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New Jersey Outdoors Magazine

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|---|--|
| Steve Perrone
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| Harry Grosch
<i>Photographer</i> | Bob Byrne |
| Lucy Brennan | Roy Elicker |
| Bob Oldenburg
<i>Circulation</i> | Joan Galli |
| Edi Joseph
<i>Environmental News</i> | Bob McDowell |
| | Pete McLain |
| | Sharon Ann Brady
<i>Editorial Assistant</i> |

NEW JERSEY OUTDOORS is the bi-monthly magazine of the Department of Environmental Protection of New Jersey. This publication is dedicated to the wise management and conservation of our natural resources and to foster a greater appreciation of the outdoors.

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from the editor

In an editorial some months ago we promised to keep you informed of any new decisions pertaining to the selling of advertising space in *New Jersey Outdoors*. After some discussion and several meetings, it was decided that we would *not* accept advertising in our magazine. We had several reasons. Although our Reader Survey responses favored advertising by 4 to 1, many of the "for advertising" responses also indicated that they did not want the magazine to change in any way. But of course advertisements on our covers and inside pages would change the "look" of *New Jersey Outdoors* in some way. Because the cover pages are prime advertising space and would bring in the highest revenue, we had planned to sell the inside and outside back covers—and possibly the inside front cover. So you see the magazine would have changed—and maybe this change would

in some way affect our credibility, although no editorial content changes were planned or proposed.

In any event, the decision was made and we will continue to devote our space to editorial matter and New Jersey photographs. Of course, as always, costs keep rising. Several other state publications, similar to our own, have increased their subscription rates to \$5.00 per year. We plan, in a Spring issue announcement, to increase our yearly subscription price by one dollar to \$4.00 per year. The two-year subscription will be discounted to \$7.00 and the three-year subscription will be discounted to \$10.00.

We feel *New Jersey Outdoors* will still be a very good buy at these modest rates. But the smart move by subscribers might be to purchase multi-year subscriptions *now* before the price goes up. Think about it!

in this issue ...

Start off the 1978 new year with a New Jersey Ski Tour. This great family sport is rapidly catching on in our state. N.J. School of Conservation Instructor Jim Merritt provides us with a list of tours for January and February for novice and intermediate skiers.

In the January/February 1976 issue of *New Jersey Outdoors*, author Herschel H. Hutsinpillar of DEP's Division of Environmental Quality asked the question, *How Much Energy Do We Have Left?* He doesn't think our readers heeded his advice last time out—so now he tells us *How to Make Your Gals Go Farther*. Please pay attention this time.

If you like winter sports and speed, try *Sail Skating and Black Ice* by Laura Henning. Read why New Jersey has 200 of *no* more than 500 sail skaters in the entire USA.

Another progress report on the Wild Turkey Restoration Project is presented by Wildlife Biologist Bob Erikson. The author tells us that the success of this Project depends in part upon the information and cooperation of our New Jersey citizens.

Did you know that approximately

one-fifth of our state was covered with a 1500-foot sheet of ice up until some 12,000 years ago? Read *The Jersey Glacier* by Jim Fitzsimmons, a frequent contributor to our magazine.

Introduced by the illustration of the Great Horned Owl by Carol Decker on the back cover, we have on pages 12 and 13 a Great Horned Owl pictorial article by Robert Pierro and Joan Galli. Mr. Pierro provided the idea and the sketches and Ms. Galli the text. Illustrations by Carol Decker have appeared in several issues of *New Jersey Outdoors*. This same trio is working on a series of wildlife portraits which will appear in future issues and Ms. Galli of the Non-Game and Endangered Species Project is coordinating this effort.

Is firewood scarce in New Jersey? True or False? Read the article *New Jersey's Firewood Resource* by Assistant Forester Anne Conley and find out "where" and "how" to get the firewood this winter.

A Coastal Management Strategy for New Jersey—CAFRA area is explained to our readers by the Office of Coastal Zone Management. This strategy spells

out policies to guide developers, various agencies, and other interest groups for making decisions in the coastal zone.

The Loneliness of Island Beach, a black and white picture story by Robert J. McDonnell, captures the winter mood of Island Beach State Park.

Martha and Mark Pokras run a bird hospital in Absecon called The Avian Rehabilitation Center. Read *The Bird Healers* by Katy Duffy Kievitt.

Flytier Mary S. Matlack writes that many fly fishermen end up as flytiers as well. There are several reasons and Ms. Matlack's article *Getting Started in Fly Tying* explains "why" and "how."

The Many Faces of Winter are first introduced on our covers in this issue and then are continued on pages 26 and 27. The photographers responsible for portraying these various *faces* are listed below each photograph.

A renewed interest these past few years in *The Muzzleloading Rifle* prompted this article by gun collector and history buff Wilfrid E. Feldman. Photographs were taken by Patrick Boffo.





Ski Tour into Tillman's Ravine

PHOTOS BY AUTHOR

Ski Touring in New Jersey

BY JIM MERRITT

Ski Touring is a great family sport which is rapidly growing in popularity in New Jersey. Using inexpensive lightweight equipment, skiers can glide down moderately inclined slopes. With proper techniques, ski tourers can easily traverse flat ground and even make their way up gentle hills. To learn the basics of ski touring one should go to one of the ski touring centers in northwestern New Jersey. These centers rent equipment, give lessons and charge a modest fee for use of the trails. Once a person has learned the basic skills and has purchased equipment, the possible areas for ski touring are limited only by lack of snow. City parks, open fields or golf courses all make great places to ski.

For those who are looking for more of a back country adventure, ski tours sponsored by the Ski Touring Council might be more appropriate. These free tours are led by volunteers and are often accompanied by a member of the Nordic Ski Patrol. They take place on unplowed roads in State Parks and Forests. Since tours average between 8 to 20 kilometers all participants should be in good physical condition and should have prior ski touring experience. Tours last most of the day so skiers should carry a small rucksack with a lunch and some spare clothing in case of a change in the weather. If you are interested in any of the ski tours listed below, please contact the leader several days before the tour is to take place.



Author pulling daughters



Skiers take a lunch break



On the Trail

New Jersey Ski Tours For The 1977- 78 Season

Saturday Jan. 7, 1978—Stokes State Forest, N.J.—*Wildlife in Winter*

This five mile tour, suitable for novice & intermediate skiers, will be led by an information and education officer of the N.J. Division of Fish, Game, and Shellfisheries. In addition to lunch, please bring field glasses. Meet at the ski touring area across from the Stokes State Forest Office on Rt. 206 at 9 A.M.

Leader: Bob Byrne 201-852-2565 — Office

Saturday Jan. 14—Stokes State Forest, N.J.—*Tillman's Ravine Natural Area*

An examination of the geologic features of a beautiful glacial ravine, such as teacups, sluiceways and V-shaped valleys, will be the focus of this five mile tour. Led by a geologist of the N.J. Bureau of Geology and Topography who will interpret geologic evolution, this tour is suitable for novices and intermediates. Bring lunch. Meet at 9:30 A.M. at the ski touring parking area across Rt. 206 from the Stokes State Forest Office.

Leader: Steve Johnson 609-292-2578 — Office

Sunday Jan.22—Stokes State Forest, N.J.—*Buttermilk Falls Tour*

Suitable for novice and intermediate skiers, this 8 mile tour will begin at the Four H Camp barricade in Stokes Forest, pass Tillman's Ravine Natural Area, and terminate at the scenic Buttermilk Falls in the Delaware Water Gap National Recreation Area. The distance cited is round trip. Bring lunch. Meet at 9:30 A.M.

Leader: Steve Spafford 201-948-3895 — Home

Sunday Jan. 29 — High Point State Park, N.J. — *Kuser Natural Area Tour*

This is a five mile tour, suitable for novice skiers, through

the unique Kuser Natural Area which consists of a dense cedar forest and swamp. Meet at 10 A.M., with lunch, at the High Point State Park Office on Route 23.

Leader: Regina Kelly 201-948-5727 — Home
948-4646 — Office

Saturday Feb. 4—Stokes State Forest, N.J.—*Wildlife in Winter*

This five mile tour, suitable for novice and intermediate skiers, will be led by an information and education officer of the N.J. Division of Fish, Game & Shellfisheries. In addition to lunch, please bring field glasses. Meet at the ski touring parking area across Rt. 206 from the Stokes State Forest Office at 9 A.M.

Leader: Roy Elicker 201-852-2565 — Office

Sunday Feb. 19 — Stokes State Forest, N.J. — *Ski Orienteering*

Before this intermediate level tour begins you will be taught how to use an orienteering compass and topographic map. After the instruction period, you will be divided into teams to make your way through the southern part of Stokes State Forest, going from checkpoint to checkpoint. The team which finds the most checkpoints in the shortest time wins. Accuracy is more important than speed so you need not be a cross country racer to do well. Bring lunch. If there is no snow but sufficient interest, we will orienteer without skis. Call at least one week in advance for details.

Leader: Jim Merritt 201-948-6507 — Home
948-4646 — Office

For a complete list of Ski Tours in the Northeastern U.S., contact the Ski Touring Council in Troy, Vermont 05868. The cost of the schedule is \$2.75. The Council also publishes a Ski Touring Guide available at the same address for \$3.50.

how to make your gals. go farther

BY HERSCHEL H. HUTSINPILLER

Ever run out of gals. when you need one? Ever stop on a lonely road with no gal. in sight? . . . Lonely, ain't it! It makes no difference whether it's gals. (gasoline) or gals (chicks); those you waste are gone forever. And, those you save are yours to have.

Since gals. and gals are similar in that they can slip through your fingers before you know it, let us dispense with formality and consider only the gals. that power your car.

We simply can't seem to learn the lessons of the Arab oil embargo, and have gone right back to squandering our petroleum resources (from which we get our gals.) like a bunch of dunderheads, using more than ever. The fact that gasoline prices are headed towards a dollar a gallon or that the day is coming when there will be no gasoline, fazes us not at all.

Yet, we could stretch out the gas we have merely by sharpening our driving habits. This point is forcibly driven home by a demonstration driver-economy program designed and operated for DEP's motor vehicle project by Bruce Comfort.

Yes, Mr. Comfort has demonstrated that you and I can save gas (and hard-earned dollars) just by taking a critical look at the way we drive. Of course, if you are one of the diehard lead-foots who infest our thoroughfares, you can spare yourself some pain by not reading on. However, if you're sensible you can help yourself and your fellow man by reading the words of Comfort.

He set up a demonstration program by equipping a station wagon (gas-guzzling type) with a fancy electronic gizmo that measures gas consumption. He then laid out a road course which provides a variety of terrain, but which is as free of traffic as possible. Traffic interference would throw in a variable which would affect the mileages obtained on various runs of the course.

The driver under test, accompanied by a technician, negotiates the course in his normal driving manner. The mileage obtained is recorded, and the driver then is given a brief lecture on good driving practices, which

DENISE FRASCELLA OF DEP'S TECHNICAL SERVICES SECTION LISTENS as Bruce Comfort explains device for measuring gas consumption. The instrument is a meter which indicates the amount of gasoline used during a run over the test course. A formula is applied to determine the miles per gallon obtained during the run.

Photos by Harry Grosch



also happen to be fuel-savers. The driver then reruns the course, making use of the information he has received on good driving. The results of the two runs are compared to determine the percentage of improvement.

The results obtained thus far shout in no uncertain terms that GOOD DRIVING SAVES GALS.! The project incidentally is being used to improve the driving skills of state employees. The tally as of the end of August shows:

Average miles per gal. obtained on first run	11.71 mpg
Average miles per gal. obtained on second run	12.94 mpg
Average percentage of improvement	10.50%
Greatest individual percentage of improvement	33.90%

If you equalled the above averages and, for example, drive 10,000 miles a year in a car which gets 15 miles to the gallon, at 60 cents a gallon you would save \$43 in a year and save 70 gallons of gas or get 1,500 miles of additional driving for free. At the same time, you would be helping to conserve a fast-disappearing and precious natural resource! You also would be causing less air pollution!

Let's take a look at some of those driving habits which really pay off.

STARTING—When starting a cold engine, first press the accelerator to the floor once to set the automatic choke, then feed only the amount of gas required to start the engine during cranking. Pumping the accelerator during start-up is a bad habit which does nothing but waste gas.

WARM-UP—Nothing is gained by a long warm-up period. It is necessary to idle the engine only long

enough so that it will not stall out when the car is in motion. In fact, an idling engine uses about a half-pint of gas every six minutes, wasting gas and emitting unnecessary air pollutants. Of course, after you move on out, you should not pour on the coal (or should we say "gas") until the engine has reached normal operating temperature. In other words, take it easy.

