

**New Jersey**

*Outdoors*

FREE PUBLIC LIBRARY  
TRENTON, NEW JERSEY  
JUN 21 1973

**April - May, 1973**



# THANKS!

All of our deer biologists and many staff members join me in thanking the numerous deer hunters who cooperated with data collectors at the various mandatory deer check stations throughout the state during the recent season.

The variety of biological data gathered during the bow, firearm, and either-sex season will provide much information useful in managing New Jersey's deer herd to help assure continuing productive seasons to come.

Tooth and jaw extraction, removal of reproductive tracts from female deer, exact location of kill, weight, antler measurements, and general information provided by the hunter are all means by which deer biologists will be able to assess the status of our New Jersey herd.

Though these procedures may have seemed curious to some hunters, all the measurements mean a great deal in aging the deer, in learning the actual distribution of deer in the state, and in judging the quality of available food as reflected by the deer's overall physical condition. #

---

For further information on our deer management programs and basic information on the white-tail deer, just write:

New Jersey Division of Fish, Game,  
and Shell Fisheries

Bureau of Wildlife Management

P. O. Box 1809

Trenton, N. J. 08625

Russell A. Cookingham,  
Director

**State of New Jersey**

William T. Cahill  
Governor

**Department of Environmental  
Protection**

Richard J. Sullivan  
Commissioner

**Division of Fish, Game, and  
Shell Fisheries**

Russell A. Cookingham  
Director

**Fish and Game Council**

Al Toth, Chairman,  
North Brunswick ('76)

Raymond Baker,  
Monmouth Jctn. ('73)

John B. Cavagnaro,  
Vineland ('75)

E. Anthony Delgado,  
Vineland ('74)

George H. Demarest,  
Hillsdale ('75)

Randle N. Faunce,  
Delanco ('74)

David Hart,  
Cape May ('76)

Harry McGarrigel,  
Atlantic City ('76)

Neal Munch,  
Freehold ('75)

Steven Tczap,  
Clifton ('73)

Charles Webber,  
Westwood ('73)

**Public Relations**

William E. Peterman,  
Supervisor

**Law Enforcement**

John C. O'Dowd,  
Chief

**Wildlife Management**

George N. Alpaugh,  
Chief of the Bureau

**Fisheries Management**

Robert A. Hayford,  
Chief of the Bureau



New Jersey Outdoors is published monthly by the 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**

Thanks ..... Inside Front Cover

The American Woodcock ..... 3

Deer Harvest Figures ..... 8

Good Fishing Brings a Bonus ..... 10

A Strange Affair ..... 11

Anadromous Fishery Project ..... 14

Madhorse Mosquito Wildlife Project ..... 23

Horse Chestnut ..... 29

Participation in Earth Week ..... 31

Ken Lockwood Gorge Area ..... 32

Ken Lockwood Gorge Area Map ..... Inside Back Cover

*Cover — "To Tag a Shad" — Harry Grosch*

As part of the anadromous fishery project on the Delaware River, Project Chief Joe Miller gently removes an adult shad from a gill net before checking, tagging, and releasing the live fish in the river. For more on the project see page 14.

**Vol. 23, Nos. 10 - 11**

**April — May, 1973**

Publication Office: Room 702, Labor Building, John  
Fitch Way Plaza, Trenton, N. J. 08625

Mailing Address: P. O. Box 1809, Trenton, N. J. 08625

Editor: R. Adams

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

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.

All unsolicited material is sent to the magazine at the risk of the sender.

Permission granted to reprint with credit to New Jersey Outdoors.



# The American Woodcock

By Russell A. Spinks

*Assistant Wildlife Biologist*

*Photographs by Harry Grosch*

The American woodcock offers a challenge to all sportsmen who meet him. Scientifically, he is known as *Philohela minor*, (Gmelin). Commonly he is called timberdoodle, mud snipe, wood snipe, or whistler. The woodcock has long traveled the upland route, through the marshes and damp thickets. Today his habitat is endangered as man alters the land. The primary purposes of this article are to acquaint the reader with the American woodcock and to implant in you an awareness of the need for conservation of woodcock habitat to insure preservation of this species.

## General Description

The American woodcock is excellently designed to suit his environment. A plumage of various shades of brown and grays and a touch of black and white gives him a mottled brown appearance. His distinguishing features are a strip-

ed head with large round eyes, and a slender beak about two and one-half inches long. His eyes are designed for nocturnal living; his long bill is used for probing in the mud for his prey. A woodcock weighs approximately 5½ to 7½ ounces. The females are heavier than the males. His weight-to-wing area ratio is lighter than most game birds, giving him the capability of prolonged flights. Walking for woodcock is simple; his large prehensile feet keep him from sinking in his moist habitat. Unless you have keen eyesight, you may never see a woodcock. But listen for the wing twitter and a whistling sound, which will often identify a flushed woodcock for you.

## Range

The woodcock is primarily a resident of the Atlantic seaboard although he has been found as far west as Minnesota, Ontario, and

← *The woodcock is distinguished by its striped head with large, round eyes and a slender beak about two and one-half inches long*

## . . . Woodcock

Wisconsin. Breeding areas include the northern United States east of the Mississippi and eastern Canada.

### **Movements**

Most American woodcock spend December, January, and February in the Gulf states. In the beginning of February the first mating calls are heard and migration north to their breeding grounds begin. Flying nightly in single file, the northern-bound woodcock reach their destination during March. The American woodcock is known to return to his home nesting area each year; breeding and nesting take place in the high ridges of

the northern states. After the woodcock family is hatched, they spend summer in the lower valleys where the ground is damp. With the coolness of fall, the woodcock makes his way southward, through the thickets of the wetlands. This protective cover makes for interesting and difficult shooting. By early November, few woodcock are seen in their northern breeding areas.

### **Reproduction**

The ability of woodcock to reproduce is a guarantee of the perpetuation of his species. The reproductive potential of woodcock is relatively low. Proper habitat is necessary for the woodcock's singing ground and nesting area.

*This is the type of open area frequently selected by woodcock for singing*





*During the fall woodcock are more apt to be found in the protective cover*

They arrive on the breeding grounds in late winter and early spring, and are among the earliest of migrants. I have noticed birds arriving in New Jersey as early as late February. A wide variety of vegetative types are used for nesting sites. Old abandoned fields with small trees and shrubs seems to be preferred. A woodcock nest with four eggs was observed in an old fallow corn field on the Flatbrook Wildlife Management Area early one April.

