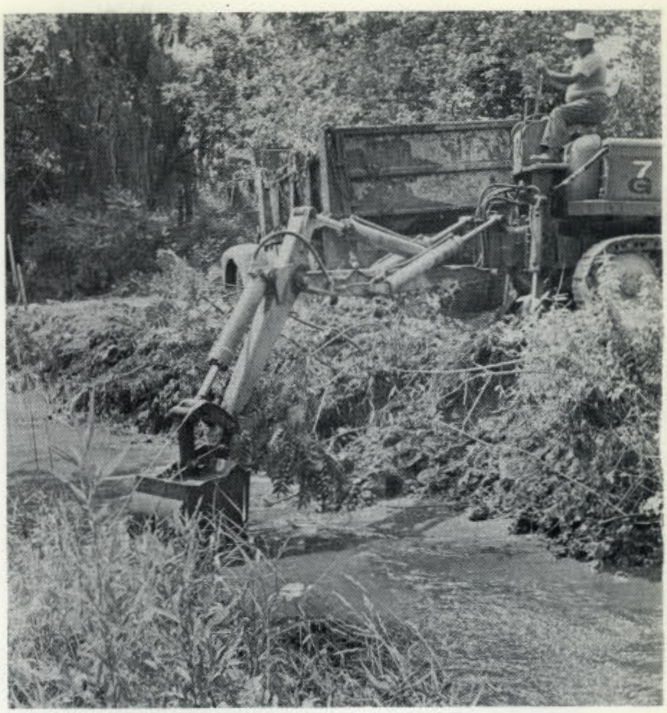
All sediment has its source in erosion of one form or another. Soil erosion, siltation, and sediment affects everyone and everything. Erosion is a natural phenomena that has been greatly accelerated by man in clearing, developing, and paving the land. Crops and agricultural land may suffer first increasing the cost of food and reducing the productivity of the land. Sediment carried into ponds, lakes, and reservoirs limits their storage capacities. Filtering and settling suspended silt from water for domestic and industrial use is expensive, water bills and product prices rise. Drainage ditches, roads, and navigation channels silted in must be cleaned resulting in higher local, state, and federal taxes. Streams, rivers, and flood plains are choked with sediment resulting in more frequent and damaging floods. It costs up to $1.00/cubic yard to remove sediment from water areas, about $.30/yard to provide new storage capacity for surface waters, but to keep the soil on the land where it belongs costs $.03/cubic yard in rural areas. The effects of erosion, turbidity, siltation, and sediment on fish and their aquatic habitat is generally adverse and is both far reaching and everlasting. If there are sufficient concentrations of silt suspended in the water the fish will suffocate or if mortality does not occur irritation and ero-

sion of the gill membrane will weaken them resulting in susceptability to disease and infection by virus, bacteria, and fungi. Prolonged turbidity results in poor growth. Siltation destroys spawning grounds and eggs of fish and kills or interferes with bottom insects that are essential as food directly to fish. Muddy water shades out light interfering with the growth of plankton that insects and fish alike depend on for food. Deep pools that once provided protection are filled in, areas that once provided habitat for fish are now areas of abundant terrestrial and aquatic weed growths. In essence fish habitat is being displaced by silt.

Water devoid of dissolved materials is intolerable in nature because pure water will not support aquatic life. Natural waters contain endless varities of dissolved materials in concentrations that differ widely from locale to locale and from time to time. Many of these dissolved materials are essential for growth, reproduction, and the well-being of aquatic organisms. Therefore, chemical elements and compounds must be considered individually rather than collectively and the beneficial and harmful effects of each weighed.

Since organic and inorganic chemicals are enormous in number, may it suffice to say that chemical pollution comes in many forms and might appropriately be regarded as too much of practically anything. Where and how it exerts its effect depends on many things. Historically chemical pollution has been concentrated in areas of heavy industry and population and associated with the industrial waste. But since World War II and the technological explosion new dangers for fish and other aquatic organisms have come with the development of new pesticides, herbicides, and fungicides, and their indiscriminate use.

The effects of DDT on aquatic organisms is well documented by localized fishkills and now significant concentrations of DDT have been recorded in the Arctic and Antarctic thousands of miles from its application. Copper sulfate which is used to treat and eliminate algae in ponds, lakes, and reservoirs has been found to retard and preclude the reproduction of fish depending on the concentration of copper in the spawning areas of these waters. Organic chemicals that are released into our waters naturally degrade to their basic inorganic elements. This natural degradation uses the dissolved oxygen supply of the water that fish and other aquatic life cannot respire and mortality occurs. Oil on the surface water prevents the diffusion of oxygen into the water thereby depriving aquatic organisms. The list of examples could go on and on. The point to be made is that although chemical pollutants are usually most severe near their point of entry and re-



Of the common pollutants, siltation is generally the most insidious because of its far reaching and lasting effects

sult in "flash pollution" and massive mortality or temporary loss of habitat "chronic pollution" or continual chemical pollution can and does completely eliminate bodies of water of their fish population by either direct or indirect effect on the fish or other aquatic organisms essential to fish or the aquatic habitat itself.

Sewage has been defined as the "spent water" supply of a community together with human and household wastes from kitchens, laundries, bathrooms, and frequently augmented by liquid wastes from industries such as dairies, slaughter houses, and food processing plants. The objectional features of releasing raw or partial treated sewage into our waterways have long been realized and major strides have been taken in the last 100 years to effectively remove organic and suspended solids that foul the water environment and the removal of much of the disease, infectious bacteria and viruses. Today's perfected sewage treatment processes are very good indeed but in many cases only in theory. But theory is unable to compensate for the frailities of man and machine. Many existing treatment plants were not designed to meet the capacity of today's mushrooming population and industry. Breakdowns in treatment equipment necessitate sewage bypass of the plant into the aquatic environment.