ACCELERATION—Moderation is the name of the game. The jackrabbit who likes to tromp on it is a real dumb bunny. Rapid acceleration reduces fuel economy by as much as 15 percent, and pollutant emissions skyrocket. The good guy accelerates with moderation. However, neither does he creep up to cruising speed, since less fuel is used in the higher gear.

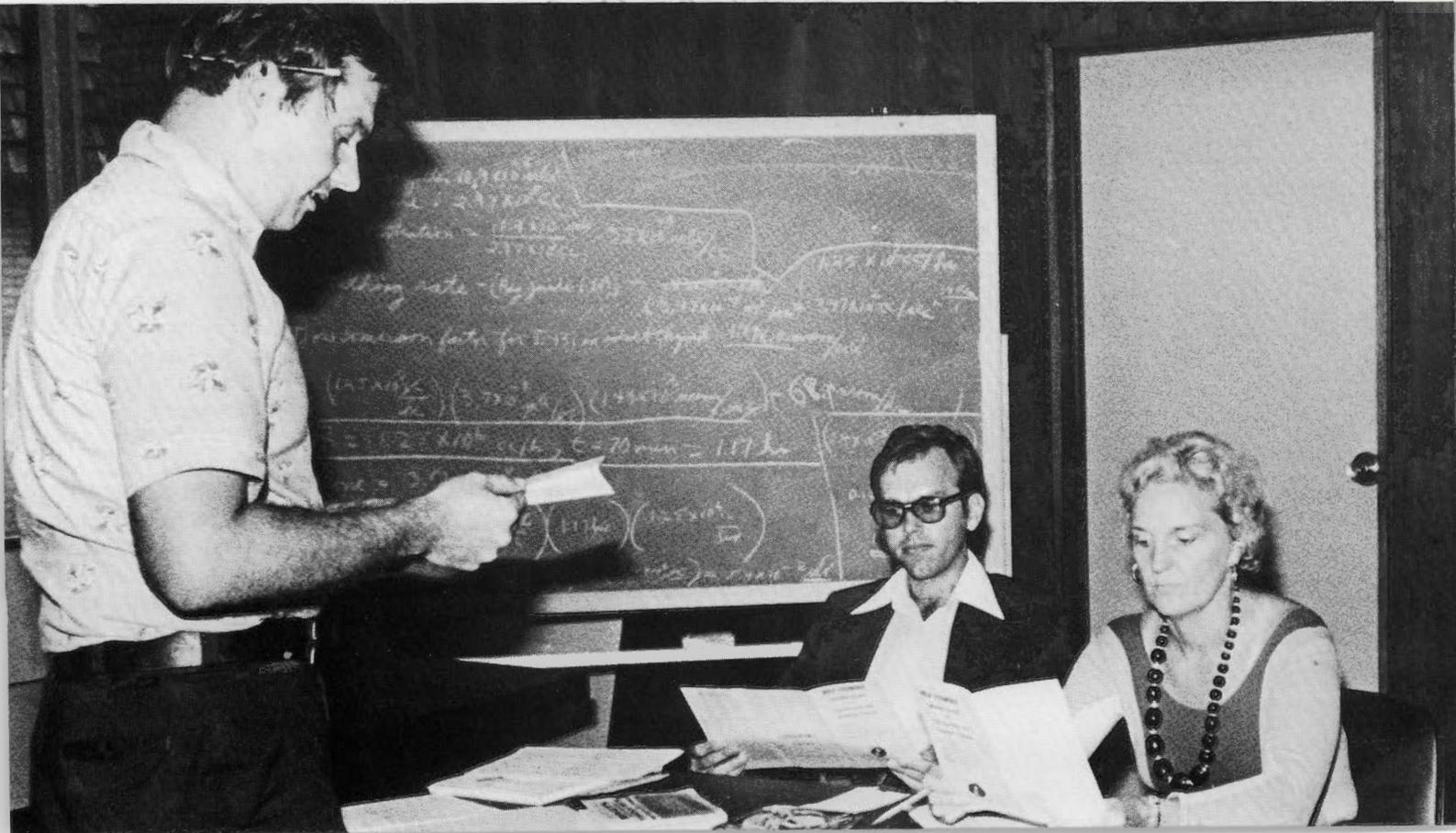
CRUISING—It may be here that we find the biggest payoff. The fellow who drives at a steady pace is the one who will get the most miles out of a tank of gas. He does not accelerate, or decelerate, just for the fun of it. He also keeps track of what is coming up ahead of him on the road.

When he sees that he will be held up by a signal light, a stop sign, or a slow-moving vehicle, he immediately starts to slow down by coasting. This uses far less gas than waiting until he is at the bottleneck to apply the brakes. Similarly, when it will be necessary to climb a steep hill, the good driver gradually picks up additional speed in advance so as to avoid fuel-robbing hard acceleration on the upgrade.

All in all, it is impossible to place too much emphasis on the "steady on" approach to driving.

Continued on page 28

BRUCE COMFORT EXPLAINS GOOD DRIVING HABITS to DEP's Assistant Commissioner Betty Wilson and Division of Environmental Quality Director Paul Arbesman. Explanation is given after driver has negotiated test course in normal driving pattern and before course is repeated making use of points on good driving set forth during this lecture.





Reflection

PHOTOS BY AUTHOR

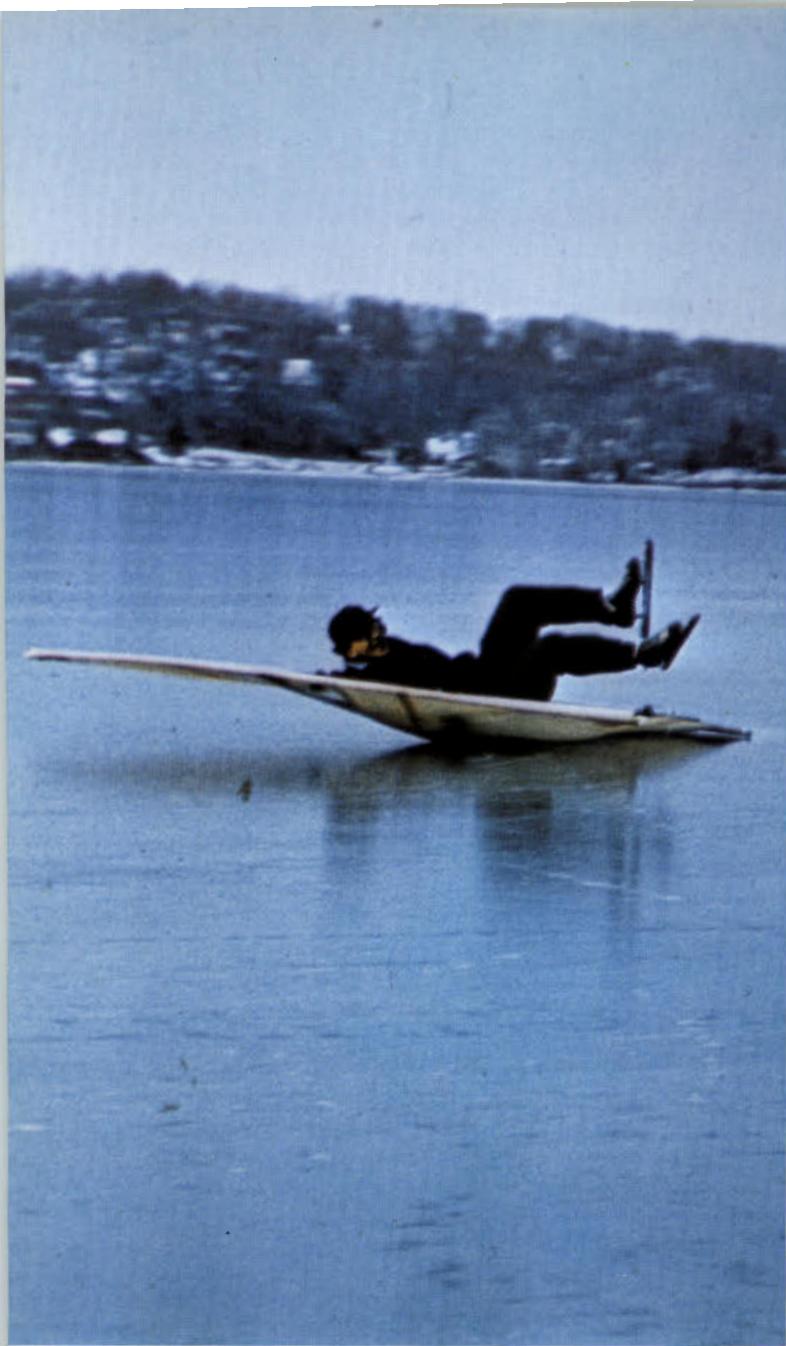
sail skating and black ice

BY LAURA HENNING

Black ice! It's enough to prompt a sail skater to drop everything, grab his sail and speed skates, and make his way to the nearest lake.

Black ice occurs early in the winter and is the smoothest type of ice. No ridges from melted and re-frozen snow have been formed yet and the ice is black, not the familiar white caused by air bubbles that gradually seep up from lake-bottom vegetation as the season progresses. It's unnerving gliding over such ice because it barely looks frozen.

On black ice there is nothing to impede the skater's forward motion, which normally averages 35 to 45 mph. Speeds of over 50 mph are not unusual as he whizzes at $2\frac{1}{2}$ times the speed of the wind. What sets the upper speed limit? Running out of lake, fatigue, and fear. It is an exhilarating experience with only the sound of the wind's rush and the occasional chatter of blades over rough ice.



Going . . . going . . . gone !

With 200 sail skaters, New Jersey is a hotbed of activity for this little-known sport. Mr. Basil Kamener, secretary of the 50-year-old Skate Sailing Association of America, estimates that in the whole country there are not more than 500 sail skaters. Our state has an ideal climate for the sport. It is cold enough to freeze the several sizable lakes but usually not so harsh that they are snow-covered during the winter. The Midwest, which also has a large number of skate sailors, has an excellent early season, but may be socked in by snow much of the winter.

For some reason skate sailing is a sport for the middleaged man, although youngsters have been taught with small triangular sails and a few women have taken up the activity. The New Jersey contingent



Black Ice!

has several female members, one of whom is the mother of six children. The oldest member is a gentleman of 83.

The equipment—thus the cost—of this sport is minimal. Skates are the racing variety with extra-long 22" blades that help to smooth out mid- and late-season ridges on the ice. The quarter-inch-wide steel blades are neither hollow ground as are figure skates nor ground flat as is the hockey blade, but somewhere in between. As a sail skater might cover up to 50 miles in a day, frequent sharpening is necessary and it pays to have a home sharpener.

To ward off wintry blasts the new snowmobile suits are perfect. One sailor recalled how in the old days he would don six layers of clothing and would have to





Old Sail Skating Print

finish his dressing outside.

The star of the ensemble, of course, is the sail. Made of nylon or dacron, it weighs 8 to 10 pounds and measures about 9' by 9' at the widest. Size depends on height and weight of the skater. Waterfun, Inc. of Stamford, Connecticut, sells three models for \$79 to \$89 depending on size. You can count on spending about \$40 if you make your own. Mr. Kamener prefers to make his own, not so much because it saves him money but because he finds the ready-made ones too small and too tautly stretched over the frame. A little bagginess is preferable. Moreover, whether store-bought or homemade, each sail handles differently, and the seasoned sailor, who may have spent hours at the sewing machine, may unfortunately find that his creation is a dud.

Early sail designs—in the 1870's the sport was established in Denmark—enabled one to cruise downwind only, requiring the sailor to struggle upwind with the sail dismantled or collapsed. Later versions allowed the skater to ride at right angles to the wind and into it just as sailboats do. The most popular shape, the

Hopatcong racing sail, conceived in 1917 and named after the New Jersey lake where it was developed, is aerodynamically designed to balance properly on the shoulder with the center of pressure directly against the body, thus preventing unbalancing of the sailor.

The techniques of skate sailing are both lazy and physically demanding. The wind provides the forward momentum but the skater must maintain spring in his flexed knees and keep his weight back on his heels. As the sail fills, the skater leans into the wind at an evidently precarious angle but the unseen gusts support his weight. The more experienced the sailor, the more boldly he leans. Tacking is accomplished by holding the sail horizontally above the head in the neutral position. A long series of lessons are not required to learn the sport. All that is necessary is initial self-confidence on skates, practice, and a smattering of adventurousness.