#### **Mortality Factors**

*Predation:* Predation is not a serious cause of woodcock mortality. The most common predators of

the woodcock are the Cooper's hawk, great horned owl, weasel, bobcat, and the common house cat. The pilot black snake is known to feed on woodcock eggs.

*Parasites:* Few woodcock have been found dead due to parasitism. Some pathological cases were found heavily infested with tapeworms, roundworms, and flukes. These endoparasites are common in most woodcock, but not in excessive amounts. Common ectoparasites include lice and blood-sucking flies.

*Disease:* No disease is known to be common in woodcock. Coccidiosis, a poultry disease, has been discovered in a few birds.



*The number one tip for woodcock hunters is to study woodcock habits and habitat all through the season*

### . . . Woodcock

**Weather:** Many woodcock die during the winter months when the wintering grounds freeze. The woodcock either freeze or are unable to obtain food during these freezes; they cannot permeate the frozen ground to obtain worms. Woodcock deaths also occur under unfavorable weather conditions during spring migrations. Heavy snows and extremely cold weather cause woodcock mortality since the birds are in relatively poor condition and under the stress of breeding.

**Accidents:** Many woodcock fly into obstructions during migration or during flights at dusk on their resident or wintering grounds. Power lines are often hit and occasionally

houses or other constructions. I have picked up two woodcock that flew into houses in Sussex County. **Hunting:** Many woodcock are harvested annually by hunters. Woodcock are quite vulnerable to the gun. The reason for the high kill success stems from the fact that woodcock once found are easily followed if not shot on the first flush. The bigger problem on the part of the hunter is to find the woodcock in the first place.

#### **Hunting Tips**

1. Become more acquainted with woodcock habits and habitat. Check them throughout the season.
2. Know your coverts; woodcock will invariably inhabit the same areas year after year unless there

is a drastic change in the habitat.

3. Keep a record of dates flight birds have arrived at coverts. Birds have a tendency to migrate about the same time each year, depending on weather conditions.

4. Use a bird dog, preferably one of the pointing breeds. The woodcock is the ideal close-lying bird dog game bird. Also, hunting woodcock without a dog is poor sportsmanship as a large percentage of downed birds would be lost; the birds plumage blends perfectly with autumn leaves.

5. Use a small bored gun, preferably a 20-gauge improved cylinder. I use the 20-gauge gun because it is lighter, more easily handled in heavy cover and is less apt to destroy woodcock shot at close ranges.

### Management

Woodcock have very specific food and cover requirements. Population numbers are largely governed by the quantity and quality of available habitat. Woodcock

cover is transitory: young forests soon become too old to attract woodcock. Most coverts pass from excellent habitat to overgrown woodland in 25 years. Some of the good coverts in Sussex County of 20 years age are practically devoid of woodcock due to over-age conditions.

The Flatbrook Wildlife Management Area provides a suitable vegetation for woodcock breeding grounds, nesting sites, feeding, and resting places. Woodcock management consists of removing large trees to encourage shrub growth. Allowing sunlight to reach the soil encourages herbaceous vegetation and the woodcock's food source, earthworms. Cattle grazing in the early 1950's was successful in keeping woodcock habitat open, but securing cattle and controlling these animals proved difficult for management personnel. Controlled burning is also used in woodcock management and is an effective method of maintaining woodcock habitat. #



*Woodcock management includes the removal of large trees to encourage shrub growth*

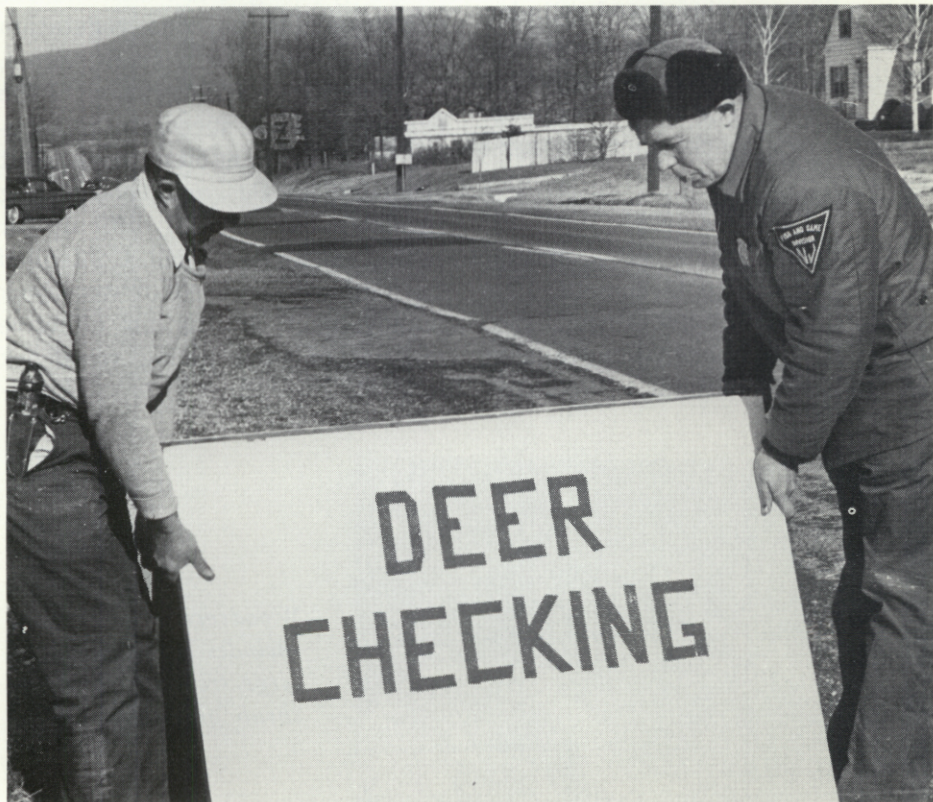
# Deer Harvest Figures

A county-by-county breakdown of deer harvested during the 1972 season showed several all-time records for a number of New Jersey counties.