. . . *Water*

Toxicants entering plants may kill beneficial bacteria in the digestive process of treatment and operations grind to a halt. Increased use of detergents that are largely complex phosphates are either not rapidly or completely broken down in treatment. The results are twofold: The organic matter that is released into the aquatic habitat must by nature decompose. All organic matter has a B.O.D., or Biochemical Oxygen Demand, which is the amount of oxygen necessary to restore the balance between oxidation (which is desirable decomposition) and desirable bacterial activity. Once B.O.D. levels are overshot by placing too much organic matter in the environment for the amount of oxygen available to decompose it, oxygen supplies are depleted and aquatic organisms die, with fish life the first to go.

The second undesirable aspect of sewage is the fertilizing effect of chemical properties in treated and untreated sewage. Phosphorus and nitrogen are the two most important fertilizing elements in the productivity or fertility of water. These two elements are abundant in all sewage because each person contributes about 6 pounds of nitrogen and 1.2 pounds of phos-

Chemicals and sewage are often combined to form complex pollutants

Too much phosphorus and nitrogen stimulate aquatic vegetation growth

phorus each year. Phosphorus and nitrogen are beneficial to the point where they stimulate growth of the basic producers in the aquatic food chain. But too much phosphorus and nitrogen stimulate abundant growths of rooted aquatic vegetation and algae blooms which are esthetically distasteful, limit recreational value, complicate reuse of water, and is a constant threat to the fish population and other aquatic organisms because of severe diurnal oxygen fluctuations. Sudden die off of vegetation due to chemical weed control or natural causes generally result in severe oxygen deficiency due to decomposition. Also, toxins produced by some blue green algae may kill fish directly or some other critical aquatic organism.

The waters of this state, both surface and ground waters, belong to all the people. Users have only a riparian right to them. That means that (a) users of water have no inherent right to pollute it, (b) users of the water have a responsibility for returning it as nearly clean as technically possible, (c) prevention is just as important as control of pollution.

The fish inhabiting the state's surface waters also belong to all the people of the state. The responsibility for protecting and managing these fish is delegated to the Division of Fish, Game, and Shell Fisheries. In the matter of water pollution, fish because of their entire dependence upon water are the principal reason for our concern and because fish are the end product of a food chain in the aquatic environment the entire cycle of events or phenomena that affects the production of fish must be included when considering the effects of pollution. But the Divi-

sion has authority to deal with pollution only "after the fact." We cannot legally order the cessation of pollution. Our laws provide for the collection of penalties for acts of pollution that cause fish mortality, but it is indeed sometimes difficult to determine what caused a fishkill let alone who is responsible. Furthermore, there is no provision made for habitat destruction or destruction of some vital link in the well being of fish that are not so apparent as a fishkill. Finally, penalties for fishkills can hardly be considered deterents after the fish are dead or the aquatic habitat has been destroyed.

The State Department of Health has the responsibility to regulate for the protection of the health, comfort, and property (land, natural resources, air, and water) of the people of the state. By virtue of their effluent standards and regulations the State Health Department has the authority to deal with pollution "before the fact," and this authority is delegated to all health officials whether they be on the local, county, or state level.

In a review of the laws of this state's governmental agencies concerning the preservation and enhancement of our environment I have found little that new legislation would improve. The problem is not in the laws or in the lack of

It is often difficult to determine what and who caused a fishkill

In the final analysis, water problems are watershed problems

laws—the problem is in the implementation of the laws. The one thing we need in government is legislation in the form of a Coordination Act requiring interagency cooperation in review of all land and water development. A Coordination Act would in effect benefit everyone and everything in our environment because the existing laws would be applied in all areas for protection and enhancement of our environment and not just in the special interest areas where they now exist.

Conservation can no longer be viewed as an independent individual problem. It is a problem of society in the framework of education, research, production, credit, tax base, and all the other ramifications of a great society. The problem is urban and rural. It seems to me that conservation of our resources should be a group effort rather than one of specialized agencies working on special interests. But in the final analysis water problems are watershed problems. It is within separate watersheds that management of water resources can best meet the needs of homes, towns, cities, livestock, irrigation, industry, power, recreation, and wildlife. This takes teamwork. Local, state, and federal agencies will cooperate in planning and financing, but the public is also part of the team and the initiative must come from you. #

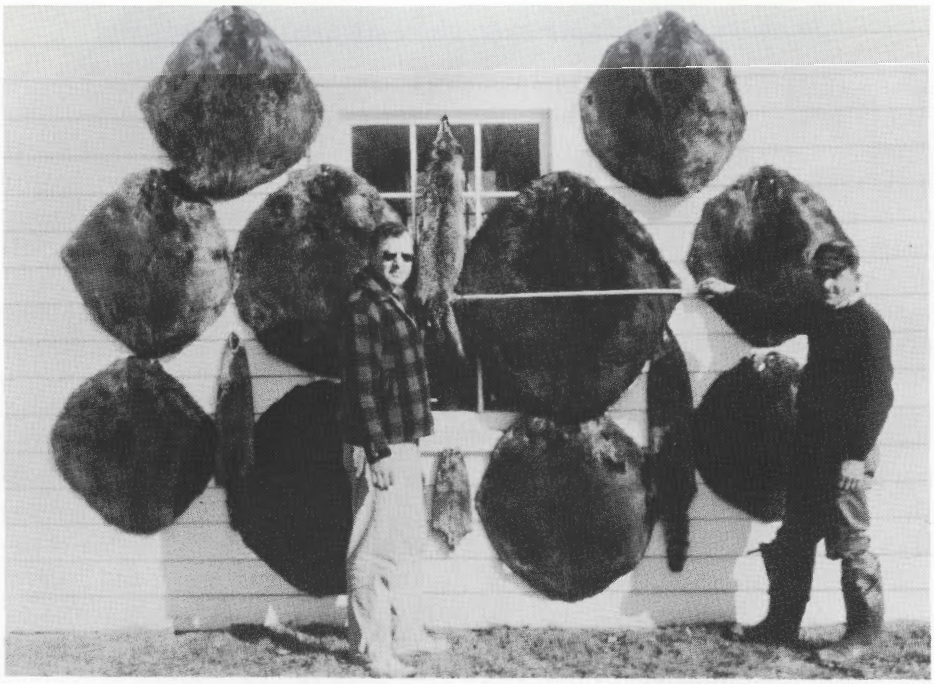
A Review of Recent

Beaver Harvests

in New Jersey

By George P. Howard, Jr.,
Bureau of Wildlife Management

In February 1947 a total of 187 beaver were harvested in New Jersey by holders of 100 special beaver trapping permits. This represented the first legal harvest taken since complete protection was afforded these animals by the Board of Fish and Game Commissioners in 1903. Since 1947, a total of 1,819 beaver have been legally harvested in the eleven special beaver seasons held throughout the state in the following years: 1947, 1952, 1953, 1954, 1958, 1959, 1961, 1962, 1964, 1968, and 1970. All of these seasons have been of the permit variety with quotas set to keep the harvest within allowable limits. The aver-