The sport is not without its dangers. Each sailor carries a pair of ice picks for extrication should he fall through the ice, a very rare occurrence. However, just in case, he routinely carries a change of clothes in his car.

In addition, the ice can play tricks. As the season wears on it freezes and in the process it expands, forming pressure ridges one to three inches high. These ridges are easily visible; however, they sometimes thrust downwards and this is not so easy to spot. There may be a few-yards-wide depression under perhaps one to three feet of water. Thin ice forms over this and may snag the unwary sailor. At other times the ice may become dangerously thin over warm underwater springs. Sometimes a patch of alternating thin layers of ice and water formed by freezing and thawing temperatures put an abrupt end to a skater's fast forward sweep and he may unceremoniously land on his nose. Mild spring weather will not daunt these hardy types. Even if the ice has receded from the shore line, they traverse wooden planks or launch themselves from boat docks.

On a sunny winter Saturday with ideal sailing conditions these skaters will find a plethora of competitors for the lake ice. There are the ordinary man-powered skaters. Among them once was a nun, recalled one sailor, her gleaming white skates and shiny blades sparkling from under her full black habit; she was all smiles. There are also snowmobiles and even cars and planes if the ice is extraordinarily thick. And there are the ice boaters, who monopolize one of the large lakes while the sail skaters take the other. Mr. Kamener feels a certain amount of good-natured charity toward the boat sailors—"They spend half of their time setting up their boats and the rest of it talking about their equipment."

The attractions of sail skating are many: Fresh air, exercise, grace, beauty. Perhaps its greatest appeal is the fun and camaraderie among the participants. "We're all just boys at heart," admitted Mr. Kamener. □

For more information on the sport and equipment contact Mr. Basil Kamener, 4 Manor Road, Livingston, N.J. 07039.

return of a native

BY BOB ERIKSEN

During the winter of 1976-77, the Division of Fish, Game, and Shellfisheries embarked on a program to reestablish a native New Jersey — the eastern wild turkey. Nearly 2000 square miles of potential but unoccupied turkey habitat exist between High Point and Cape May. And it is the goal of the Bureau of Wildlife Management to return wild turkeys to their former range.

New Jersey Outdoors carried the story of our first release of ten wild turkey hens trapped in Vermont in the March-April 1977 issue (*Welcome Back . . . Turkey*). The efforts of the Bureau to procure live-trapped wild birds finally paid off.

On February 4, 1977 five more hens trapped in Vermont were received. These five birds were released on the morning of February 5 in Sussex County. The turkeys were in excellent shape and flew effortlessly from the crates to join the other hens.

Fifteen wild turkey hens with tremendous reproductive potential were now loose in some of New Jersey's finest turkey habitat. Only one obstacle remained — tom turkeys to go with the hens. Vermont biologists were having no success trapping gobblers.

New York's Department of Environmental Conservation came to the rescue on February 10 by sending three gobblers trapped in Allegheny State Park to New Jersey. The birds ranged from 16 to 18 pounds and were beautiful specimens. These toms were joined six days later by four juvenile gobblers or "jakes" flown in from Allegheny.

So, in the early spring of 1977, New Jersey's turkey flock consisted of 22 birds. All that was needed was good brood rearing weather. Occasional reports of the birds through the late winter and early spring showed them to be in good condition and remaining in the vicinity of the release site.

Typically, turkeys remain in sex-



Harry Grosch

segregated flocks until early spring when the gobblers begin to seek out hens. Gobbling activity and breeding peak in early May. After brooding, hens disperse to nest and raise broods.

Poults are hatched in June, the usual brood size being 9-12. After hatching, the young birds will remain with the hen until the immature toms leave the family group in late fall. The first three weeks are the most critical for the poults. If they survive this danger period, their chances of surviving to adulthood are excellent.

During July and August, much of the brood's time is spent in fields foraging for insects and grass seeds. It is at this time that turkey sightings are likely to occur. Although vulnerable to observation while utilizing fields, wild turkeys are very wary and will quickly retreat into the woods if disturbed.

And so it was in mid-July that the first brood reports began to be received by the Bureau. An adult hen with 9 poults was sighted by Bureau personnel within two miles of the release site. A juvenile hen was reported next with 6 poults a short time later. Since those two reports others have come in and, while they haven't been confirmed by the Turkey Project, most seem reliable. The locations of several broods are known. Indications are that our small turkey flock is faring quite well.

Most of our summer reports have come from farmers, fishermen and

hikers. As fall progresses into winter and sportsmen take to the field, there is a chance for additional sightings. Hunters observing wild turkeys should contact the Bureau.

Information from the public is very important to our Turkey Restoration Project. Turkey Project personnel can't follow the birds constantly, so we rely on reports from farmers, hunters, fishermen, hikers, campers and others. We are interested in turkey reports on a statewide basis.

Should you observe wild turkeys, there are several points to note. First of all, remember the exact location, date, time, number of birds and, if possible, their sex. Next, look for any wing streamers or leg bands. The wing streamers are colored and are usually visible with binoculars.

Success of the Wild Turkey Restoration Project depends upon you. Illegal actions involving release of pen-raised turkeys or killing of the birds could seriously undermine the project and should be reported.

With the cooperation of sportsmen and other interested parties, the wild turkeys should, in the near future, roam much of New Jersey's woodlands once again and New Jersey hunters will know the challenge of stalking this wily bird. □

Please contact the following with turkey reports:

Bob Eriksen
Clinton WMA Box 409
Hampton, NJ 08827
201-735-8793

Joe Penkala
Assumpink WMA RD #3
Robbinsville, NJ 03691
609-259-7954

THE JERSEY GLACIER

"Jersey Glacier" is a term originated for this article only. The proper term for the glacier which covered northern New Jersey is the "Labrador Ice Sheet" and the last advance of this ice sheet, which covered our northern counties, is correctly titled the "Wisconsin Glaciation."

BY
JIM FITZSIMMONS

For an investment of only several dollars you can buy one of nature's unique antiques—a piece of glacier. An ancient ice cap, almost one million years old, visited New Jersey and bestowed upon us a very "earthy" gift of boulders, sand, and gravel. These glacial remnants can be easily found, dug out, and sold for hundreds of uses throughout the state. Many of us have already bought some of the "Jersey Glacier" for our driveways or for landfill or even for the very ground we live on. Perhaps we've even wondered about its origin.

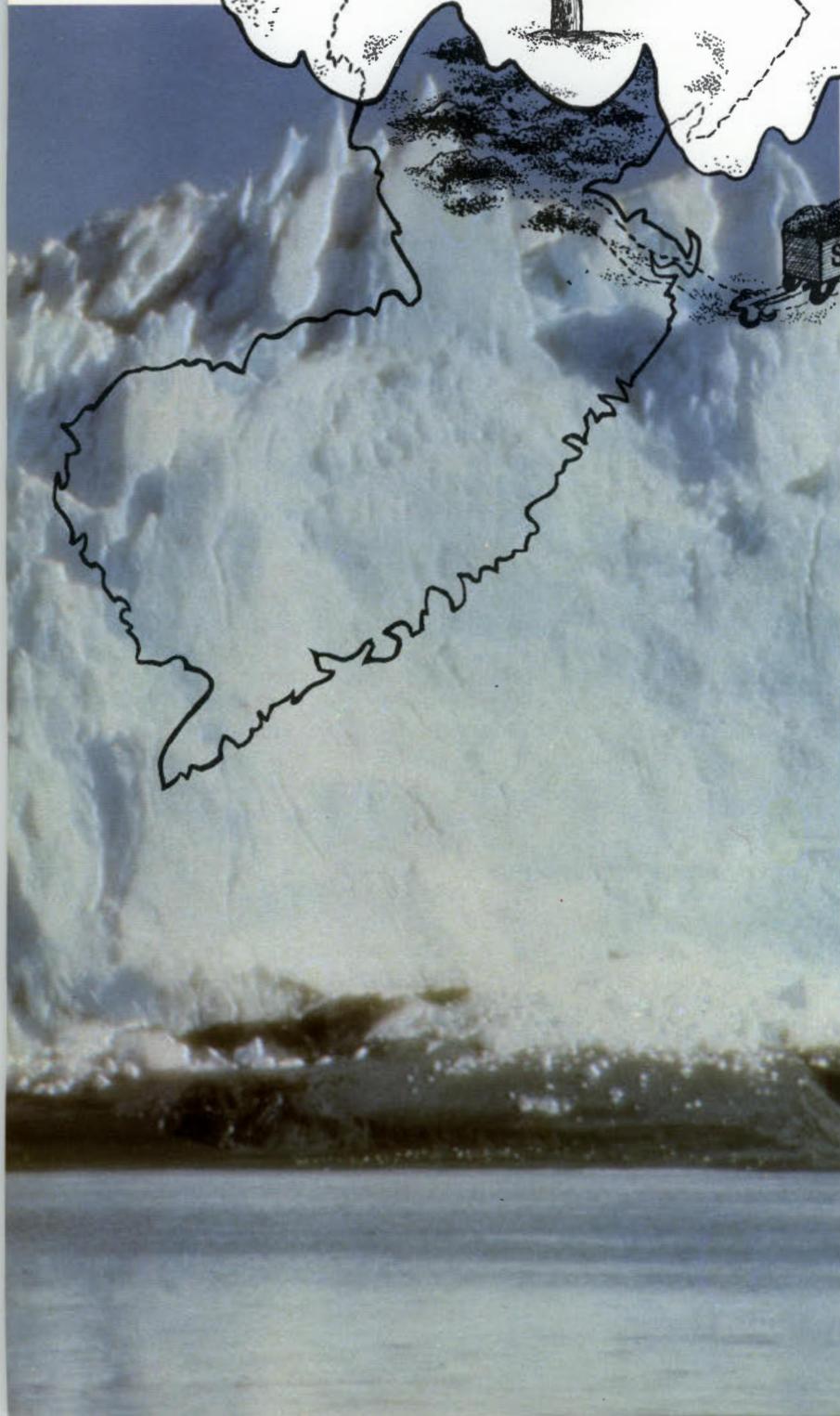
About 75 million years ago a gargantuan ice sheet, four million square miles in extent and up to a mile thick, pushed and scraped southward out of Canada's interior. Methodically and relentlessly this mass of ice devoured and held within itself untold billions of tons of rock and soil. Bloated and heavy with this acquired debris, the "Labrador Ice Sheet" slid finally to a halt.

During the glaciation in North Jersey, the ice reached a thickness of almost 1,500 feet over High Point on the Kittatinny Mountain. Buried under nearly one-half mile of ice were those areas drained by our Passaic and Hackensack Rivers. These two river valleys now contain more than half our state's population.

Eventually the glacier began to melt—a slow process that would

This modern-day Alaskan glacier depositing tons of sandy material has much in common with the continental ice that covered about 1/5 of New Jersey's surface area during the ice age.

ILLUSTRATION BY DEBRA SMITH • PHOTOS BY AUTHOR



reveal a whole new landscape beneath the ice. The melting, or *ablation*, as geologists call it, had deposited blankets of soil and rock upon vast areas of North America. Thus, 12,000 years ago, as the latest of four glacial invasions of North America came to a watery end, New Jersey's northern tier of counties received a new and unique topography.

Roughly one-fifth of our state's surface area felt the grip of the glacier. On a map, just picture a line drawn from Perth Amboy, through the Plainfields, then north and west to Belvidere in Warren County. North of this line lies our glaciated land.

Glaciologists (geologists who study the work of ice on the environment) call the sand and the gravelly, glacial soil *drift*. The many patterns and forms in which this drift was deposited are referred to as *moraines*, *eskers*, *kames*, and *terraces*. To us they are simply knobby hills or elongated ridges, a very common part of North Jersey's landscape.

The building and construction industry has found New Jersey's glacial gift to be very useful and lucrative. Sand and gravel dug from the land can be delivered at about \$20 per truckload, enough to convince some farmers to devote part or all of their land to sand pits rather than to agriculture! The sand and gravel industry ranks as the most important mineral industry of both New Jersey and New York.

But our ice-age legacy consists of much more than sand and gravel. We can thank the "Jersey Glacier" for such beautiful waters as Budd Lake, Lake Hopatcong, and Greenwood Lake. The Great Swamp and the Hackensack, Big Piece, and Troy meadows also mark our glacial history. And we must not forget two massive lakes that disappeared thousands of years ago and left us with two of New Jersey's most important waterways, the Passaic and Hackensack rivers.