Record buck kills were reported in the following counties:

Hunterdon .....	1,330
Warren .....	963
Cumberland .....	403
Gloucester .....	77
Salem .....	184
Sussex .....	792

A new state record was set during the firearm buck season with 6,987 reported as compared to 6,643 in 1957. Last year's reported kill was 4,955.



*The new reporting system, requiring that deer be taken to a deer checking station, probably accounted for a large portion of the increase recorded*

The reported bow and arrow harvest set records in the following counties in 1972:

Hunterdon .....	371
Warren .....	187
Salem .....	52

State biologists point out that excellent deer harvests in North Jersey counties follow years of antlerless harvests aimed at maintaining the deer herd in balance with its habitat. This is shown by figures of better than three bucks harvested per square mile in Warren and Hunterdon counties.

The new reporting system probably accounted for a large portion of the increase recorded.

The following table lists the number of legal deer harvested during each season in 1972. The figures are divided by counties. #

***Number of Legal Deer Harvested in Each Season in New Jersey in 1972 by County***

<b>County</b>	<b>Bow and Arrow</b>	<b>Six-day Firearm Buck</b>	<b>Permit</b>	<b>Total</b>
Atlantic	63	494	0	557
Bergen	3	11	0	14
Burlington	110	543	0	653
Camden	15	70	0	85
Cape May	15	118	0	133
Cumberland	73	403	0	476
Essex	0	7	0	7
Gloucester	12	77	0	89
Hudson	0	0	0	0
Hunterdon	371	1,330	797	2,498
Mercer	74	243	104	421
Middlesex	29	107	59	195
Monmouth	38	132	43	213
Morris	149	540	351	1,040
Ocean	80	456	0	536
Passaic	19	158	63	240
Salem	52	184	0	236
Somerset	72	349	220	641
Sussex	97	792	285	1,174
Warren	187	963	649	1,799
Unknown	0	10	0	10
<b>Totals</b>	<b>1,459</b>	<b>6,987</b>	<b>2,571</b>	<b>11,017</b>

## Good Fishing Brings a Bonus

The adage that the way to a man's heart is via his stomach is true, and this bit of knowledge can be turned to advantage by "fishing widows," left-behind wives of ardent anglers who spend weekends pursuing fish. Make his catch into a gourmet's delight by following some simple kitchen rules, and—who knows?—you might get that new living room suite or kitchen appliance you've been wanting.

Fish are delicious table fare when correctly prepared. Of course, the first step is to have properly-cleaned, fresh fish, and this is the fisherman's responsibility. The method recommended calls for cleaning and icing-down fish immediately after taking them. This preserves the sweet, delicate flavor that most fish normally possess, and helps eliminate fish odor and taste.

Once in the kitchen, there are several popular methods of preparing fish. Probably the most common is pan-frying. This is suitable for small, whole fish such as bluegill, bass, trout, and walleye. Fish should be salted, rolled in corn meal, and cooked over a low flame. Use butter and brown each side. Skin should be crisp. Covering the pan will create steam and destroy crispness.

Baking fish are usually whole, or big pieces of large fish. Leave the skin on and bake in a very hot oven for a short period, or bake in medium oven for a longer time. A third method calls for baking in milk, bullion, or other flavored stock that does not cover the fish.

The secret to deep frying is to bring the cooking oil to proper temperature (360 to 380 degrees). Dip pieces of fish in milk, flour, and bread crumbs; or in flour, beaten egg, and then bread crumbs. Completely submerge fish in hot oil; they will rise when done. Drain excess oil and serve immediately

Broiling is a good way to serve fatty fishes. Heat both the oven and broiling pan to insure even cooking. Baste frequently with butter, or place a strip of fat bacon on each filet. #

---

The Bureau of Wildlife Management, New Jersey Division of Fish, Game, and Shell Fisheries, is currently conducting a deer tagging program to study deer travel patterns. Many deer have been tagged with metal cattle tags in each ear. In addition, colored plastic ear streamers were used for field identification. Deer captured as fawns were tagged with small monel metal tags which were also inserted in the deer's ear. To improve management techniques, deer tags, lower jaws of tagged deer, and relative information should be recorded and sent to the New Jersey Division of Fish, Game, and Shell Fisheries.

# A Strange Affair

By Harry Ferguson

*Harry Ferguson of Stillwater has submitted an interesting description of a peculiarly tame ruffed grouse which actually approached him numerous times and ate from his hands. Such behavior is quite unlike this normally cautious bird and a reasonable explanation would be difficult to arrive at.*

*The grouse may have been hand-raised a distance from Stillwater and finally took over the field and woods near Ferguson's property. Hand-raised birds generally, and often unfortunately, lose all fear of man and become subject to death by autos or domestic pets. Or the grouse may simply have been an overzealous individual seeking to establish dominion over these strange two-legged creatures trespassing in his area.*

*Whatever the grouse's reasons, his actions certainly were not those of a normally wild, secretive bird.*

The grouse is my favorite bird, one which I have observed and hunted all my life. Being somewhat familiar with this bird's customary wild nature and habits, I was surprised and unable to account for an experience I had with a grouse this year during the late spring and summer months.

My friend Merle and I were trying to get a rough, uncultivated, and grown-up field in shape for planting in buckwheat. It was high, rocky ground quite a distance from any human habitation, and was surrounded on three sides by wooded area and on the fourth side by a thick nannyberry hedgerow.

The second day on the field, while removing rocks with a stone boat hitched behind our Jeep, we saw

a grouse come into a corner of the field from the woods, watch us for a few minutes, and then start coming towards us along the hedgerow. About a hundred feet from us it stopped, found something to eat, and shortly thereafter disappeared into the hedgerow. This routine was repeated on the several days we were removing rocks.

When we started to harrow the field, dragging a spring tooth harrow behind the Jeep, the grouse came out of the hedgerow towards the Jeep and approached within four or five feet. We stopped and got out, and I squatted down on my haunches. The grouse was making a low, half murmuring, half clucking sound. I tried to imitate it and the bird came within



### . . . Strange Affair

*The customarily wild and wary grouse approached the author closely and eventually even stepped up on his hand and let him raise it up in the air*



two feet of my outstretched hand. When we moved towards it the grouse would back away, and as we retreated, it would run towards us. This went on every day for another several days until we completed the harrowing. The only change was that the bird would apparently hear the Jeep coming to the field in the morning and be waiting at the bar gate entrance to the field.