Beaver seasons have been of the permit variety with quotas set

age reported statewide harvest in these special seasons has been 165 animals. Although records of the county breakdown of the harvests are not available for the years of 1958 and 1959, Atlantic, Burlington, Morris, Ocean, and Sussex have been the leading beaver producing counties over the years. It is interesting to note that record collected by Division conservation officers, which has value to the New Jersey beaver management program and which will be summarized here.

Land Ownership

Records of the ownership of lands on which beaver have been legally trapped since 1961 show that most New Jersey beaver harvested since 1961 have been trapped on privately owned lands with the yearly percentage taken from these lands varying between 52 and 70 percent. In recent years, (since 1964), a greater portion of the harvest has taken place on public lands and state-owned lands. This is to be expected as more and

Table 1—New Jersey Beaver Harvests

No. Permits	(100)	(100)	(100)	(76)	(49)	(36)	(67)	(89)	(100)	(99)	(97)
County	1947	1952	1953	1954	1958**	1959**	1961	1962	1964	1968	1970
Atlantic	2	31	15	6			40	58	37	25	23
Bergen	0	0	0	0			0	0	0	0	0
Burlington	9	0	9	7			15	12	25	23	31*
Camden	0	1	0	1			14	7	19	8	20*
Cape May	0	0	2	0			5	4	12	1	5
Cumberland	0	3	5	7			20	15	7	15	11
Essex	0	0	0	0			0	0	0	0	0
Gloucester	0	4	3	3			13	14	16	6	4
Hudson	0	0	0	0			0	0	0	0	0
Hunterdon	13	4	10	0			0	0	0	2	2
Mercer	11	3	7	5			0	0	0	0	0
Middlesex	0	1	4	0			0	0	0	0	0
Monmouth	0	18	10	7			0	1	0	10	4
Morris	50	69	44	27			0	39	32	36	21
Ocean	46	46	29	26			17	12	10	30	24
Passaic	31	5	2	3			0	12	20	2	0
Salem	0	0	6	0			0	0	0	0	0
Somerset	0	2	2	0			0	0	0	0	0
Sussex	25	19	22	11			34	35	46	37	47*
Union	0	0	0	0			0	0	0	0	0
Warren	0	6	0	6			0	0	0	0	0
Totals	187	212	170	109	72	91	158	209	224	195	192

*—Record harvest for county
**—County breakdown of harvest not available

Total Harvest—1,819 animals

beaver harvests were experienced in 1970 in Sussex (47), Burlington (31), and Camden (20) Counties. The 192 beaver reported harvested in 1970 is well above the average for past seasons, and compares favorably with recent harvests.

During the 1961 through 1970 beaver trapping seasons, data was

more privately owned areas suitable for beaver are being developed, drained, and polluted. It is also to be expected that in the future publicly owned, state and federal lands, will support the bulk of the New Jersey beaver population and harvest. In 1970, 46 percent of the beaver harvested were caught on publicly owned lands, with 35 percent of the harvest coming from state controlled areas.

Records kept since 1961 show a steady increase in the use of the Conibear killer-type traps in the harvest of New Jersey beaver. (In 1961 a total of 78 percent of the reported beaver harvest was caught with various leg gripping traps of which the #4 and #14 were the most popular. Only 21 percent of the harvest was taken with the Conibear trap in 1961, mostly in the South Jersey Counties. In 1970 the percent of the beaver harvest trapped with Conibear traps had risen to 60 percent with the various leg gripping traps accounting for only 40 percent of the total. No doubt, the efficiency of the 330 Conibear-type trap for trapping beaver has resulted in this large increase in its use.

Table 3—Land ownership (Beaver harvest areas 1961-70)
(Percent of Harvest)

	1961	1962	1964	1968	1970
Private	63.5%	70.3%	58.0%	51.8%	54.1%
Public	36.5%	29.7%	42.0%	48.2%	45.9%
State	27.8%	19.1%	32.6%	44.6%	35.4%
Municipal	8.8%	10.6%	9.4%	3.6%	8.3%
Federal					2.2%

Table 4—Types of traps used (Beaver harvests 1961-70)
(Percent of Harvest)

Type of trap	1961	1962	1964	1968	1970
Conibear 330	21.1%	22.2%	45.1%	47.7%	59.4%
Leg Gripping	78.9%	77.8%	54.9%	52.3%	40.6%
#4	38.2%	44.9%	26.3%	26.2%	24.8%
#14	20.4%	14.8%	24.6%	14.9%	12.5%
#44	12.5%	12.7%	2.2%	5.1%	
#3	7.2%			3.0%	3.3%
#1½, #2	.6%		1.8%	3.0%	

Sex and Age of Beaver

Since 1961 the percent of male beaver in the harvest has varied from 50 percent to 60 percent with the totals for 1964, 1968, and 1970 seasons being 52.1, 54.1, and 53.7 percent males. The age composition of the harvests, based on pelt sizes, is to be found in Table #6. Although not the most accurate measurement of beaver age classes, the size of pelts can be used to give index of the age composition of the beaver harvest from year to year. Young of the year

vary from 36.1 percent to 15.4 percent of the catch with the average being 26 percent.