So, it isn't necessary to buy a piece of the ice age to know it existed in our state. We have merely to look around to find a natural heritage only a few thousand years old, a remembrance of the "Jersey Glacier." □



Typical form of the glacially deposited sand in north Jersey.



Former grazing land being utilized for the extraction of sand and gravel. Sand deposits of this type may be as deep as 25 to 100 feet. Can you spot the cows in this scene? Hamburg Mtn. appears in the background. This valley is presently carpeted by glacial sands to a depth of 50 to 100 feet. An active sand extraction operation in northern New Jersey.



An active sand extraction operation in northern New Jersey.

Wildlife In New Jersey—

BY JOAN GALLI

Unlike some of its avian counterparts, the Great Horned Owl is true to its name. The largest of New Jersey's resident owls, the "great horned" is also one of three North American owls with ear tufts or "horns." When perched, it sits erect with ear tufts raised. Big yellow eyes, intently gazing out from under the "V" of the forehead feathers gives it a scholarly "wise old owl" look. "Wise" in the sense that the evolutionary process has created in the Great Horned Owl an efficient yet versatile predator, well deserving of its reputation as the fierce and untamable "tiger of the woods."

A nocturnal hunter, more often heard than seen, the owl is nevertheless easily identified by its large size, conspicuous ear tufts and plumage which is generally dark brown on the upper parts and lighter



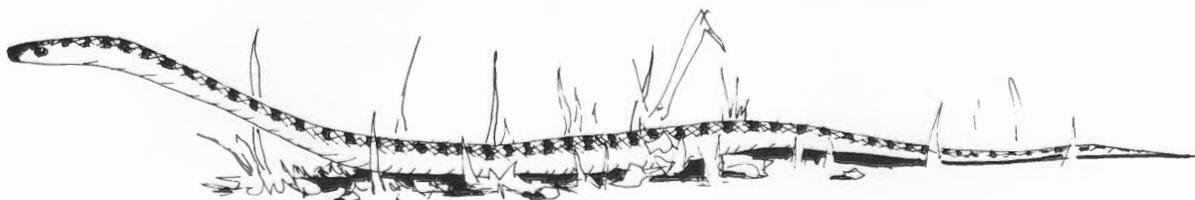
The horned owl will nest in hollows in trees 30-70 feet high.



Horned owls feed heavily on rodents reducing the damage they do to crops.



Snakes and even the skunk are fair game for this bird of prey.



—The Great Horned Owl

ILLUSTRATIONS BY ROBERT PIERRO

underneath. Neck and upper breast are white. The lower breast and belly are heavily streaked with brown. The tail is short, rounded and barred. No whistling wings forewarn of this predator's attack as the flight feathers are deeply fluted allowing for absolutely silent flight. Whether perched or in flight, the bird appears powerful and heavily built. When put on the defensive, the owl will enhance this awesome appearance by lowering its head, hunching its shoulders, fanning its wings up over its back, and hissing. In such an attitude it appears double in size and no other species except man will accept the challenge.

Although endowed with a varied repertoire of screams, shrieks, whistles, and hisses, the Great Horned Owl is most commonly recognized by the

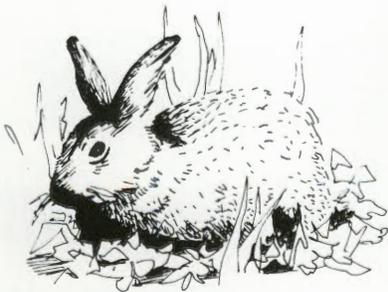
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Deep woods near lakes or swamps are favorite haunts.



Muskrats and fish are part of its diet.



Young rabbits form a large part of its diet.





Firewood cut on a Mercer county tree farm owned by M. Kuser.

NEW JERSEY'S FIREWOOD RESOURCE

BY ANNE CONLEY

Assistant Forester

Firewood is abundant in New Jersey: True or False? If you are one of many caught without firewood for your fireplace or wood burning stove during these cold winter months, you will probably answer with an emphatic "FALSE." However, keeping in mind that New Jersey

Wood used as fuel has always been an important source of energy for New Jersey. Vast amounts of timber were used by the iron furnaces. Glassworks, railroads and steamboats were also dependent upon wood for fuel up to 1850, when wood was replaced by coal. In a 1900 report of the state geologist on forests, wood used for fuel was valued at 57 percent of the total value derived from the forests of New Jersey. Wood is still an important component of the New Jersey economy, providing 45,000 jobs, although today wood used for fuel provides only a small percentage of this employment. With the value of all energy sources rising sharply, wood for fuel is again placing high demands on New Jersey's forest land.

is 54 percent tree covered, with 40 percent in commercial forest land, the answer is actually "TRUE" if you know where to look.

First, what kind of wood are you looking for? As shown in the chart, hardwoods are preferred over softwoods. Softwoods ignite easily and are excellent for kindling, although they burn out quickly. Continuous use of large amounts of softwoods can create a hazard as creosote from resins in the wood will deposit in the chimney and can cause a chimney fire. Hardwoods are more difficult to ignite but give a more efficient, uniform and long lasting fire. Wood from fruit and nut bearing trees such as apple, cherry, and hickory is highly prized as it gives off a pleasant aroma, much like that of the fruit itself when burned. Therefore, a mixture of softwood kindling to easily start your fire, and hardwood logs for a long lasting fire, with some fruit wood for aroma is an ideal combination.

Freshly cut firewood is termed "wet" or "green" wood. Green firewood is extremely difficult to ignite, wastes heat energy in burning, and will deposit additional creosote in the chimney. Dry or "seasoned" wood burns best. At least six months to a year is needed to air dry firewood sufficiently, so you must buy either already seasoned firewood or green wood early enough for drying before you intend to burn it. For maximum drying efficiency large wood should be cut or split into smaller pieces. Firewood should be stacked off the ground, with plenty of ventilation for drying. Also, it should be covered to prevent re-wetting. By law, firewood in New Jersey must be sold by the cord or fraction thereof. A cord is defined as four feet by four feet by eight feet of closely stacked pieces, which will contain 128 cubic feet of stacked wood or approximately ninety cubic feet of solid wood, plus 38 cubic feet of air space.

Now that you know what to look for — where is all this abundant firewood? Wood that is useful for firewood may be unacceptable for any other purpose. Diseased, suppressed or undesirable trees are removed from forests through timber stand improvement work and sold as firewood, thus reducing competition for the healthy desirable trees remaining in the forests. The upper limbs of trees cut down for lumber are salvaged for firewood from a timber harvest area. Slabwood is

An example of a modern firewood dealer is the Rusnak Brothers of Camden County. Their firewood is sold on both the wholesale and retail level.



RATINGS FOR FIREWOOD*

Hardwoods	Relative amount of heat	Easy to burn	Easy to split	Does it have heavy smoke?	General rating and remarks
Ash, red oak, white oak, beech, birch, hickory, hard maple, dogwood	High	Yes	Yes	No	Excellent
Soft maple, cherry, walnut	Medium	Yes	Yes	No	Good
Elm, sycamore, gum	Medium	Medium	No	Medium	Fair — contains too much water when green
Aspen, basswood, yellow-poplar	Low	Yes	Yes	Medium	Fair — but good for kindling
Softwoods					
Pitch, shortleaf & Virginia pine	High	Yes	Yes	Yes	Good but smoky
White-cedar, eastern red cedar	Medium	Yes	Yes	Medium	Good — excellent for kindling
Eastern white pine, true firs	Low	Medium	Yes	Medium	Fair — good kindling
Tamarack, larch	Medium	Yes	Yes	Medium	Fair
Spruce	Low	Yes	Yes	Medium	Poor — but good for kindling

*Source: Northeastern Forest Experiment Station and Northeastern Area, State & Private Forestry, USDA Forest Service.

the outside portion of logs sawn into lumber. Slabwood is a waste product for a sawmill, yet it is quite suitable as firewood. Also, firms manufacturing wood products from lumber often generate waste wood. This type of material is sometimes sold as firewood. By burning this wood you are making use of an energy source which might otherwise go to waste.

Available from the Forestry Bureau of the Division of Parks and Forestry is the revised Firewood Dealers Directory. Send a self-addressed stamped legal size envelope to Forestry Bureau, P.O. Box 2808, Trenton, N.J. 08625. Upon receipt of the Directory, write or call these dealers to check on their firewood supply, prices, and if they deliver and stack the firewood they sell. Also included in the listing are hardwood sawmills that usually have slabwood for sale.

For the more adventurous homeowner, there are areas in many state forests and parks designated for collection and cutting of dead wood by individuals for personal home use. A fee of \$5.00 per cord is charged with a maximum of two cords allowed per person. You are granted three days in which to cut your firewood. Only those with a good knowledge of working and safety

practices with a chain saw or axe should try this method of obtaining firewood. Also, remember that a cord of wood weighs more than two tons, so you will need to make several trips or have a large truck to carry your cord of wood away. Contact the area superintendent at the numbers listed below to check on availability of wood for collection at these state parks and forests.

Worthington State Forest	201-841-9575
Jenny Jump State Forest	201-459-4366
Stokes State Forest	201-948-3820
Lebanon State Forest	609-726-1190
Bass River State Forest	609-296-1114
Wharton State Forest	609-561-0024
Belleplain State Forest	609-861-2404
Allamuchy State Park	201-852-3790
Ringwood State Park	201-962-7031
Wawayanda State Park	201-764-4120
Washington Crossing	609-737-0623
Voorhees (Spruce Run Office)	201-638-8801

So you see, there is abundant firewood in New Jersey when you know where to look for it. Now with this information in hand, you will be able to obtain all the firewood you will need for the remaining winter months. □

These 150 cords of wood were cut and stacked on the Cuttler Tract in Morristown, N.J. The wood was cut by employees hired for an Economic Recovery Act (ERA) project in 1935.

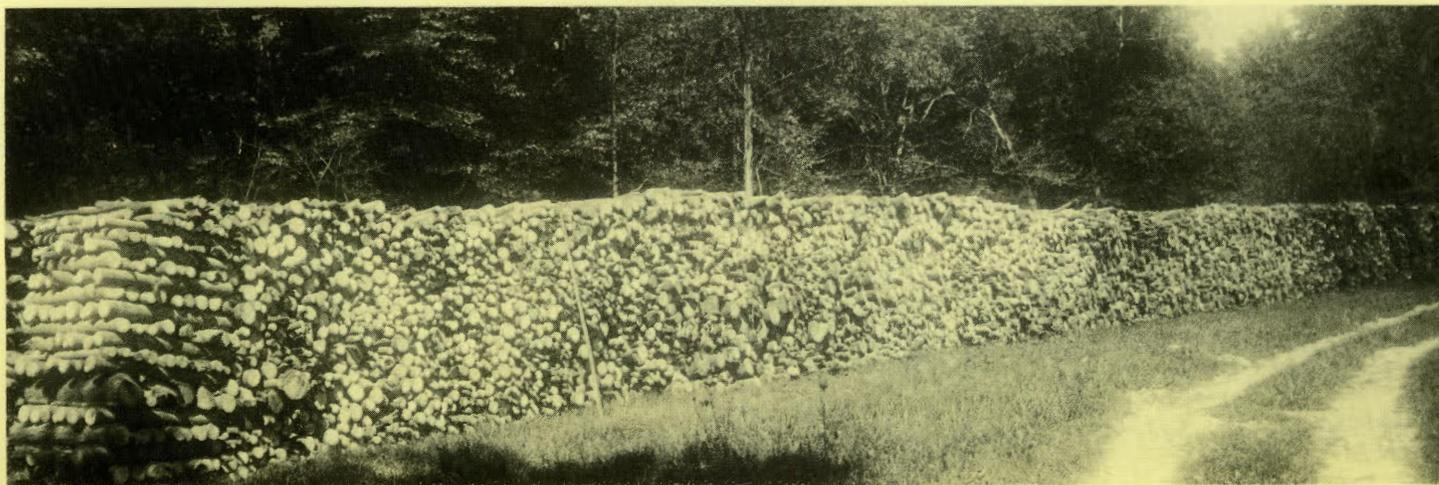


PHOTO BY FORESTRY BUREAU, DIVISION OF PARKS AND FORESTRY

IN CASE OF AN OIL SPILL

"HELP!" IS AVAILABLE
FOR STRICKEN BIRDS
FROM THE NEW YORK
ZOOLOGICAL SOCIETY

For people whose spirits soar at the sight of a wild bird flying against the sky, there is no more heart-rending scene than this same feathered creature trapped in a coating of thick, black oil. Oil spills have become an environmental fact of life, and everyone wants to help the innocent victims, but most people don't know how. To meet the ever-growing need for up-to-date, accurate information about how to save oil-spill victims, the New York Zoological Society has published a handbook, "Help! A Step-by-Step Manual for the Care and Treatment of Oil-Damaged Birds."