Due to bad weather seeding was delayed and when we next drove up to the field the grouse was not at the gate. However, when I started seeding in the buckwheat with a cyclone seeder the bird came out of the hedgerow about a hundred yards from me, took off from that point, flew directly to me, and landed at my feet. This interrupted the seeding. Off came the seeder and I got down on my knee and tossed a few buckwheat seeds in front of the grouse. It sampled some but did not seem to have much interest in the buckwheat. I pushed my hand close to the grouse and it pecked at my fingers, extended its ruff, raised its crest feathers, and assumed a defensive fighting posture, jumping several inches in the air, flapping its wings, and scratching the ground with its feet.

On one of its jumps I further extended my hand and the grouse came down with both feet on my palm. I stood up slowly at the same time raising my hand with the bird on it until it was slightly above the level of my head. In this position the grouse and I remained motionless for about two minutes

while Merle and I were expressing our amazement to each other. I then slowly squatted, lowering my hand to the ground, and the grouse stepped off my palm and worked its way back to the hedgerow.

Over the next two weeks Merle and I went up to the field every day the weather was fit, and I had my camera, an M3 Leica with Summicron f5 com. 1:2 lens, and Kodachrome II film. Every morning we were there, substantially the same performance occurred, except that I had the grouse on my hand as related on only three more occasions. At no time was the grouse held or restrained in any way.

What made this wild bird so friendly and so unafraid? We thought, of course, that the grouse might be a female with a nest and a young brood but we are not too sure. We were unable to find either a nest or a chick. Also, while not a reliable indication of sex, the band on the grouse's tail feathers was unbroken. The bird appeared to be a mature, medium size bird in good healthy condition. We never saw the grouse on the field in the afternoon but always in the morning. When on the field it would never let me get between it and the hedgerow in order to take a picture. Each time, the grouse would run around me on one side or the other.

Since I have as witnesses Merle and my wife, who had many doubts until the grouse came to her and pecked her own fingers, let it be said of our experience that the truth is stranger than fiction. #

# Anadromous Fishery Project

By P. D. McLain,

*Federal Aid Coordinator*

*Photographs by Harry Grosch*

April and May are traditionally shad fishing months along the Delaware River from Trenton on up through the Delaware and into its east Branch. When the shad bush blooms along the hillsides, shad are usually running up through the Delaware in this annual spawning migration from the Atlantic Ocean.

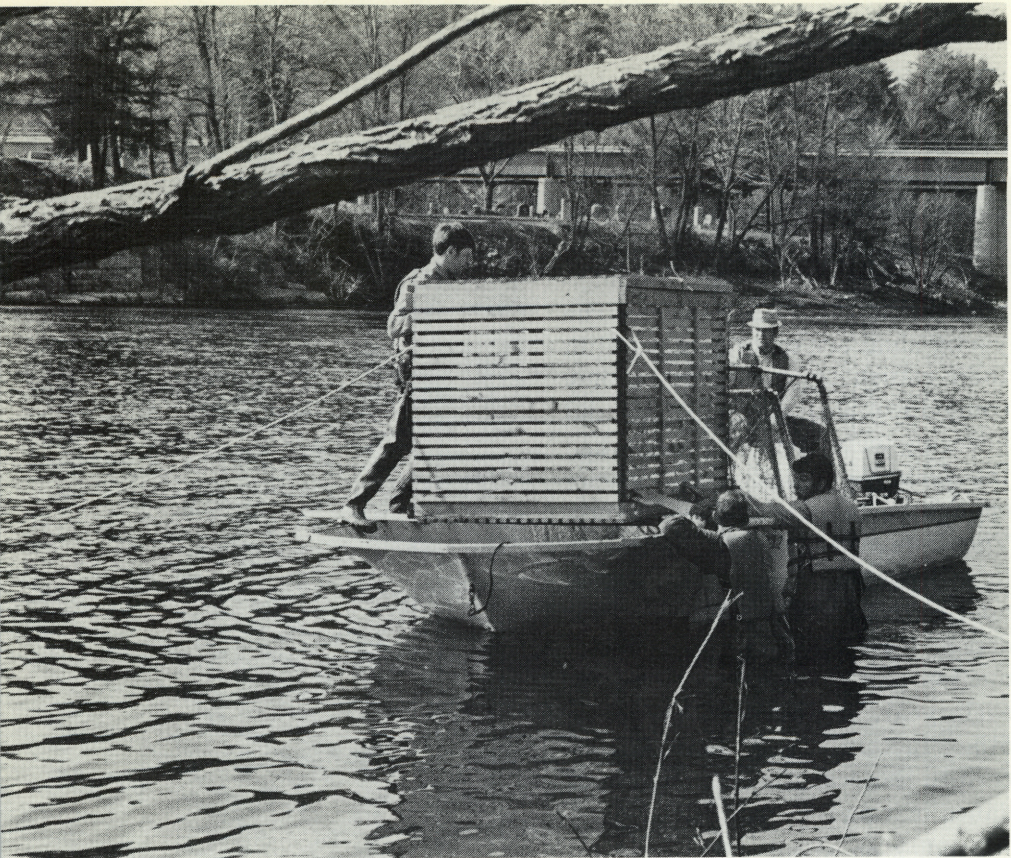
One of the important and probably less known Federal Aid to Fishery projects is the AFS-2 "Delaware River Anadromous Fishery," a cooperative "Basin States" project involving New Jersey, Pennsylvania, New York, and Delaware where the states contribute 40 percent and the federal government 60 percent each year of a \$100,000 plus Federal Aid to Fishery project to study the anadromous fish on the important Delaware River.

The project is headed by Joseph Miller with headquarters in Rosemont, New Jersey. Working with Mr. Miller are two federal fishery biologists, Jame Friedersdorff and Harold Mears, and Craig Billingsley permanently assigned to the

project by the Pennsylvania Fish Commission. They have one part-time secretary and employ four to six summer fishery assistants.

The major objective of the project is to conduct the basic research necessary to develop a sound program for management of anadromous fishes of the Delaware River Basin. Their project's major emphasis has been on American shad with incidental studies on striped bass. As the project proceeds, studies will be expanded to include striped bass, river herring, white perch, sturgeon, and the American eel.