Pelt size and condition

Since 1961 over 40 percent of the beaver harvested in New Jersey have produced pelts of over 60 inches. The percentage of over 60-inch pelts (extra large, blanket, and super blanket) has varied from a low of 37 percent in 1964 to a high of 49 percent in 1960. Over 90 percent of the pelts have been graded as good to excellent during this period with less than 2 percent being rated as poor. In 1970, 186 beaver pelts were rated as 92 percent good to excellent, 5.3 percent fair, and 2.7 percent poor by the conservation officers to whom the pelts were presented for tagging.

Table 5—Sex of Beaver Harvested (1961-1970)

	1961	1962	1964	1968	1970
Male	60.5%	50.3%	52.1%	54.1%	53.7%
Female	39.5%	49.7%	47.9%	45.9%	46.3%

Table 6—Beaver Pelt Sizes (Percent of Harvest)

Size	1961	1962	1964	1968	1970	Estimated Age Class
over 70 inches	5.2%	3.4%	6.3%	13.3%	7.3%	3+
65-70 " 60-65 "	33.9%	38.0%	30.8%	35.9%	31.8%	3
55-60 " 50-55 "	33.9%	35.6%	26.8%	35.4%	31.2%	2
45-50 " 40-45 " under 40 "	26.8%	22.9%	36.1%	15.4%	29.7%	1

Beaver Relocation

The live trapping and relocation of problem and nuisance beaver has been a continual operation in New Jersey since the late 1940's. Some of the wildlife control Representatives of the Division spend most of their time on this activity. Since 1947, 1,507 beaver have been live trapped and relocated throughout the state by fish and game personnel. As many as 150 beaver have been moved in one year, with a total of 62 being captured and transplanted during 1969-70. An average of 87 beaver annually have been relocated by the Division since 1960. Most of the active beaver colonies now present in New Jersey are the result of the Division's trap and transplant activities. Bailey-type live traps are being used to move most of these animals with a few beaver each year being captured in New Jersey-type box traps. Live trapping has been carried out on a complaint basis only, providing other measures, such as water control flumes,

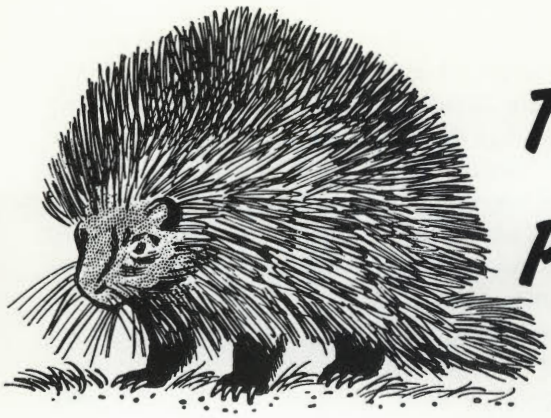
are not feasible. An effort has been made to relocate beaver into areas where they will not again become nuisance animals, but after 25 years of this program it is becoming increasingly difficult to find suitable areas which will support beaver without their interfering with man's activities. Beaver will not stay in many areas which appear to be ideal for them, and a thorough knowledge of beaver ecology is necessary to the success of any beaver relocation program.

Table 2—Beaver Relocation
(Live-trapped and transplanted)

Year	No. Beaver
1947-48	20
1948-49	23
1949-50	30
1950-51	43
1951-52	24
1952-53	47
1953-54	37
1954-55	28
1955-56	16
1956-57	124
1957-58	91
1958-59	69
1959-60	92
1960-61	93
1961-62	87
1962-63	105
1963-64	71
1964-65	34
1965-66	104
1966-67	115
1967-68	69
1968-69	78
1969-70	62
	1,507

Summary

In reviewing the records of past beaver harvests in New Jersey it is apparent that the periodic controlled trapping seasons for beaver, combined with a live trap and transfer program for problem and nuisance animals, will insure a New Jersey beaver population providing the proper habitat is available to support these animals. Beaver have a rather high rate of reproduction, will live in close proximity to man, and adapt fairly well to changing conditions. Man's activities represent the most important limiting factor as far as beaver are concerned. The filling or draining of swamps and low areas, the development and construction which has taken place on flood plains throughout the state, plus the ever increasing pollution of most of our streams and lakes, are all limiting New Jersey's beaver population of the future. The fact that the beaver's activities are often in direct conflict with man's use of the land, also tends to reduce the areas available for beaver. The preservation of adequate areas of high quality beaver habitat throughout the state, a reduction in the amount and severity of water pollution now taking place, plus a periodic thinning of the existing beaver population would seem to offer the best beaver management program for the future. #



The Porky

Porcupines are actually relatively scarce in New Jersey. However, people seem to be fascinated by these interesting mammals and we receive many questions about them. Here are a few facts concerning the quill pig or hedgehog.

One of the slowest, clumsiest and apparently least useful animals in North America is *Erethizon dorsatus,* better known to hunters, hikers, and campers as the porcupine. Few persons who have spent any time at all in the woods have not encountered the porky and shaken their heads in consternation, wondering what possible place such a creature could have in the Good Lord's scheme of things. For sheer sloth there is no contest between the porcupine and any other North American mammal; the porky wins in a walk. The fact that he is seldom molested by any but the most hunger-crazed animals probably accounts for his almost complete indifference and lack of alertness. His sole defense is the sharp quills of varying length that bristle from all parts of his body except head, belly, and feet. It is these quills that provide the porky's most distinguishing characteristic. And though long ago proved erroneous, the misconception that the porcupine can shoot, or throw, his quills at an attacking enemy still finds credence among the uninitiated and the gullible. He will, when hard pressed, flip his six-inch tail at a persistent attacker, trying to dissuade him by implanting a few of the short, sharp quills in his opponent's body. But, his routine defense against inquisitive intruders is much less taxing on his brain or physical powers: He simply tries to hide his vulnerable head under a deadfall and relies on his quills to discourage serious molestation. Most animals have a knowledge and healthy respect of the porky's quills and usually give "Old Needles" a wide berth. Dogs, however, are seldom hesitant to mix it up with the first porcupine they encounter. Even after the painful experience gained, first, from the penetration