Prepared for the amateur as well as the professional conservationist, "Help!" already has been applauded by zoologists around the world. Marlin Perkins, star of the popular television series "Mutual of Omaha's Wild Kingdom," calls it "the most complete handbook for caring for oil-coated birds I have ever seen," and recommends it "for all nature lovers, conservationists, zoos, scouts, hu-

mane organizations, bird watchers, and state and Federal conservation and wildlife officials."

Dr. Victor B. Scheffer, Consultant for the U.S. Marine Mammal Commission, adds, "The manual will appeal especially to those who recognize the unity of nature or, if you wish, the kindness between people and birds." The publication has also been praised by such leading conservationists as Sir Peter Scott, Honorary Chairman of the Wildfowl Trust in Great Britain; Dr. Anne LaBastille, author, ecologist, and winner of the World Wildlife Fund's gold medal in 1974; John S. Gottschalk, Executive Vice President of International Association of Fish and Wildlife Agencies; and Dr. Paul A. Johnsgard, a Director of the International World Waterfowl Association and author of *The Snow Goose*.

The handbook is a reprint from the August/September issue of ANIMAL KINGDOM, a magazine devoted to wildlife and conservation, which is published for 12 North American

zoological associations by the New York Zoological Society. Originally printed as a special "pull-out" supplement to the magazine, "Help!" can easily be tucked into a pocket for handy reference in the field.

"Help!" was written by Emil P. Dolensek, D.V.M., and Joseph Bell, both of the New York Zoological Society. As the Society's Veterinarian, Dr. Dolensek is responsible for the health care of some 6,000 animals of 800 different species at the Bronx Zoo and the New York Aquarium. He also serves as Honorary Veterinarian for the New York City Police Department, and is the co-author of the book, *A Practical Guide to Impractical Pets*. Joseph Bell is Deputy Director of Zoology and Chairman and Curator of Ornithology at the Bronx Zoo. A Director of the International Wild Waterfowl Association, he has been associated with the Zoo's bird department for more than 30 years, serving in every capacity from assistant keeper to curator.

Many zoological organizations in the United States and Canada will offer "Help!" to their visitors and members. Anyone interested in obtaining copies should first check with his or her local zoo or aquarium. If the handbook is not available from these sources, people may write directly to the publisher. Orders should be addressed to "Help!," New York Zoological Society, Bronx, New York 10460. The reprint is being made available to the public at modest prices that merely cover the costs of printing and mailing so that the information will reach as many people as possible. Prices (including shipping) are based on the quantity ordered; payment should accompany all orders.

1-9	50¢ each	
10-49	45¢ each	
50-99	40¢ each	
100-499	35¢ each	
500-999	30¢ each	
1000 +	25¢ each	□



Environmental News

PHOTOS SUPPLIED BY DEP.



NEW JERSEY BOOSTERS. The four men posing at the base of the Statue of Liberty have good reason to look pleased. U.S. Secretary of the Interior Cecil Andrus (second from left) and Governor Brendan Byrne (extreme right) earlier had announced that New Jersey is receiving a \$3 million Public Works grant for Liberty State Park on the Jersey City waterfront. This grant will provide vitally needed construction jobs for Hudson County as well as speed the development of Liberty State Park — a boost for the economy and the environment. Plans call for the construction of a parking area to serve the recently restored railroad passenger terminal, a pedestrian plaza, an entrance to the train concourse at the passenger terminal building, food service concessions, restroom facilities, interpretation/exhibit areas, administrative offices, a maintenance yard with an access road and a landscaped overlook at the harbor's edge. In addition to the federal grant, the state is adding \$510,000 of its own funds to the project. Flanking Interior Secretary Andrus are Environmental Protection Commissioner Rocco D. Ricci (extreme left) and Jersey City Mayor Francis X. Smith. DEP is responsible for the development and administration of Liberty State Park.

NEW JERSEY FIGHTS BACK . . . SUES PENNSYLVANIA FIRM FOR POLLUTING TRENTON'S AIR AND WINS CONSENT JUDGMENT

In an unusual legal action — the first case of its kind where New Jersey sought to control emissions from a facility in a neighboring state — DEP sued the Stauffer Chemical Company of Falls Township, Pa. (near Morrisville) for polluting the air of Trenton and surrounding townships (Mercer County) across the Delaware River. Governor Byrne announced that the suit, filed on October 4, was settled in the state's favor a week later when officials of the chemical company signed a consent judgment (terms given below) agreeing to remedy the situation.

Background of the case: On August 31, 1976, and July 1 and September 13, 1977, phosphorus trichloride fumes from Stauffer Chemical Company drifted across the Delaware River in large amounts. Several Trenton-area residents became ill, apparently as a result of the noxious discharges. When attempts to persuade the company to correct the situation failed and Pennsylvania authorities' enforcement activities apparently did not lead to abatement, the decision to sue was made and carried out. Suit was brought under the Federal Public Nuisance Act in Federal District Court, Trenton.

Consent judgment provisions: Under terms of the consent judgment, filed for review with federal judge Clarkson S. Fisher, Stauffer admitted that the emissions took place; agreed to implement an air pollution control program to be reviewed and supervised by Pennsylvania air pollution authorities; will submit quarterly status reports to the New Jersey Department of Environmental Protection; will pay a \$15,000 penalty to DEP, half of which will be returned to the company if no similar pollution occurs within two years; agreed to allow DEP investigators to enter and inspect the facilities in the event of another air pollution incident; and agreed that in the event of future such emissions, the Federal District Court of New Jersey has jurisdiction over such legal action as the state might file.

Deputy Attorneys General Steven Tasher and Peter Herzberg represented DEP in the case. □

NEW JERSEY WARNS EPA/PHILADELPHIA/ 74 INDUSTRIES/PA. IT WILL SUE OVER AIR POLLUTION

In mid October a letter was sent to the U.S. Environmental Protection Agency (EPA), the Pennsylvania Department of Environmental Resources, the City of Philadelphia and 74 commercial establishments in that city notifying them that New Jersey intends to file suit for violations of the federal Air Pollution Control Act. The letter, signed by Governor Brendan T. Byrne, Attorney General William F. Hyland and Environmental Protection Commissioner Rocco D. Ricci, says that the state is taking legal action due to nonenforcement of strict sulphur in fuel oil requirements in Philadelphia that are needed to bring air quality within federal health standards, and because of the increased pollution burden on New Jersey as a result.

The action was based on the fact that the air in Philadelphia remains more contaminated than the federal health standards despite the seven years which have elapsed since the federal Clean Air Act mandated speedy compliance with those standards. Existing federally approved standards for sulphur in fuel which would mandate the removal of 40 percent of the existing sulphur from oil burning in Philadelphia have not been enforced by federal, state or city officials.

The letter served notice that unless the violations of law are remedied, New Jersey intends to commence suit after 60 days in order to obtain relief for these violations of the Clean Air Act and any other applicable law.

Studies show that a large portion of the sulphur oxide pollution measured at DEP's air monitoring station in Camden originates in Philadelphia. Governor Byrne noted that the pollutants in the air from Philadelphia drift over to southern New Jersey and "leave the air so dirty that even with restrictions on our own industry, we can't meet minimum air quality standards." "New Jersey is not going to sit by and allow that ongoing abuse of our health and economy," he said.

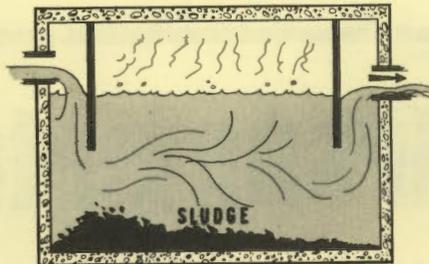
DEP has sought for more than two years to resolve the matter outside the federal court by suggesting the adoption of regional sulphur standards by the parts of New Jersey, Delaware and Pennsylvania (including Philadelphia) which share the airshed. □

Teacher workshop program

DEP RECEIVES \$32,000 GRANT FOR WILDLIFE EDUCATION

A \$32,000 grant from the U.S. Department of Health, Education and Welfare (HEW), recently awarded to DEP's Division of Fish, Game and Shellfisheries, will be used for development of wildlife education materials. The HEW grant is one of a few educational grants ever offered to a state environmental

Continued on page 16D



SEPTIC TANK DIAGRAM. A septic tank is simply a tank buried in the ground to treat the sewage from an individual home. Waste water from the home flows into the tank where bacteria in the sewage break down the organic matter and the cleaner water flows out of the tank into the ground through sub-surface drains. Periodically the sludge or solid matter in the bottom of the tank must be removed and disposed of.

Pine Barrens Water Study Begins

The department recently took another step to protect water quality in the Pine Barrens by engaging Rutgers University in a three-year study of the impacts of septic tank effluents (see photo) and indirect sources of pollution such as runoff on the surface and groundwaters. The data will be used to help administer a protection program for waters of the Pine Barrens and are expected to have application in other parts of the state where septic systems are built upon areas with similar soils.

The \$417,633 study will involve the 760-square-mile section of the Pine Barrens to be designated as a "critical area" for sewerage purposes by DEP. Scientists from the Rutgers Center for Coastal and Environmental Studies at Cook College and the New Jersey Agricultural Experiment Station have teamed up to perform the study.

Jeff Zelikson, Acting Director of DEP's Division of Water Resources, said it had been generally known that too many septic tanks upon too small lots can adversely affect the water resources of the Pine Barrens and upset a sensitive ecosystem. "Through the Rutgers University study we will develop a tool to find out exactly how septic tank effluents affect surface and groundwater water quality," he said. □

DEP GETS TWO GRANTS TO PURSUE TOXICS

The department recently received two federal grants totaling \$238,100 to study the effects of toxic substances in the environment. The grants represent national recognition and support of New Jersey's toxic substances control program begun in 1976 under the direction of Dr. Peter Preuss, special assistant to the commissioner.

A \$73,100 one-year grant, awarded by the U.S. Environmental Protection Agency (EPA), will be used to study the relationship between cancer mortality in New Jersey and exposure to industrial emissions and other environmental factors.

A second EPA grant—\$55,000 a year for three years—will be used to survey about 10,000 industries throughout the state to evaluate the use and emission of 80 selected carcinogens (cancer-causing substances) and other toxics. □

\$30 MILLION BEACHES/HARBOR BOND WINS APPROVAL

New Jersey voters in the November 8 general election approved the 1977 Beaches and Harbor bond issue proposal. This is good news for eligible municipalities which have beach erosion problems along tidal waters: \$20 million of the bond issue funds will be spent over a five-year period to support a significant beach restoration and protection program. Approved municipal projects related to jetties, groins, bulkheads, seawalls and beachfill will have 50 percent of their costs financed by the bond issue with the remainder shared locally. On the state level, \$10 million of the bond funds will be used to pay the state's one-third share of the cost for cleanup of the harbor along a five-mile reach of waterfront adjacent to Liberty State Park. This entails removing deteriorating piers, sunken and abandoned ships and other debris. The federal government will pay the remaining two-thirds (\$20 million) of the total cost.

The Shore Protection Program, administered by DEP's Division of Marine Services, is necessary because nature is constantly eroding New Jersey's beaches endangering both life and property. The program, therefore, helps to maintain the tourism industry along the Jersey Shore—and tourism is the second largest industry in New Jersey. Thus, the environment and the economy benefit.

For information about requirements to be met by municipalities applying to the program, write to Bernard Moore, DEP, Division of Marine Services, Office of Shore Protection, Box 1889, Trenton 08625. □

CAFRA PERMIT APPROVED FOR LIFE-CARE FACILITY IN OCEAN GROVE

The department recently approved a Coastal Area Facility Review Act (CAFRA) permit for construction of a \$14 million retirement facility in Ocean Grove (Monmouth County). The 272-unit complex, to be known as Aldersgate, will occupy a four-acre oceanfront site at the northern end of Ocean Grove adjacent to Asbury Park. Aldersgate is the first life-care facility project to be approved by CAFRA. (A life-care facility is one which a single person or couple enter when they are well and contract with to care for them the rest of their lives.)