The project is divided into several important study or work units. One is on the pollution block which occurs between Philadelphia and Marcus Hook. Here the pollutants entering the Delaware River frequently cause a dissolved oxygen deficiency which results in a block of water through which shad and other anadromous fishes cannot pass and in which they cannot live. Studies have shown that when the dissolved oxygen



*Modified Maine fyke trap loaded on a ski barge is maneuvered into place by shad study crew who will lower it into the water of the Delaware River between Milford and Port Jervis*

drops to four parts per million the shad cannot reach their ancestral spawning grounds on the upper Delaware River above Easton.

In the area where the pollution block forms, the spring spawning run of shad starts in April and could last through late May. However, usually about the middle of this period the oxygen level of the river water drops and the run is effectively blocked from the upper river. Last spring it was estimated

that only two-thirds of the normal run was able to reach the upper Delaware River. In years of low rainfall and lack of spring run off, a greatly reduced spring spawning run results.

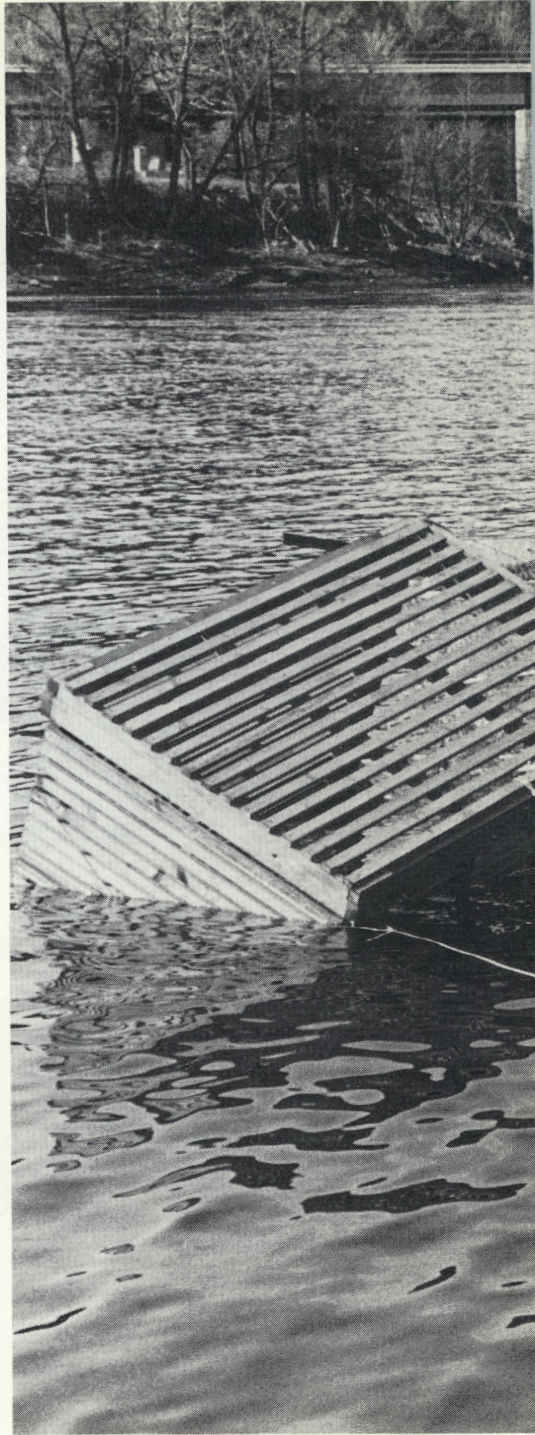
The second phase of this study consists of upstream work. The biologists maintain seven collecting stations to evaluate the relative abundance of young shad, locate the nursery areas, and study mortality of the adult spawners.

## . . . Federal Aid

Over 95 percent of the adult shad die after spawning and as they descend the river in July and August on their return to the sea. Those not succumbing after spawning may die from lack of oxygen and the pollution in the Philadelphia to Marcus Hook block. The young shad are more successful in their return to the ocean as they come down with the fall rains and lowering water temperatures when the pollution block is not severe enough to cause a high mortality. The Delaware shad population is in a critical condition, since with no repeat spawners it is entirely dependent upon successful reproduction and survival of the young each year. Pollution, dams, and other factors are of critical concern to the perpetuation and abundance of this resource.

Studies on about 4,000 shad indicate that three-to-four-year-old female shad will be about 20.7 inches in length and weigh about 5.3 pounds. The male or "buck" shad will be about 18½ inches and weigh 3.7 pounds. Shad do not spawn or ascend the river until they are three to four years of age.

It is possible that shad, upon reaching the pollution block when the dissolved oxygen level prohibits their upstream travel, may, as with other species of fish that can



*Trap in place, at right, with the wings being set out down stream*



April — May, 1973

17

### . . . Federal Aid

not find suitable spawning sites, resorb their eggs and return to the ocean. Studies also indicate that at least some of the adult shad splinter off and run through the C & D Canal into the Chesapeake Bay or into the Brandywine River to spawn.

Another important phase of the anadromous fishery project is the collection of fish below the pollution block in the Delaware River and Bay. Here, tagging returns and sampling provide information on annual spawning, growth rate, and other information on the shad

both entering the river and returning to the ocean after the annual spawning. To date a total of 2,791 shad have been tagged with an orange spaghetti-type tag bearing a number and asking the sportsman or commercial fishermen that catch the fish to return the tag to the Rosemont Fishery Laboratory, Box 95, Rosemont, N. J. To date 95 shad returns have been obtained and plotted.

An important aspect of the study that is presently being explored is the censusing of the adult shad run with electronic underwater equipment. It is envisioned that this unit will provide reliable in-

*Fyke trap just about set*





The Delaware River shad study includes activities that require night gill netting to capture adult shad on the upper river, as shown in this series of photographs.