of the quills and, later, from their removal by an owner armed with a sturdy pair of pliers, some dogs never learn. More's the pity, too, for the removal of multi-barbed quills is almost as painful to a loving owner as it is to his dog. Besides dog owners, campers generally have reason to dislike *Erethizon.* An almost uncontrollable affection for salt leads the porcupine to gnaw on anything touched by human hands. Perspiration, with its salt content, attracts the porky to a wide variety of man-handled camping articles, any of which will be rendered useless after Erethizon has gotten teeth into them. Strictly a vegetarian—except for his salt raids—the porcupine feeds principally on the inner bark of coniferous trees. At an average weight of between 15 to 30 pounds, the porcupine is the second largest rodent in America, topped only by the beaver. Mating in late winter or early spring, the female produces as many as four young. The porky is protected in some areas on the basis of the fact that he is about the only animal an unarmed person, lost in the woods, might easily kill with a stone or club. But his infrequent value as survival food is far out-balanced in the minds of most conservationists by his destructiveness to young trees. His bark-eating depredations upon forest plantings have earned him a place on the bounty list of many states. #

Land Acquisition

The acreage assigned to the Division since the inception of the Green Acres Program totals 36,449.8371 acres and is listed below:

County	Total Acres Assigned
Atlantic	2,922.25
Burlington	815.71
Cape May	10,579.825
Cumberland	5,391.9183
Gloucester	37.00
Hunterdon	264.21
Monmouth	2,822.5688
Morris	2,308.375
Ocean	7,256.970
Passaic	770.00
Salem	2,105.861
Sussex	1,114.03
Warren	61.119
Total	36,449.8361 acres

Status Report on

Soft Iron Shot

The problem of waterfowl losses caused by lead poisoning due to ingestion of shot by dabbling ducks is of concern to all sportsmen. It occurs primarily in areas where the waterways and lakes have hard bottoms into which shot pellets will not sink quickly. In October of 1969, the Sporting Arms and Ammunition Manufacturers' Institute (SAAMI) announced that a long-range research project, conducted for the industry by the Illinois Institute of Technology-Research Institute, indicated that soft iron shot showed promise as a possible substitute for lead in shotshells for waterfowling. The announcement emphasized that a number of technical problems remained to be solved before such shot could be made commercially available. A discussion of the subject was presented in the February 1970 issue of *New Jersey Outdoors*.

SAAMI recently issued a news release which reported on the current status of efforts to develop soft iron shot. Because of the importance of this subject to all concerned, we are reproducing the release below.

A recent news release from a respected conservation organization of national stature discussed iron shot as a substitute for lead in shotshells for waterfowling. It raised a question about the diligence being exercised by members of the Sporting Arms and Ammunition Manufacturers' Institute (SAAMI) to solve this problem.

At the outset it should be reported that individual members of SAAMI are devoting major effort to this matter. It must be recognized that difficult technical problems remain to be overcome since shells must function satisfactorily and safely in guns of many different types and makes.

The concern expressed by conservationists and sportsmen in this matter is understandable. However, there are recently uncovered facts that waterfowlers and gun owners in the United States and Canada ought to know about soft iron shot. They are:

FACT #1

There is presently no reliable source able to deliver super-soft iron wire that consistently meets specifications required in making soft iron shot.

FACT #2

Soft iron shot has been observed to cause choke deformation and barrel scoring in some makes and types of shotgun barrels.

FACT #3

It appears that soft iron shot hardens with age, and such shot will "shoot out" chokes on many guns of modern manufacture.

Only two companies now make

super-soft iron wire, the material required to make soft iron shot. It is not a "shelf item" for ready delivery. These companies are unable to reproduce consistently the required specifications. Iron wire meant to test guns and gun barrels. It is true that the two gun barrels used, in which a total of about one thousand shots were fired, showed no barrel or choke damage.

Subsequent firing tests by two loading companies used different makes of guns with various inter-

Extensive firing tests must be conducted to evaluate the loads

that fails to meet specifications cannot be used to make satisfactory soft iron shot.

The tests conducted by the Bureau of Sport Fisheries and Wildlife at the Patuxent Wildlife Research Center in Laurel, Maryland, were intended to determine the "mortality efficiency" of soft iron shot. They were NOT

ior barrel profiles and choke designs. All of them were typical examples of shotguns currently used by American water-fowlers. Results show forcing cone changes, barrel scoring, and choke deformation after 200 to 1,000 loads of iron shot were fired.

Plastic cup wads were used. The load of soft iron shot moving

through the barrel appears to act as a peening hammer causing measurable changes in chokes despite the plastic collar around the shot. Movement of metal in the forcing cones was also discernible in some guns. Scratches or scoring were plainly visible in some tubes.

It is too early to tell if these changes affect gun safety. They do effect choke performance and patterning ability of the gun. Until soft iron shot is available with some degree of reliability, it is not possible to conduct tests on the scale required to give meaningful, reproducible results.

A year and a half after the Patuxent tests, samples of unused shot were studied. It had age-hardened by about 25 percent. The quantity of this shot was inadequate to permit firing tests. Enough is known about iron shot in shotgun barrels to make it clear that there would be barrel wear and choke damage from even modest use of such "aged" shot.

Is this kind of barrel erosion and choke deformation acceptable to American waterfowlers? It is not an easy question to answer, especially when you are aware that to American sportsmen a firearm is forever .... or at least for his own generation and maybe into the next.

More important than a consumer's irritation over scratches in the tubes of his favorite gun, or a bulge in the choke-end of his pet autoloader, are potential safety and performance shortcomings. This can only be evaluated through extensive firing tests with shotguns representing a cross-section of guns made in the past 50 years. Such tests are not possible until the technological problems of producing soft iron shot of uniform quality are solved.