Because Ocean Grove is a unique 19th century historical town with many examples of seashore Victorian architecture, DEP required Aldersgate to revise its building design to be more compatible with the surrounding architecture. The project, expected to be completed by May 1979, will create about 120 new permanent jobs. Parking will be provided for 300 cars and recreation facilities will include an arts and crafts room, woodworking shop, game room and shuffleboard courts. □

YOU CAN HELP PREPARE A STATEWIDE TRAIL PLAN

A recent survey conducted by DEP showed that millions of New Jersey residents use the state's trails for such activities as hiking, nature walks, bicycling, horseback riding and canoeing. A master plan being developed by the New Jersey Trails Council will begin with a mapped inventory of all known trails in the state including those for horses, bikes, canoes, ski tours and off-road vehicles.

The trails council, a citizen advisory group, seeks volunteer assistance from groups and individuals in preparing a plan that will best serve the needs of trail users. Anyone wishing more information may contact Lois Johnson, Trails Coordinator, DEP Green Acres Program, 1301 Parkside Avenue, Trenton 08638.

Following completion of the inventory, the trails council and DEP's Green Acres section will prepare guidelines for developing the state's trails, emphasizing the linkage of existing trails and expansion of the system. (The entire project is authorized under terms of the "New Jersey Trails System Act" of 1974 which directs DEP to establish a system of scenic and recreational trails both in the natural, remote sections of the state and in scenic areas in or near urban locations; set up connecting or side trails; designate, administer, regulate and acquire such trails and trail rights-of-way. It permits use of Green Acres funds for trail projects. The law sets penalties for violation of any provision of the law or any rule or regulation promulgated under its terms.) □

MARCH 31 DEADLINE FOR GREEN ACRES PROJECTS

County and municipal governments have until March 31 to submit detailed lists of intended Green Acres projects for 1978 to DEP for consideration in its preparation of a priority list. The department will review the responses and use them as guides in developing a "Program of Action" for meeting the open space and recreation needs of the state. The result will be more effective distribution of Green Acres funds.

Deputy Commissioner Betty Wilson noted that this is the first attempt to solicit advance notice as to the local needs involving acquisition or development of open space lands. (Green Acres rules adopted in July 1977 outlined the local response method for charting interests in Green Acres matching grant programs.) Wilson said the 1978 Program of Action will be in operation by April.

DEP will continue to process grant applications already on hand but future applications will be reviewed according to the priority list. □



TAX EXEMPTIONS FOR SOLAR UNITS. Solar heating and cooling systems are exempt from property tax under terms of legislation signed into law by Governor Byrne in October. Byrne (center, above) chose the Northern Burlington County Regional High School in Columbus for the signing ceremony because it has completed the first solar-assisted greenhouse on the East Coast (background, left). (The facility, built on school grounds by the students, was paid for using federal and state vocational funds.) The law, Chapter 256, P.L. 1977, becomes effective January 1, 1978 and will expire after five years unless extended. Standards for solar energy systems that will be eligible for the tax exemption are to be developed by the state Energy Department. Seated from left to right in the photo are Energy Commissioner Joel Jacobson, Governor Byrne, Assemblywoman Jane Burgio. Standing, from left are Coordinator of Rural Development Albert H. Leu (representing Agriculture Secretary Philip Alampi), Education Commissioner Fred Burke, Environmental Protection Commissioner Rocco Ricci, Principal of Northern Burlington Regional Jr. High School G. Richard Lang, and Superintendent of Schools Ralph Di Sibio.

To curb illegal dumping

Hazardous Waste Rules Proposed

The department held a public hearing in mid November on its proposed regulations to keep track of hazardous chemical wastes by requiring every shipment of hazardous waste materials to be accompanied by a DEP document called a "Special Waste Manifest."

Under the proposed rules, the state would supply manifest forms to industries producing hazardous wastes. The waste producer, transporter and disposer would each complete a section of the form. Both the producer and the disposer would then be required to send copies of the manifest to DEP. (Similar measures have already been instituted in California and Texas.)

Beatrice S. Tylutki, director of DEP's Solid Waste Administration, said the new regulations are intended to curb illegal dumping which has been plaguing the state. "Putting a stop to the clandestine dumping of hazardous wastes is one of DEP's highest priorities, and the manifest appears to be an effective tool for achieving that goal," she said. Tylutki called the manifest system "cradle to grave control" over transportation and disposal of hazardous wastes. □

For hazardous spills

Trucking Company Fined \$7,000

A Middlesex County trucking firm was fined a total of \$7,000 for two hazardous substances spills in 1975, in violation of the state's water pollution laws. Superior Court Judge George Y. Schoch, sitting in Trenton, imposed the penalties against Annex Trucking Company, of Old Bridge Township on October 5 after hearing the case brought by DEP.

Deputy Attorney General Keith A. Onsdorff, who prosecuted the case for DEP's Division of Water Resources, said the company was fined \$2,000 for a 4,500 gallon spill of gasoline from a tanker truck which struck a utility pole on Route 206 in Chester Township (Morris County) on April 23, 1975. The load of gasoline then flowed into the Black River and the Morris County Chubbs Pond Wildlife Sanctuary disrupting the environmentally sensitive area. The court imposed a \$5,000 fine for a second spill—1,300 gallons of toluene, a petrochemical—on July 27, 1975 from a parked tanker at the company's office on Factory Lane in Old Bridge Township. Also, the company, failed to notify DEP's Hazardous Substances Spill Response Office of the spills as required by law. □



News Capsules

TWO NEW BROCHURES

"HELP YOURSELF . . . DRIVERS' GUIDE to Fuel Economy and Emissions Control" is a six-page foldout brochure available free from DEP's Bureau of Air Pollution Control, Box 2807, Trenton 08625. The factors influencing fuel consumption and exhaust emissions are presented in a readable, easily understandable manner. Topics covered include vehicle design, vehicle maintenance, driving conditions and driving habits. It contains a table showing how much fuel costs per 10,000 miles based on an auto's average miles per gallon (mpg). (For example, a car getting 10 mpg at a gas cost of 56¢ per gallon means that the owner is paying \$560 per 10,000 miles for fuel.) A blank chart is included so the reader can keep track of his/her car's fuel consumption and cost.

"WATER . . . what the state is doing to manage this life support resource" is an eight-page foldout brochure available free from DEP's Division of Water Resources, Box 2809, Trenton 08625. In addition to explaining the work of the division, the brochure contains pictures and interesting facts about water availability, supply, cost and the like. □

HUNTERS, TROPHY DEER DEADLINE: FEBRUARY 24

February 24 is the cut-off date for entering the annual state record deer program sponsored by DEP's Division of Fish, Game and Shellfisheries, in cooperation with the New Jersey State Federation of Sportsmen's Clubs. The competition is divided into two divisions: the 200-pound club and the antler club. Entry blanks are available from the division office or wildlife management area offices. Address all correspondence to the Division of Fish, Game and Shellfisheries, Box 1809, Trenton 08625.

PINE BARRENS WORKSHOP FOR TEACHERS

An Environmental Education Workshop in and about the Pine Barrens will be held at the Conservation and Environmental Studies Center in Browns Mills on Friday, January 20, 1978. The all-day workshop will feature general information about Pine Barrens ecology and preservation with a special presentation by Congressman James J. Florio, sponsor of the workshop.

Experts in environmental education will present indoor/outdoor training sessions for five courses. Each teacher-student will receive a teaching packet of learning materials appropriate for the grade level of his or her preference.

For registration forms and other information contact Teresa Sell, phone 609-881-7050, or write 114 East High Street, Glassboro 08020, or the Conservation and Environmental Studies Center, phone 609-893-9151. □

Stage two in process

FARMLAND PRESERVATION PROJECT

The extensive analysis of offers made by farmland owners—offers to sell development easements were received on 16,600 acres—has been completed, ending the first stage of New Jersey's farmland preservation pilot project. As a result of staff analysis and review by the local steering committee, three large land parcels totaling about 5,000 acres and located in the townships of Lumberton, Southampton and Pemberton are undergoing full-scale appraisals—the second stage of the program. Prices to be paid by the state for the development easements will depend upon the results of two independent appraisals of the land to determine its agricultural value and its development value. Following the appraisal process, another review will be made by DEP Commissioner Ricci and Agriculture Secretary Alampi, administrators of the pilot project, and a decision will be made concerning easement purchases.

(Under the pilot project, which is being funded with \$5 million in Green Acres money, farmland is preserved through the purchase of development easements by the state. The state will purchase the easement for the difference between the land's agricultural value and its development value. The farmland owner retains ownership and the right to sell the land, but the land may only be used for agricultural purposes in the future.) □

CONSERVATIONIST OF THE YEAR

Robert E. Mangold, a wildlife biologist with the New Jersey Division of Fish, Game, and Shellfisheries, has been named Conservationist of the Year.

The New Jersey Chapter of the Wildlife Society made the award during its fall meeting held at the Wetlands Institute in Stone Harbor.

The chapter selected Mangold in recognition of his 26 years of outstanding achievements in game and nongame research and management in New Jersey.

Mangold, who lives in Tuckerton, holds a masters, as well as a bachelors, degree in wildlife from the University of South Dakota, where he also taught.

He started with the division in New Jersey in 1951 as leader of the cottontail rabbit project. He subsequently worked on deer, clapper rail, waterfowl, and other migratory birds.

During the early 1970's he developed the state's endangered and nongame species project and edited the first official endangered species list.

Mangold has served as the division's representative on the Natural Resources Council and as a biologist evaluating Coastal Area Facility Review Act applications.

He has written numerous articles on game and nongame species, many illustrated with his own photographs. □

NEW JERSEY WILD AND SCENIC RIVER SYSTEM ESTABLISHED

The New Jersey Wild and Scenic Rivers Act signed into law by Governor Byrne in late September creates a state wild and scenic river system. Chapter 236, P.L. 1977 enables DEP to designate rivers or parts of rivers for inclusion within the state system; to adopt land use and other regulations consistent with the law's purposes for lands delineated as floodways, flood fringe or flood hazard areas; and to acquire lands which will promote the scenic and recreational objectives of the legislation.

The purpose of the measure is to preserve rivers or sections thereof which possess outstanding scenic, recreational, geologic, fish and wildlife, floral, historic, cultural or similar values. Four classes of river areas are established: Wild river areas, Scenic river areas, Recreational river areas and Developed river areas.

The Wild and Scenic Rivers Act is patterned after the federal law establishing the National Wild and Scenic River System to permit New Jersey to apply for federal recognition of individual components of the state's system as part of the national one. Federal recognition guarantees the rivers a measure of protection from federally funded, licensed or otherwise assisted projects and increases the potential for receiving federal grants for land acquisition.

DEP is directed to complete all requirements necessary for the designation of a section of the Mullica River from Atsion Lake in Wharton State Forest (Burlington County) to the Route 542 crossing at Pleasant Mills and Cedar Creek (Ocean County) as the initial component of the New Jersey Wild and Scenic Rivers System. □

(Continued from page 16B)

TEACHER WORKSHOP GRANT

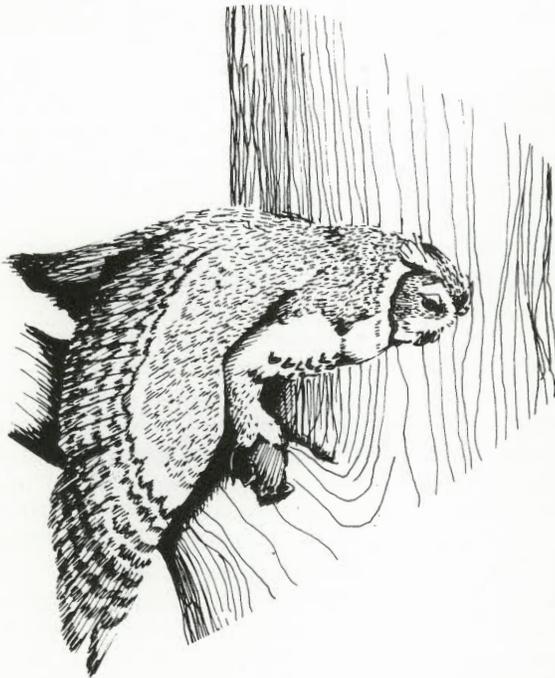
protection agency.

Russell A. Cookingham, division director, said the grant is a result of the division's Wildlife Education Weekends which are workshops for teachers to examine the philosophy and techniques of wildlife management. The workshops are held in conjunction with the New Jersey School of Conservation in Stokes state forest (Sussex County) and the Conservation and Environmental Studies Center at Whitesbog (Burlington County).