*Joe Miller, Project Chief, lifts gill net containing shad*



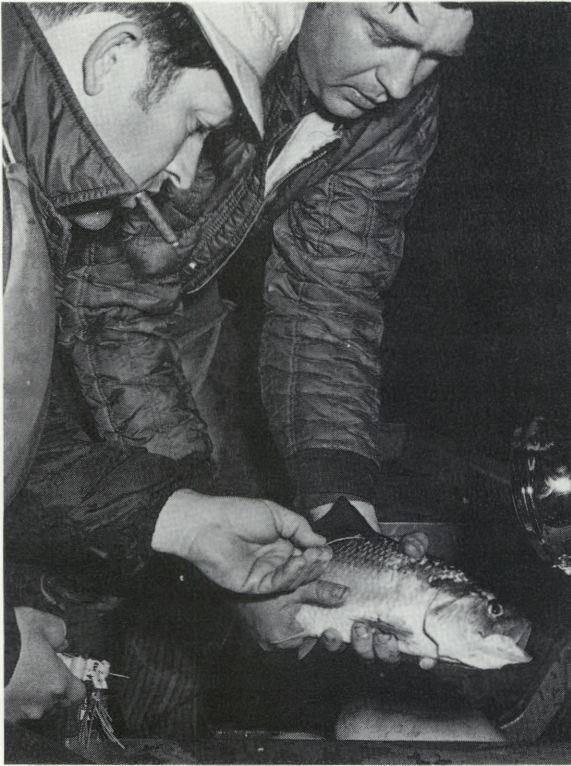
*Joe Miller holding shad while Ed Bedlow, biologist, uses a Floyd Taggin Gun to tag fish*

### . . . Federal Aid

formation on the magnitude of the annual run of adult shad up the river and also returning seaward.

The administrative direction of the anadromous fishery project on the Delaware River is accomplished

During April and May of each year, shad fishermen turn to the Delaware River and seek out the shad from just north of Trenton into upper New York State at East Branch. Some of the best shad fishing areas along the Jersey side of the Delaware River are Raven



*Fish with embedded tag is checked and returned to water, usually in less than 30 seconds*

through the "Delaware River Fish and Wildlife Policy Committee" comprising the directors of New Jersey, Delaware, Pennsylvania, and New York, the Regional Director of the Bureau of Sport Fisheries and Wildlife, and the Regional Director of the National Marine Fishery Service.

Rock, King Cole, just below the Delaware Water Gap, Worthington State Forest, Dingman, and Port Jervis. The knowledge and stewardship that this study is promoting is extremely important as increasing development of the Delaware Basin threatens its shad population. #



*The anadromous fishery project on the Delaware River is extremely important if shad, such as the one above, are to be caught in the future. The above fish happens to be the New Jersey state record fresh water shad, 7 pounds and 13½ ounces, caught by Richard Lepes in the Delaware River in 1971*



# Madhorse Mosquito Wildlife Project

By Fred Ferrigno, *Senior Biologist,*  
Section — Wetlands Ecology

*Photographs by* Harry Grosch

Managing wetlands habitat for wildlife and yet controlling excessive mosquito populations are problems faced in tidal marsh areas of New Jersey.

At the request of the Salem County Mosquito Commission, a meeting was held to discuss the mosquito breeding problems of the Madhorse Fish and Wildlife Management Area with the Director of the Mosquito Commission and officials of the New Jersey Division of Fish, Game, and Shell Fisheries.

The major area of concern was the northern portion of the state-owned Dickenson Tract; here a peninsula, known as the Lower Alloways Neck, is surrounded by a tidal marsh and the Silver Lake muskrat impoundment. The original proposal to eliminate mosquito breeding was submitted by the Rutgers Entomology Department and involved a large band ditch situated on the low marsh and bordering the upland edge. At this meeting it was agreed that no proposal involving ditching would be

accepted unless the principals of quality ditching were adhered to.

The first prerequisite of such management is its need. Therefore, an extensive mosquito larval dipping survey was initiated during the spring of 1971 to determine the amount and distribution of mosquito breeding depressions. At this time the entire peninsula was practically inundated due to excessive spring rains. Because of this, road areas were flooded, food areas could not be planted, and mosquitoes were unusually abundant. Larvae of the swamp mosquito (*Aedes vexans*), woodland pool mosquito (*A. canadenses*) and the two salt marsh mosquitoes (*A. sollicitans* and *A. cantator*) were everywhere.

It was obvious from the survey of the distribution and location of breeding depressions that the original proposal of band ditching would be a waste of mosquito control funds and would isolate hunters from the marsh. The logical

← *Hilt Fisher and author begin project by determining the distribution of mosquito breeding depressions and staking out to the nearest tidal ditch. Management crews will follow, clearing trees and shrubs so that heavy equipment can operate*



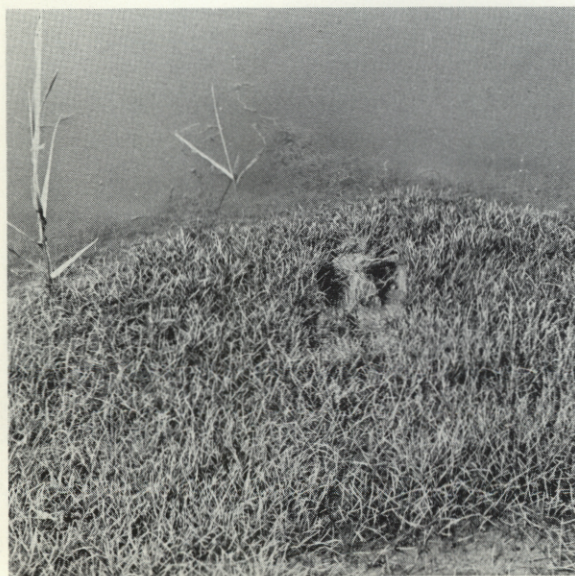
*An isolated marsh is restored to tidal inundation by clearing and ditching through upland barriers. Heavy salt marsh mosquito breeding was eliminated*

*Killifish gain access to a previously isolated marsh by a newly constructed ditch. Crabs, perch, shrimp, and other organisms of the tidal food web will follow*





*Hilt Fisher, Director of Salem County Mosquito Commission, explains project to one of his heavy equipment operators*



*Oftentime lush stands of spike rush, a favorite waterfowl food plant, grows on the newly inundated mud flats*



*Tidal inundation of this previously mosquito breeding upland slough resulted in a tidal pond free of mosquitoes and heavily utilized by fish and wildlife*



*Ditches that removed water from flooded fields not only eliminated mosquito breeding but encouraged growth of millet, panicum, and other grasses fed on by deer, pheasants, quail, and rabbits. Cut trees were piled on the sides of ditches to provide winter cover for game*



### . . . Madhorse Project

solution to the mosquito problem was to break through upland and higher vegetational barriers causing tidal inundation of marshes and upland sloughs and providing an access for killifish (*Fundulus heteroclitus*) that would devour mosquito larvae even in the upland ditches.