Members of SAAMI independently, and aggressively are pursuing programs to bring soft iron shot into production. They are attempting to keep the U.S. Government agencies concerned for North American waterfowl resources fully informed of their progress. #

Harvest of Game by Licensed Hunters in New Jersey

Species	Percent of hunters hunting each species	Estimated hunters	Days hunted	Daily bag	Mean seasonal bag	Est. harvest
Pheasant	75.43	123,200	6.38	.47	2.99	368,365
Rabbit	71.71	117,124	6.82	.68	4.62	541,110
Squirrel	31.75	51,857	6.56	.43	2.84	147,275
Quail	34.16	55,793	7.74	.50	3.88	216,475
Grouse	34.50	56,349	5.93	.13	0.79	44,515
Duck	22.49	36,733	5.52	1.14	6.34	232,885
Woodcock	19.83	32,388	6.17	.56	3.43	111,090
C. goose	11.78	19,240	4.81	.14	0.67	12,890
Brant	6.17	10,077	4.25	1.23	5.22	52,600
C. rail	1.78	2,907	2.78	.99	2.75	7,995

Reel Care

The "work horse" of your tackle team is the reel, whether it is a spinning, fly, spin-casting, or casting model. It bears the brunt of angling labors and, as such, must occasionally be groomed and slicked up to perform well season after season.

Taking care of reels requires only a few minutes on a lazy Sunday afternoon, and, when compared to replacement costs caused by neglect, this maintainence time is highly profitable.

The three main enemies of reels are sand or other abrasive matter, rust and lack of proper lubrication. Periodic care, particularly at winter lay-up time, is an easy task if performed in a methodical manner.

First, lay out a sheet of clean paper or cloth. Then disassemble the reel, meticulously placing each part down in the exact order it is removed.

Prepare a mixture of kerosene and oil in a bowl deep enough to immerse the reel.

With a toothbrush, scrub all parts thoroughly. Where rust is evident on non-functioning surfaces, scour with steel wool until a smooth metal finish is obtained.

After cleaning, a light, household machine oil will lubricate all surfaces satisfactorily. Vasoline is excellent for gears, and can be used as a substitute for lubricants especially recommended for the task.

One word of caution: be sure that screwdriver sizes are precisely matched to the screws. A fine reel is much like a watch, and all parts must be worked on with proper tools.

Another point to observe when applying oil, is to never lubricate fiber drag washers. Clean them, but keep them dry. Also, always release the drag pressure when storing reels away for the winter.

Take care of your tackle's work horses now so they can reciprocate next year. #

When The Season's Over The Seasoning Begins

It's a shame more people don't share in the culinary delights of wild game. For game meals can be both different and delicious and provide a taste-tempting change from run-of-the-supermarket fare.

There's never been any question that the benefits of hunting go far beyond the mere taking of game. The pleasure of being out in the fields and woods, of coming closer to Nature, of healthy outdoor activity, and good fellowship with other hunters are all important rewards for the hunting outdoorsman. But the final reward is enjoying the fruits of your labor.

Success in converting your outdoor harvest to a dinner-time delight depends on a combination of diligence and skill both in the field and at home. Your field work involves rapid and proper dressing of game. Delayed or improper field dressing can definitely spoil a potential feast. But if you've passed this test, you're well on the way to ultimate success.

Home work involves the actual cooking of the game, and this is the final key to your enjoyment. Here is a waterfowl recipe for those of you who would like to give it a try:

1. Place ducks in pan breast up.
2. Sprinkle each duck with one tablespoon of cooking sherry.
3. Season each duck with ½ teaspoon each of celery salt, curry, and pepper, plus one teaspoon of salt.
4. Let set in pan for ½ to 1 hour.
5. Chop and place in pan one small onion and one celery stalk. Add ¼ to ½ inch water. Bake about 20 minutes at 500 degrees until breast is brown. Turn and bake until back is brown. Cover and cook one more hour at 300 degrees. Total cooking time, about 2 hours. If dressing is desired, use any favorite poultry recipe.

Incidentally, for those of you who often bring home a mixed bag of birds, here's another recipe that will enable you to combine them into a delicious dish. It's a mixed game pie:

Split a dozen small birds, or if larger ones are included, cut into pieces of similar size. Place in sauce pan with two quarts of water and bring to boil, skimming off residue that comes to the top. Add salt and pepper, small onion chopped fine, small bunch of minced parsley, three whole cloves and ½ pound of salt pork diced and browned. Be sure water is deep enough to cover birds. Thicken with 2 tablespoonfuls of browned flour and let boil up. Stir in piece of butter about the size of an egg. Then remove from the fire and allow to cool. Line the sides of a buttered dish with pie crust. Fill dish with birds and about a pint of cooked, diced potatoes. Pour gravy on and put on top pie crust. Bake at 375 degrees until done. #

Snowmobiles

The increasing popularity of snowmobiling has caused the International Snowmobile Industry Association to tighten standards to curb user objections and public complaints.

The ISIA, spokesman for the snowmobile industry's major manufacturers in the United States and Canada, has taken action in a number of areas including safety, noise level, snowmobile trail development, and legislation.

ISIA has published a "Snowmobile Owners Safety Handbook," and has made it available for distribution by member manufacturers with each new machine and to present owners. The booklet warns that "Regardless of previous experience in driving other kinds of vehicles, everyone is a beginner the first time he sits behind the controls of a snowmobile."

Beginning drivers are urged to, "drive slowly and carefully" until they learn the intricacies of the machine. Speed is only for experienced drivers.

Other warnings include these: never refuel while the engine is running, don't loan your machine to inexperienced drivers, never lift machines from the rear to clear the track, don't tail gate other machines, use the "buddy" system on long trips, know the terrain over which you are traveling to avoid running into wire fences or guy wires, and learn about "wind chill" and weather hazards.

Also included is a snowmobile code of ethics, emphasizing courtesy and respect for private property, which was drafted by a committee representing the U.S. Forest Service, Bureau of Outdoor Recreation; and conservation commissions or departments of Minnesota, Michigan and Ontario; and the U.S. National Park Service.

While ISIA's main concern at this time is safety, the association is concerned about proposed legislation which is unnecessarily harsh on snowmobile owners. The organization prefers that state-wide control and licensing of snowmobiles be placed under conservation department supervision rather than motor vehicle departments or multiple municipal ordinances.

Noise control is a subject of industry concern. The matter is currently under study.

The association is cooperating with a publisher to produce a national map of trails. #

Some folks feel that snowmobiles are the best things to hit the winter trails since dog teams. Others contend that they are the worst machines ever invented. Like them or not, we sure have them in the state. More on snowmobiles and wildlife on the following page.