The lack of suitable wildlife-resource oriented literature for both teachers and students prompted the division to apply for federal funds. The money will be used to develop appropriate educational materials using wildlife as a teaching tool to widen understanding of broad environmental concepts. All material prepared with grant funds will be used in future teaching workshops and will be available to any teacher.

The next Wildlife Education Workshop program is scheduled for May 1978. Interested teachers should contact Bob McDowell, coordinator of the DEP program, at 201-852-2565 for further information. □

The Great Horned Owl



deep booming whoo-who-who-who-who which can be heard for several miles on a still night. Many of the calls are quite ventriloquial, sending you searching in the wrong direction for an owl that has located you either by sight or sound long before you will spot him.

Contrary to popular belief, Great Horned Owls can see very well by day. They simply prefer to hunt at night when their acute hearing combined with keen eyesight make location of prey a simple matter. Their unnerving habit of following any movement with an unblinking stare and steadily moving head is explained by the fact that their eyes are essentially immovable. To compensate, the Great Horned Owl possesses well developed neck muscles which allow the head to rotate through 270 degrees.

Great Horned Owls do not migrate. They mate for life and remain life-long residents of a home territory which they maintain year-round. It is in the dead of winter when most birds have moved from their nesting range to winter in the sunny south that the Great Horned Owl begins its nesting season. Vocal year around, in the day time as well as at night, this "hoot owl" is particularly noisy during the mating season when it will respond most easily to a human's imitation of its call. With the leafless trees of winter, you might think that a large noisy owl in the woods would be easy to find. Not so, they are not easy to locate and the experts have often been stumped in their attempts to find the nesting owls.

Otto Heck, who has been studying nesting Great Horned Owls in Hunterdon County, New Jersey, for a number of years has developed a sixth sense for

locating them. Seeking the owls on their nest is not something you should do however, unless you are willing to suffer the consequences of a silent, but possibly, painful assault by a Great Horned Owl which will not hesitate to attack man in defense of its nest.

In particular, the recent invasion of the woodlands by snowmobiles has caused problems for the owls which flush from the nest when disturbed, leaving the eggs or young unattended and subject to loss due to chilling in the winter weather. Hunters, hikers, and birdwatchers near the nest sites, as well as timber cutting for firewood and sawmills, and clearing for housing developments can also cause failure at the nest sites.

Great Horned Owls nest in woodlands where large sugar maple, tulip, white oak or evergreen trees with strong horizontal limbs make ideal roosts. The eggs are commonly laid in the abandoned nests of red-tailed hawks, crows or squirrels to which the owl may add feathers or hemlock branches. The owls will also use snags or tree holes for nesting. They nest near water and, in Hunterdon County, are usually found on the rocky ridges where the farmers cannot work the land and mature woodlands have remained. In these rural farm areas, man's activity has benefitted the owl which feeds on the rodents associated with corn and grain crops.

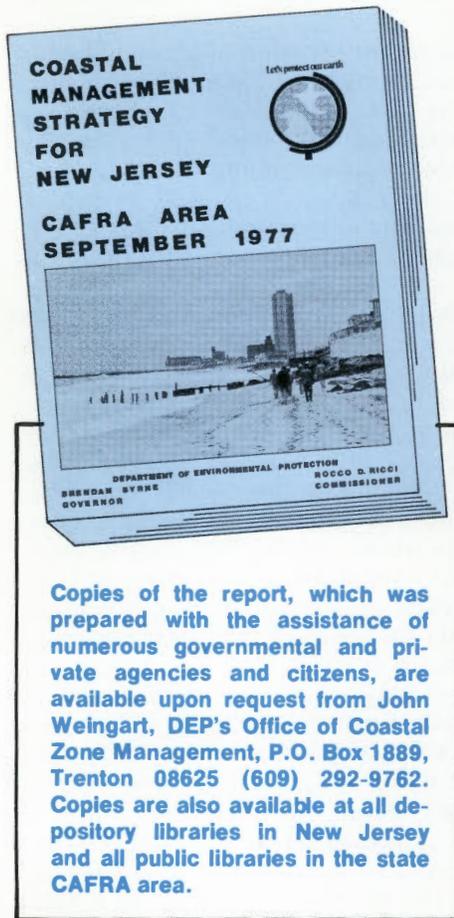
During a mild winter, nesting may begin as early as late December. Incubation takes 37 days. The owls are ready to fly in six to eight weeks just at the time when the young of the prey species are appearing in the woods and fields. Great Horned Owls are generalized feeders as is evidenced by the scattered remains of dinners found in and under nests. Examination of the pellets, the undigested portions of a meal which are cast (thrown up) by the owls, has revealed the remains of rats, mice, squirrels, rabbits, woodchuck, muskrat, and even skunk. They also feed on birds, including other raptors, as well as crayfish, frogs, fish, snakes and insects.

While Great Horned Owls feed primarily on unwelcome rodents, they will also take chickens, game birds, waterfowl, and an occasional small house cat. In so doing, they incur man's wrath which is often expressed by a gun or trap. However, all birds of prey are protected under federal law. The best way to resolve this situation is to remove what is tempting the owl to a place of safety—an enclosed pen.

Occasionally, a half-grown owlet may be found on the ground under the nest. Blown out, pushed out, or tumbled out of a flimsy nest, the youngster presents the observer with a problem—what do you do with a temporarily misplaced owlet? The best alternatives are to either leave it be or gently place it in the low branch of a nearby tree. Its hunger calls will attract the adults which will feed it even on the ground. Besides, a young horned owl can climb trees by using its beak and its stiff tail feathers as props. It may well get home again on its own. If the Great Horned owlet survives the hazards of adolescence, it may live up to twenty years. □

A STRATEGY FOR THE COAST

Proper Management of the Diverse and Precious New Jersey Coast



Copies of the report, which was prepared with the assistance of numerous governmental and private agencies and citizens, are available upon request from John Weingart, DEP's Office of Coastal Zone Management, P.O. Box 1889, Trenton 08625 (609) 292-9762. Copies are also available at all depository libraries in New Jersey and all public libraries in the state CAFRA area.

June 20, 1973—the date New Jersey's Coastal Area Facility Review Act (CAFRA) was approved. As stated by the Legislature . . . "an exceptional, unique, irreplaceable and delicately balanced physical, chemical and biologically acting and interacting natural environment resource called the coastal area . . ."

That far-sighted Act in 1973 mandated the giant step forward that the state took this past September when a comprehensive plan entitled the *Coastal Management Strategy for New Jersey* was submitted to Governor Brendan Byrne and the Legislature by Rocco D. Ricci, Commissioner of the state Department of Environmental Protection (DEP).

The 223-page document, developed over the past four years, includes DEP policy statements on where development should take place, what should be built, and how.

For example:

- Major industrial facilities would not be encouraged in environmentally sensitive shore areas.

- High rise structures should be allowed along the beaches only where they are aesthetically compatible with their surroundings.
- Residential housing should be encouraged in developed areas but not in open spaces.
- Specific sensitive areas are identified and delineated.

The report spells out policies to guide developers, various agencies and other interest groups in making decisions on many issues. The report was prepared by DEP's Office of Coastal Zone Management, headed by David N. Kinsey, Chief.

DEP held a series of morning, afternoon and evening public meetings on the *Strategy* in late November in eight locations—Trenton, Toms River, Asbury Park, Camden, Salem, Cape May Court House, Atlantic City and Jersey City—to discuss the report and listen to suggested changes.

The *Strategy* defines a process for making public decisions on the future

PHOTOS SUPPLIED BY THE DEPT. OF ENVIRONMENTAL PROTECTION.

**Where land meets sea — perhaps
the most vital and delicate
area on earth.**



of the coast. The *Strategy* first describes the Coastal Area defined by CAFRA. The statutory CAFRA Area includes a 1,376 square mile land area and related coastal waters in a region stretching from Raritan Bay along the Atlantic oceanfront to the Delaware Bay.

The report goes on to propose a "coastal zone" under the federal Coastal Zone Management Act, and spells out coastal policies. DEP recommended that this *Strategy*, revised after public meetings, be submitted by the Governor for federal approval as the first segment of New Jersey's participation in the national coastal management program.

Policies of the Coast Management Strategy

Four basic coastal policies make clear the major choices and the basic direction represented by the *Coastal Management Strategy*:

1. *Protect the coastal ecosystem.*
2. *Concentrate rather than disperse the pattern of coastal residential, commercial, industrial and resort-oriented development and encourage the preservation of open space.*
3. *Employ a method for decision-making which allows each coastal location to be evaluated in terms of both the ad-*

vantages and the disadvantages it offers for development.

4. *Protect the health, safety and welfare of people who reside, work and visit in the coastal zone.*

The specific policies in the *Strategy* are divided into three groups: USE POLICIES are directed at different uses of the coastal zone, such as housing and energy facility development; LOCATION POLICIES evaluate specific types of coastal locations such as wetlands and agricultural land, and PERFORMANCE STANDARDS focus on controlling the effects of development, such as water runoff and soil erosion.

The *Strategy* includes more than fifty policies addressing Uses and Performance Standards. As examples of the coastal policies, the *Strategy* encourages hotel-motel construction in developed oceanfront communities, directs offshore crude oil and natural gas pipelines away from the center of the Pine Barrens, reaffirms the State's preservation policy on coastal wetlands, and encourages energy conservation in building design and development patterns. The *Strategy* also presents an explanation of a Coastal Location Acceptability Method (CLAM), which will be used to determine specific Location Policies.

How The Coastal Policies Are Used

DEP will carry out the policies and techniques of the *Coastal Management Strategy* through its regulatory decision-making under the CAFRA, Wetlands and riparian permit programs.

In addition, decisions in the coastal zone under other permit programs administered by the Department, such as programs concerned with Air Quality, Flood Plain Management, Sewerage Facilities and Water Facilities, will reflect consideration of the *Coastal Management Strategy*, to the extent possible within the legal constraints of these programs. DEP will also use the Coastal Policies in the *Strategy* to review plans and proposals by other public agencies, allocate state funds, and undertake further planning affecting the coastal zone.

DEP will also work closely with other state agencies, particularly the Department of Energy, Department

of Community Affairs, Department of Labor and Industry, Department of Transportation and Department of Agriculture, federal agencies, local agencies, interest groups and the public in carrying out and refining the *Strategy*.

Next Steps In Coastal Management

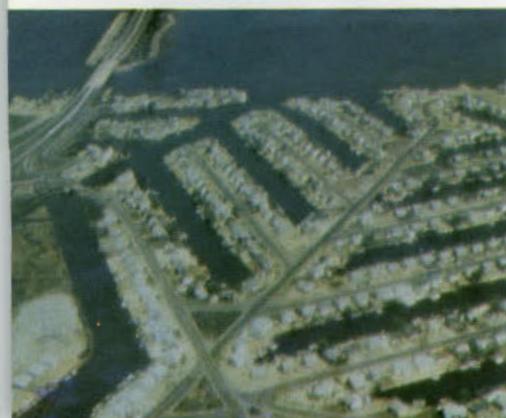
DEP intends to submit a coastal management program for federal approval in two stages. First, the *Coastal Management Strategy* is intended as the draft of the coastal program for submission this winter for federal approval for the CAFRA Area of New Jersey. Second, the management program for the coastal region *outside* of the present CAFRA area—along the Delaware River and in northern New Jersey—will be completed and submitted for federal approval by late 1978.

The *Coastal Management Strategy* represents a major step in New Jersey's efforts to manage its coast. Most significantly, it provides a framework for building from the work done to date. As the immediate next step, DEP invites widespread public discussion and debate on the contents of the *Strategy*. The Department will seek opportunities to continue the discussions begun at the public meetings in November of 1977, by meeting with other interested individuals and groups throughout the state.

During the next year, DEP will address in greater detail many of the issues raised in the *Strategy*. Among the projects to be emphasized are: (1) further developing, refining and explaining the Coastal Location Acceptability Method (CLAM), (2) producing maps of many coastal features to clarify the implications of coastal policies, (3) preparing a *Coastal Handbook* to assist people who must work with the *Strategy* on a day-to-day basis, and (4) continuing to develop a clear, comprehensive, and coherent system to implement the *Coastal Management Strategy*, with an emphasis on creating productive state-local relationships.