Tidal inundation of Lower Alloways Neck was provided from both sides with many continuous ditches. This removed stagnated water from woods and fields, inundated lower areas, and thus eliminated mosquito breeding. The breeding depressions were like isolated portions of fingers running perpendicular to the marsh edge. Our plan was to get the tides up into these areas as far as possible.

This program was a cooperative endeavor between the Salem County Mosquito Commission, Rutgers Entomology Department, and the New Jersey Division of Fish, Game and Shell Fisheries, with all the field management work accomplished by the Salem County Mosquito Commission under the direction of the Director, Hilt Fisher.

An added benefit of this program is the resultant increase of wildlife habitat and food. Trees from upland barriers and adjacent to abandoned ditches were sawed down and piled to provide winter cover for upland game. Draglines

were used to dig large ditches through the barriers, marshes, and upland.

As water was removed from fields, the mosquito breeding ceased and the resulting growths of millet and grasses were fed upon by deer, pheasants, rabbits, and quail. Flooded woodlands were drained, eliminating mosquito breeding and providing feeding areas for woodcock and other wildlife. Tidal inundation of previously isolated marshes eliminated the production of the pestiferous salt marsh mosquitoes, and returned these marshes to a salt marsh ecosystem contributing nutrients and food organisms which will benefit the entire tidal food web. Lush stands of spike rush (*Eleocharis spp.*), a food plant relished by many species of waterfowl, have invaded many inundated mud flats.

The Madhorse Project is a good example of what can be accomplished when there is cooperation and coordination between different agencies. The area is now void of pestiferous mosquitoes without the use of insecticides; it contributes food and nutrients to the estuary and it is better habitat for wildlife. Hilt Fisher, director of the Salem County Mosquito Commission, his management crew and the entire commission were responsible for the successful project, which brought this type of quality ditching to Madhorse. #

*Aerial view of completed project, on the preceding page, showing broken upland barriers to provide tidal inundation, tie-in of man made ditches to naturals, and proper sod disposal. Chemicals are no longer needed here, mosquitoes are controlled, and there is better habitat for wildlife*

# Horse Chestnut

(*Aesculus hippocastanum*)

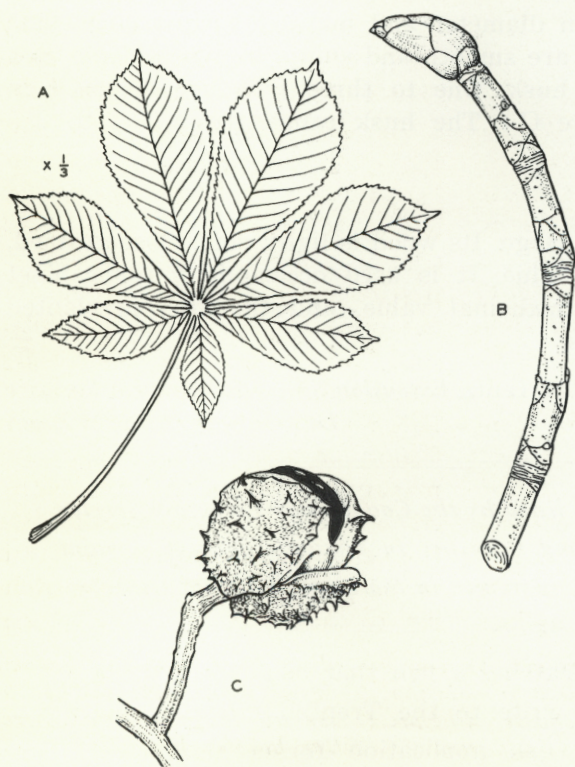
The horse chestnut is a handsome tree and was first planted in this country in Philadelphia. Its original home was Greece.

## Range:

It has been planted extensively in this country and now exists in every state. In certain areas where the soil is sufficiently fertile, it has escaped from cultivation and has naturalized itself. It seldom occurs in woodlots, but it is found growing in the vicinity of fences and buildings. It is commonly found growing as a lawn or street tree.

## Leaves:

This tree is easily identified by its 5 to 7 palmately compound leaves. (See figure A.) Leaves are opposite, and leaflets are arranged in the form of a fan and fastened to a leaf stalk 4 to 7



*Horse Chestnut*

A. Leaf

B. Twig

C. Fruit

## . . . Horse Chestnut

inches long that is grooved and swollen at the base. Leaflets are irregularly and bluntly serrated, thick, rough, dark green on top, and a paler green on the bottom. In autumn, the leaves die from the edges, turning a yellowish brown.

### Twigs:

Stout, shiny, reddish-brown with a large pith. The twig has a large, sticky terminal bud, one-half to 1 inch long. Leaf scars are opposite, large, and heart-shaped with large bundle scars. (See figure B.) The bark on old trees is dark brown and broken into thin plates.

### Flowers:

Flowers are large and showy. White flower clusters are 6 to 12 inches tall with blossoms three-fourths inch long. Flower throats are dotted with yellow and purple. Male and female flowers are borne separately on the same tree.

### Fruit:

A nut, about 1 inch in diameter and marked with a large pale scar at the base. Nuts are smooth and shiny, brown in color, and enclosed by a spined husk. One to three nuts are enclosed in each husk. (See figure C.) The husk ranges from 1½ to 2½ inches in diameter.

### Uses:

This tree is medium to large. Its wood is light, soft, close-grained, weak, and of limited value. It is used occasionally for cabinet work. The bark has medicinal value, and the tree is planted for landscape purposes. #

—Austin N. Lentz, *Extension Specialist in Farm Forestry*  
*Drawings by Aline Hansens*

---

---

*The largest horse chestnut listed by the Cooperative Extension Service for New Jersey, 8 feet and 6 inches in circumference at a point 4½ feet above the ground, is located in Marquand Park in Princeton.*

---

---

Any fisherman who catches a fish that could be a state record is invited to write to the Trenton office of the Division for record fish application forms and rules.