NATIONAL RIFLE ASSOCIATION OF AMERICA

Resolution

WHEREAS, The NRA believes that wildlife species pursued in the course of the legitimate sport of hunting must be taken in fair chase; and

WHEREAS, Improper use of motorized air, water and land conveyances gives hunters an unfair advantage in the taking of wildlife of all types; and

WHEREAS, Undue harassment of wildlife with such conveyances can result in weakness and death of harassed species and is particularly inimical to wintering animals; now, therefore, be it

RESOLVED, That the Board of Directors of the National Rifle Association of America, assembled in Annual Meeting here this 7th day of April 1970, deplores and condemns the improper use of motorized air, water and land vehicles in the taking or harassing of wildlife and in the shooting of wildlife from such conveyances, and urges passage of proper legislation to curb such unsportsmanlike activities, and further urges that proper law be enacted permitting hunting to begin on the day following transportation to an area by air.

New Jersey Fish and Wildlife Management Areas

Section 23:7-9 of the Revised Statutes prohibiting certain activities on State-owned Public Shooting and Fishing Grounds, also referred to as Fish and Wildlife Management Areas, under the jurisdiction of the Division, provides that further regulations, for use of these areas may be prescribed by the Division as may be required, under penalties as prescribed therein (not more than $200.00 for each offense). In accordance therewith, the following regulations, in addition to those already outlined in that section, are hereby established and shall be enforced:

It shall be unlawful to operate any type of a motor vehicle on or over any cultivated or planted wildlife food area, fireline, or field.

It is unlawful to operate any type of snowmobile, snow cruiser, motorbike, motorcycle, trail bike or off-road motor vehicle, on any of these areas at any time.

No person, either while in an automobile or vehicle of any kind, whatsoever, shall hunt for, pursue, shoot, shoot at, kill, capture, injure, or destroy a bird or animal in this state.

What's new in fishing tackle?

Amid the ballyhoo that accompanies the introduction of most "new" fishing lures and equipment, we sometimes tend to overlook the fact that almost everything now on the market has a direct descendant many years—even centuries—old.

Modern tackle is far removed from that of the horse-and-buggy days, but there are very few items around that couldn't be obtained by Grandpa during his barefoot schoolboy days. It may not have been as attractive or as operative, but its results were fairly good.

Even our fur-robed ancestors of prehistoric times devised tackle that would do the job. Small round stones, pointed on both ends with a line tied in the middle were effective in putting fish on the table more than 7,000 years ago.

The Egyptians of about 2,000 B.C. developed a proficiency with a reed rod and length of line very much like our familiar cane poles. In the 1400's walking sticks that were actually nine-foot telescoping fishing rods were common.

Even spinning rods, which Americans consider "new," had their origins as far back as the 17th Century in Europe.

The Romans came up with the first artificial fly, called the red hackle, and they also used clam shell's as lures, Everything from stone and bone to steel has been fashioned into hooks.

Though the resemblance may be faint, it's a rare piece of tackle that doesn't have a fascinating history.

So the next time you walk into a sporting goods store, don't ask what's new, ask what's different. #

The Snowy Owl

Species:

The Snowy Owl.
Nyctea scandiaca

General Characteristics:

A large white, or whitish with dusky flecking, owl with a round head; one of the largest and most powerful of the owl family, 20 to 26 inches; day-flying; perches on some commanding position, such as a rock, hill, sand dune, muskrat house, or other elevation. Favors open country such as shores, marshes, or tundra. Quite shy and difficult to approach closely.

Range:

Arctic; winters south rarely to New Jersey.

Life History:

This powerful killer is dependent upon the lemming and other small rodents for most of its food, and when the population of these animals drops, as for example, in the low of the population cycle, the population of snowy owls also drops. It also eats quantities of game and small birds, as well as waterfowl, especially when there is a shortage of lemmings and arctic hares. Home to this white owl is on the northern tundras, where the pairs make their nests on the ground in this treeless area, usually on a high and dry location. The nest is a rather flimsy affair, a slight hollow lined with a little moss and a few feathers. The snowy owl ordinarily lays five to seven or eight eggs, but occasionally more or less may make up a clutch. The incubation period apparently is between 30 and 34 days, with incubation begun shortly after the first egg is laid, so that the young hatch at irregular intervals, instead of at approximately the same time as do most birds' eggs. Perhaps because of this, young owls suffer a relatively high rate of mortality as nestlings.

The snowy owl is fairly shy, and, because it is found in open situations (beaches, marshes, etc.), is difficult to approach. This bird's enemy is man, and it is fortunate that it is so wary.

Its eggs and hatched young may be preyed upon by arctic foxes and jaegers, but adults are large enough to defend themselves from smaller predators, and wary enough to evade the larger ones. The effects of pesticides on the snowy owl are not known, but are probably less than those birds spending more time around man and his noxious chemicals. On the rare occasions these birds are located, they should not be killed. #

Wildlife Control

Live traps, steel traps, repellents, and water control devices were utilized in order to alleviate damage on a total of 336 complaints serviced during the past year. Some 1,894 animals were taken by the Wildlife Control Representatives in the control of nuisance or predatory animals during 1969-70. A breakdown as to species involved is as follows:

Species	1969-70	1968-69
Foxes	279	317
Cats	109	110
Crows	148	192
Hawks	12	8
Opossum	221	205
Skunks	141	146
Snakes	33	30
Squirrel	99	129
Turtles	176	148
Raccoon	328	411
Owls	5	6
Muskrats	145	265
Weasels	8	15
Rabbits	21	25
Beaver	62	78
Woodchuck	65	50
Dogs	13	19
Deer	29	0

Guide to the

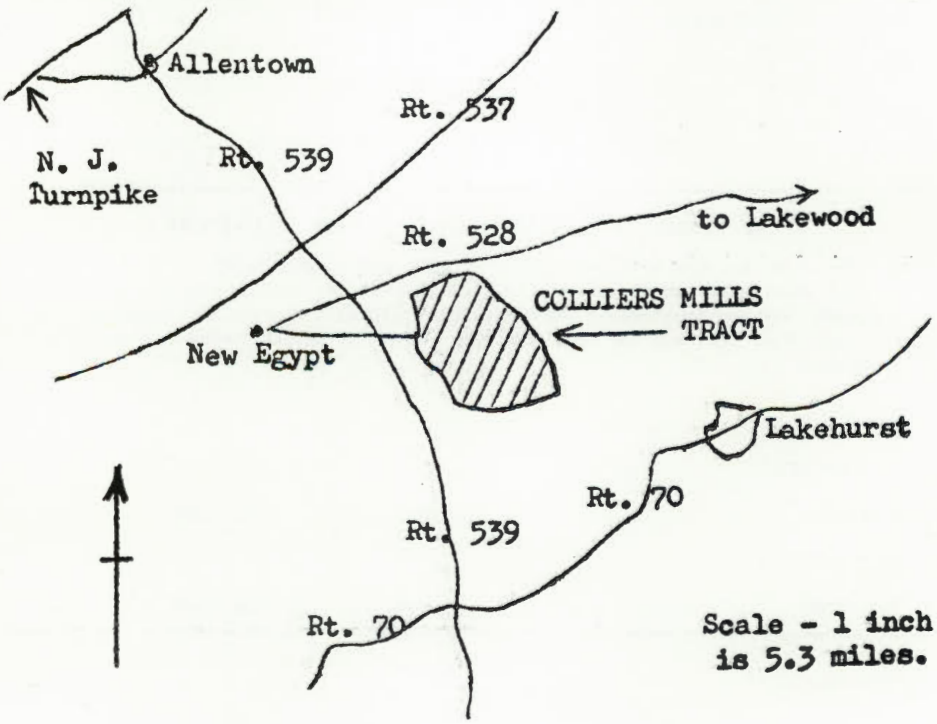
Colliers Mills Tract

The Colliers Mills Fish and Wildlife Management Area consists of about 12,000 acres and is located in Ocean County. Generally this tract is bounded on the east by the Archers Corner-Colliers Mills Road, on the south by the U. S. government line, on the south and east by the Lakehurst Air Station line, and on the north by the Ridgeway-Cassville and the Ridgeway-Stump Tavern roads.

This tract is managed for upland game and waterfowl. About 200 acres of field have been cleared and planted to wildlife food and cover plants. There are 18 lakes and ponds totaling more than 250 acres.

This tract is heavily utilized for quail, rabbit, and pheasant hunting. Deer hunting is excellent for both the archer and firearm deer hunter. Waterfowl hunting is available. Fishing for largemouth bass, pickerel, and yellow perch is very good. Limited camping is permitted.

To reach the Colliers Mills Tract from the north, drive to Allentown in Monmouth County. Pick up Route 539 and follow it, crossing Route 528 which is the New Egypt-Lakewood Road. Continue southward on Route 539 from this point about two miles and turn left on the first black-top crossroad. Proceed about one mile to the entrance of the tract which is marked by a sign. #



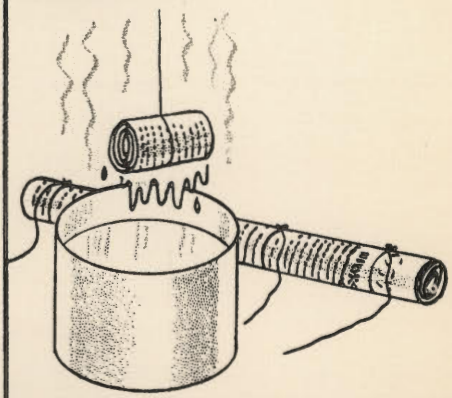
Fur, Fin and Campfire

By BILL BERO

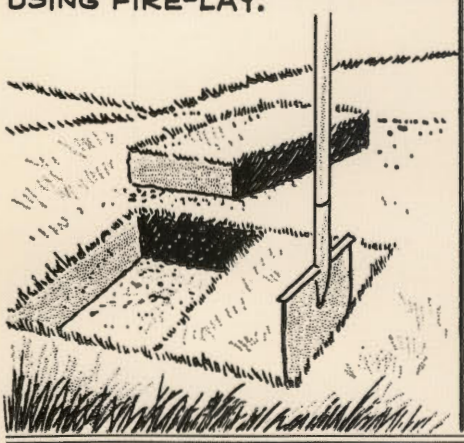
FIRE MAKING TIPS

CARRY A COFFEE CAN FILLED WITH SAW DUST SOAKED WITH KEROSENE. THIS CAN BE USED TO START A FIRE WHEN THE CAMP AREA IS DAMP AND WET.

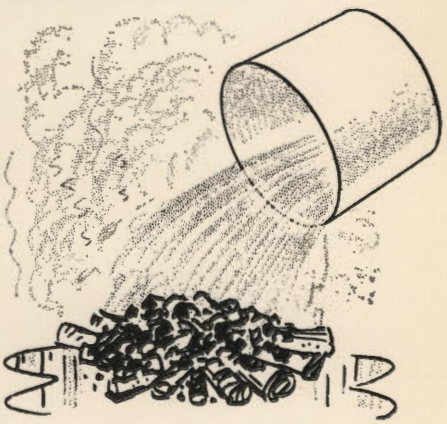
GOOD FIRE STARTERS MADE AT HOME FROM ROLLED UP STRING TIED NEWSPAPERS. DIP CUT SECTION IN MELTED PARAFIN.



TO PREPARE FIRE SITE ON GRASSY AREA, CUT OUT SECTIONS OF SOD. REPLACE SOD AFTER YOU ARE THROUGH USING FIRE-LAY.



BEFORE YOU BREAK CAMP PUT OUT THE FIRE BY DOUSING WITH WATER. MAKE SURE IT IS **OUT.**



Winter camping and hiking can be most enjoyable, as long as you are properly equipped and have the know-how. Why not give it a try this month?

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TIPPER FLINTLOCK'S

Tips on Shooting Safety

KEEP YOUR GUN UNLOADED WHEN NOT IN USE