## Encourages Participation in Earth Week '73

The National Wildlife Federation plans to join with the national and state governments and thousands of local communities, schools, organizations, and individuals in the celebration of Earth Week '73 during the Week of April 9-15.

As in the past, the Federation and other conservation groups are encouraging participation throughout the land, particularly at the local level. This year, the emphasis will be on the urgent national need to conserve our energy resources and to determine the best possible alternatives to our current energy problems. Major focus should also be given to the cost-benefit factors involved in a transition to a decent environment in order to clear up many of the existing misconceptions given about the price of a clean environment. An attempt will be made to gain some perspective from Earth Day 1970, up to the present—to see where we have been, what our current status is, and how we can best solve the problems which remain.

“Although some individuals may suggest that concern for the environment is a passing fancy,” warns Tom Kimball, NWF executive vice president, “we must not overlook the evidence of the overwhelming grass roots support of the American people in the struggle to preserve and maintain air and water quality.” This was evident by a recent Harris Poll, taken during the 1972 election campaign, which showed 83 percent of the American people placing air and water quality as a major priority of the federal government over the next four years. #

---

---

**You may use the subscription form below to subscribe, renew,  
or order a gift subscription to New Jersey Outdoors**

To: New Jersey Outdoors, P. O. Box 1809, Trenton, N. J. 08625

Please send a subscription (at \$3.00 per year) for  1 year  2 years  
 3 years for \$8.00  new  renewal

Name .....

Street .....

Post Office ..... State ..... Zip Code .....

From .....

# **Ken Lockwood Gorge Area**

## **Hunterdon County**

The Ken Lockwood Gorge Fish and Wildlife Management Area, located north of High Bridge in Hunterdon County, is one of the most picturesque of all the fish and wildlife management areas.

This area known as "Ken Lockwood Gorge," a distance of approximately two and one-half miles, is a portion of the South Branch of the Raritan River.

The "Gorge" stretch is open to fly-fishing only from April to November and is closed to all fishing on days that the area is stocked. (Check the fish law compendium for specific regulations.)

The tract was purchased in September 1948. Today this area comprises 255 acres of woodland and fields. Over one-half of the tract was obtained through the State Green Acres Program; the rest of the area was purchased with money from hunting and fishing license fees.

This area is being managed primarily for fishing, upland game, and deer.

### **Fishing**

More than ten species of fish are present in this portion of the South Branch of the Raritan. The species found in greatest abundance are brown and rainbow trout, smallmouth bass, rock bass, and red-banded sunfish.

The area receives ample numbers of trout, since approximately 35,000 fish are stocked in the South Branch of the Raritan River throughout the season.

### **Upland Game**

In the upland portion of the tract, good grouse, cottontail rabbit, and squirrel hunting opportunities are available.

### **Deer**

A growing deer herd presently offers the bow and shotgun enthusiasts ample hunting opportunities.

No swimming or camping is permitted on the Ken Lockwood area at any time.

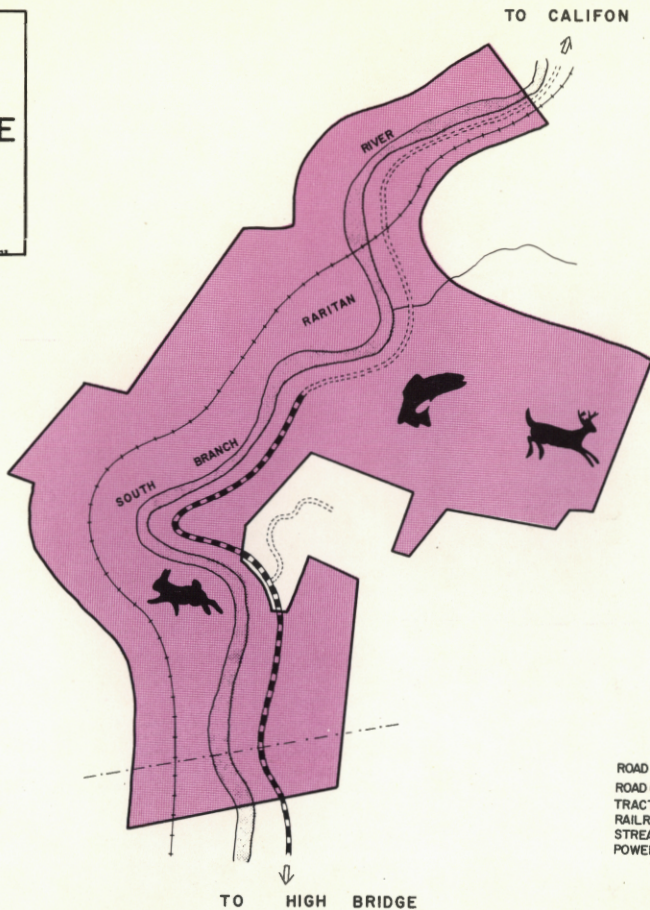
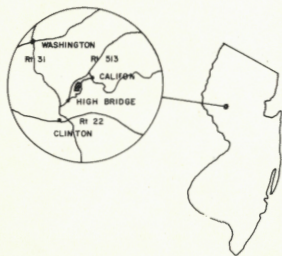
This area is being maintained for the licensed sportsmen of the state, although many citizens make use of it for other forms of outdoor recreation. Its program is financed by license money of the sportsmen. #

—*William M. Smith,*  
Bureau of Wildlife Management

Hunterdon County

**KEN LOCKWOOD GORGE  
FISH & WILDLIFE  
MANAGEMENT AREA**

SCALE: 0 1/4 1/2 MILE



**SYMBOLS**

- |                   |           |
|-------------------|-----------|
| ROAD (IMPROVED)   | ———       |
| ROAD (UNIMPROVED) | - - - - - |
| TRACT BOUNDARY    | ———       |
| RAILROAD          | ——+——     |
| STREAM            | ~~~~~     |
| POWER LINE        | - · - · - |

# ***Remember***

**your fishing license  
does not give you  
any right  
or privilege  
to trespass  
on another's land**

**Always Ask  
Permission**

**New Jersey Outdoors  
P. O. Box 1809  
Trenton, N. J. 08625**

*Second class postage  
paid at Trenton, N. J.  
and additional office.*