Some users of the coast might expect the *Strategy* to define specific blocks or areas within each coastal municipality for preservation as a natural resource or as appropriate for a specific type of development. While DEP's detailed coastal wet-

Continued on page 29



The Loneliness

Photographs by Robert J. McDonnell

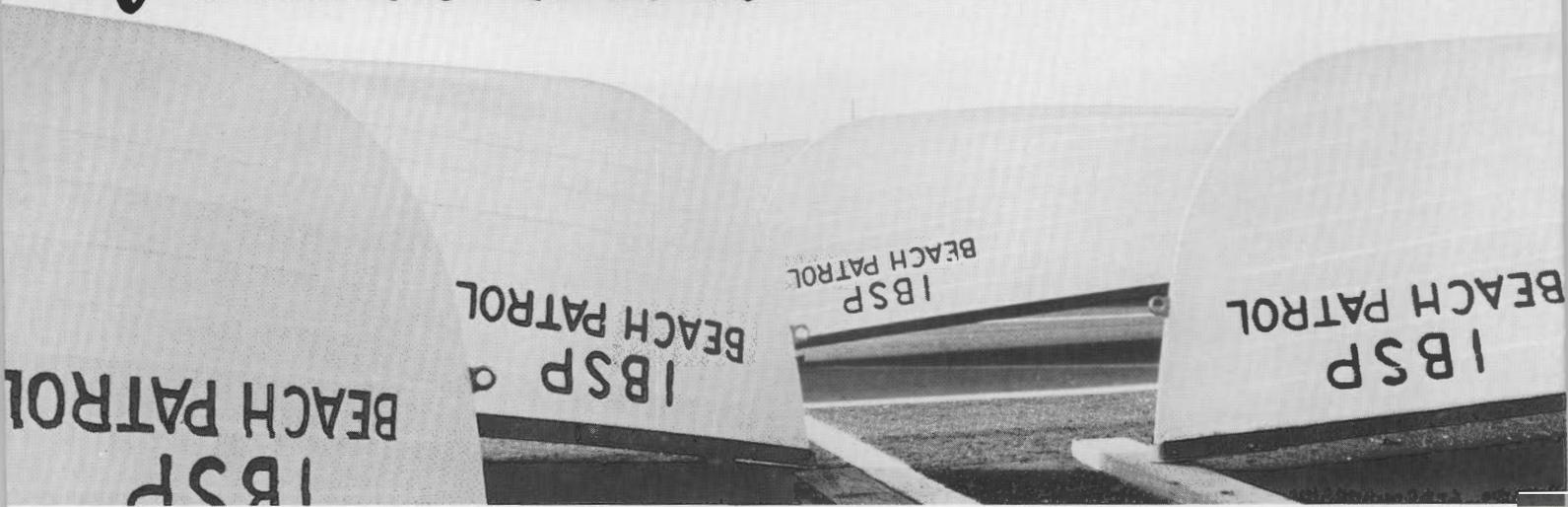


Dune Grass Bends with Gusts of Wind

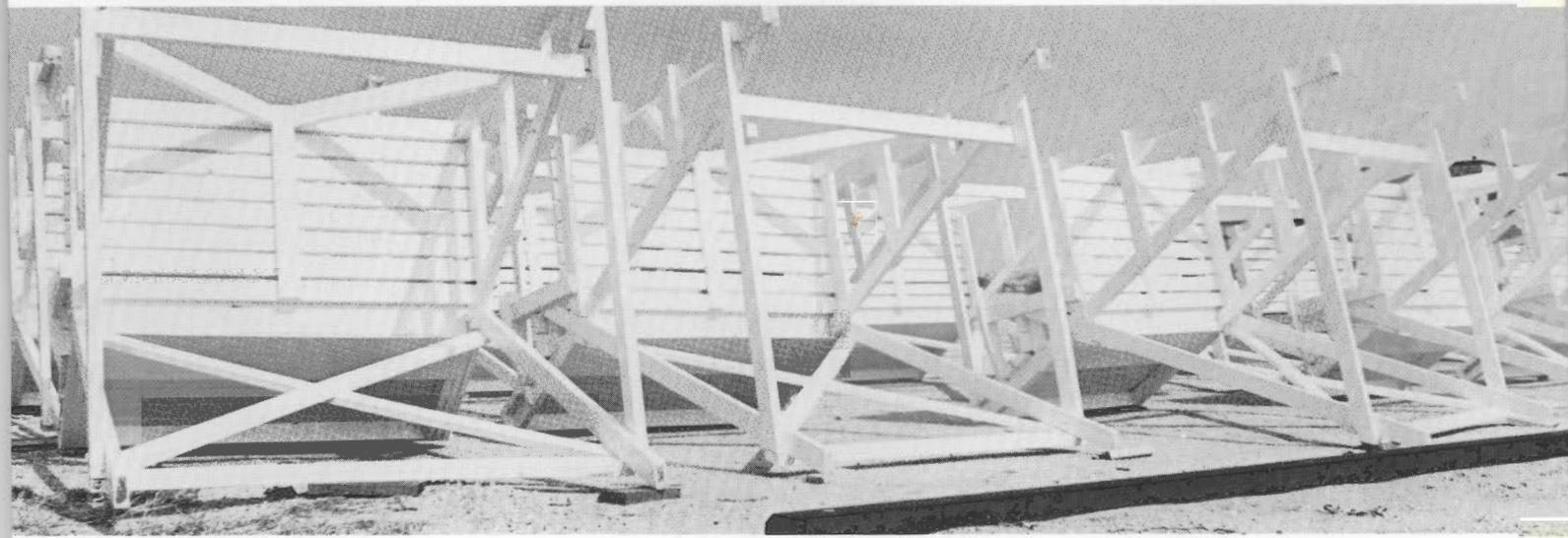
A White House Standing Lonely Guard



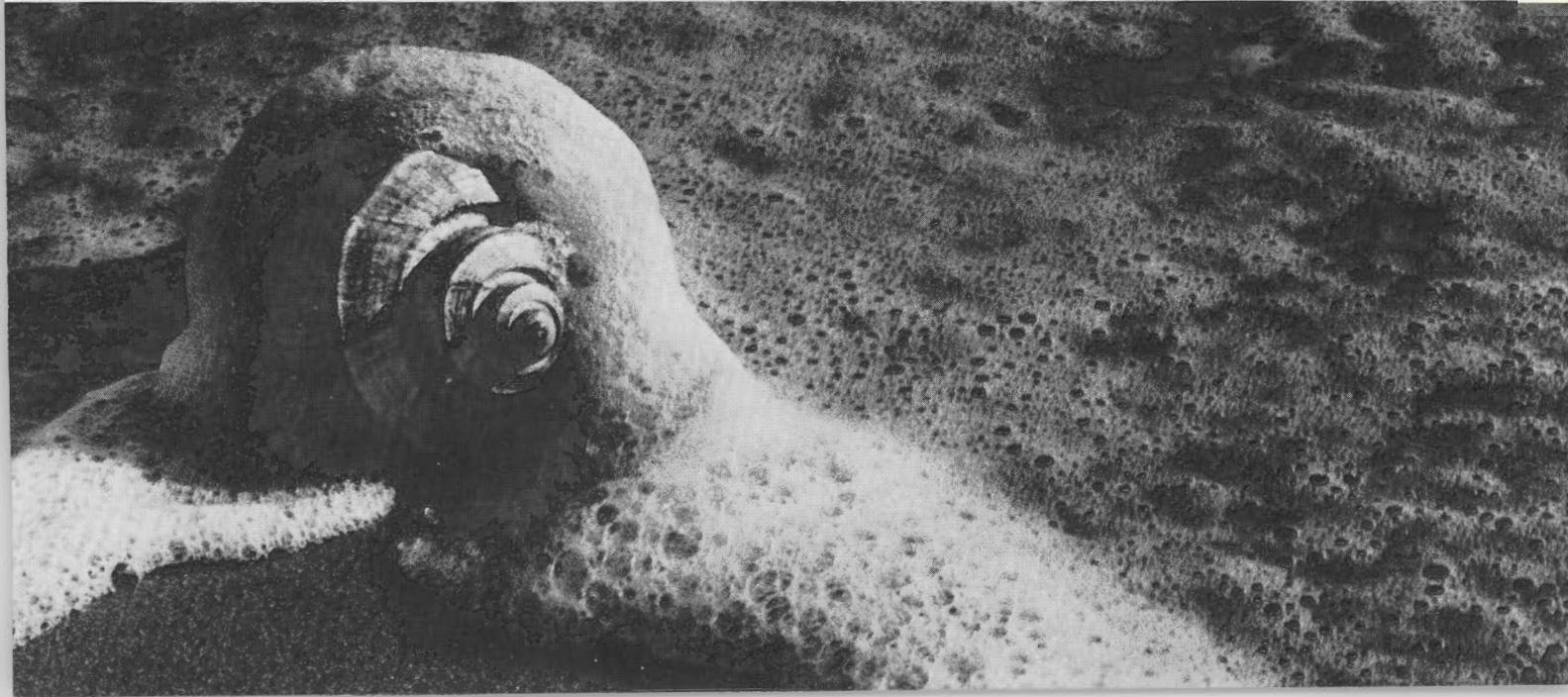
of Island Beach



Guard Boats and Stands Waiting for the Crowds



Shell in Surf





These young flickers are about to be fledged after being hand-reared by Martha and Mark Pokras.

THE BIRD HEALERS

BY KATY DUFFY KIEVITT

PHOTOS BY MARK POKRAS

In the unique hospital run by Martha and Mark Pokras, the "patients" are truly bird-brains! The Pokras's care for injured and ill birds at the Avian Rehabilitation Center, which has its headquarters in their home in Absecon. Martha and Mark are instructors in the departments of Marine Science and Biology at Stockton State College, where they teach ornithology. At the Center, Mark performs the simple surgery, such as removing shot from muscles and suturing wounds. More complicated procedures are referred to Dr. Samuel Rubin at the Linwood Animal Hospital.

During the intense and prolonged cold weather last winter, many of Mark and Martha's "patients" were starving waterfowl, especially brant. Many other "patients" are birds hit by cars, such as the turkey

vulture and screech owl presently being rehabilitated. Still others are found in leghold traps, like the red-tailed hawk, which lost one leg as a result of being trapped. They also have birds whose injuries result from shooting incidents, such as a Canada goose blinded in one eye and a short-eared owl rendered incapable of flight. Other "patients" suffer the consequences of head injuries or infections.

The Center has definite seasonal cycles of "admissions." In the spring and summer, most of the "patients" are baby birds. In the fall, hunters bring the Pokras's sick and injured birds encountered while hunting. During the winter, the number of cold and starving birds brought to the Avian Rehabilitation Center depends largely on the severity of the weather and the availability of food.



This great horned owl broke its leg but was successfully rehabilitated, as can be seen in this picture showing it just prior to release.



Marsh hawk about to be released.



Adult laughing gull and chick, patients at the Avian Rehabilitation Center.

Although many birds come to the Avian Rehabilitation Center in critical condition, approximately 50 percent of them survive. Better than half of the survivors are able to be released. Martha says that the high point of their work comes when birds that have been successfully rehabilitated are returned to the wild. Sometimes birds recover but are crippled or unable to fly, and are therefore incapable of surviving in the wild; in these cases, the birds are placed with reputable zoos and nature centers where they are cared for and serve to educate the public.

Many injured and ill birds can recover if they are given the proper treatment, but it takes know-how to rehabilitate birds. It also takes Federal and State permits (the Center has Federal Permit #5-SP-577 and New Jersey Humanitarian Permit #206). Martha and Mark encourage those who find wounded birds to make arrangements to get them to a licensed rehabilitation facility. The Avian Rehabilitation Center works in conjunction with Brigantine National Wildlife Refuge, where injured birds may be left until

Mark and Martha can pick them up. If you find an injured bird, you can call Brigantine NWR (609 652-1665) during the day and Mark and Martha (609 652-7566) evenings and weekends.

Mark, who has been a licensed bird bander for five years, has some advice to those who find injured birds. First of all, be sure to protect yourself from being hurt by the bird. For example, a swan's wing can deliver a serious blow and many birds have strong sharp bills capable of inflicting wounds. If you can get close to the bird, cover it with something opaque—a blanket or towel—pick up the covered bird, and place it in a cardboard box (because birds are calmer in the dark). It is not necessary to give food and water immediately. An injured bird is usually in shock and should be allowed to sit quietly.

The Avian Rehabilitation Center is a nonprofit undertaking and is wholly funded by tax-deductible contributions. The mailing address is RD 1 Box 271 Absecon 08201. □

GETTING STARTED IN FLY TYING



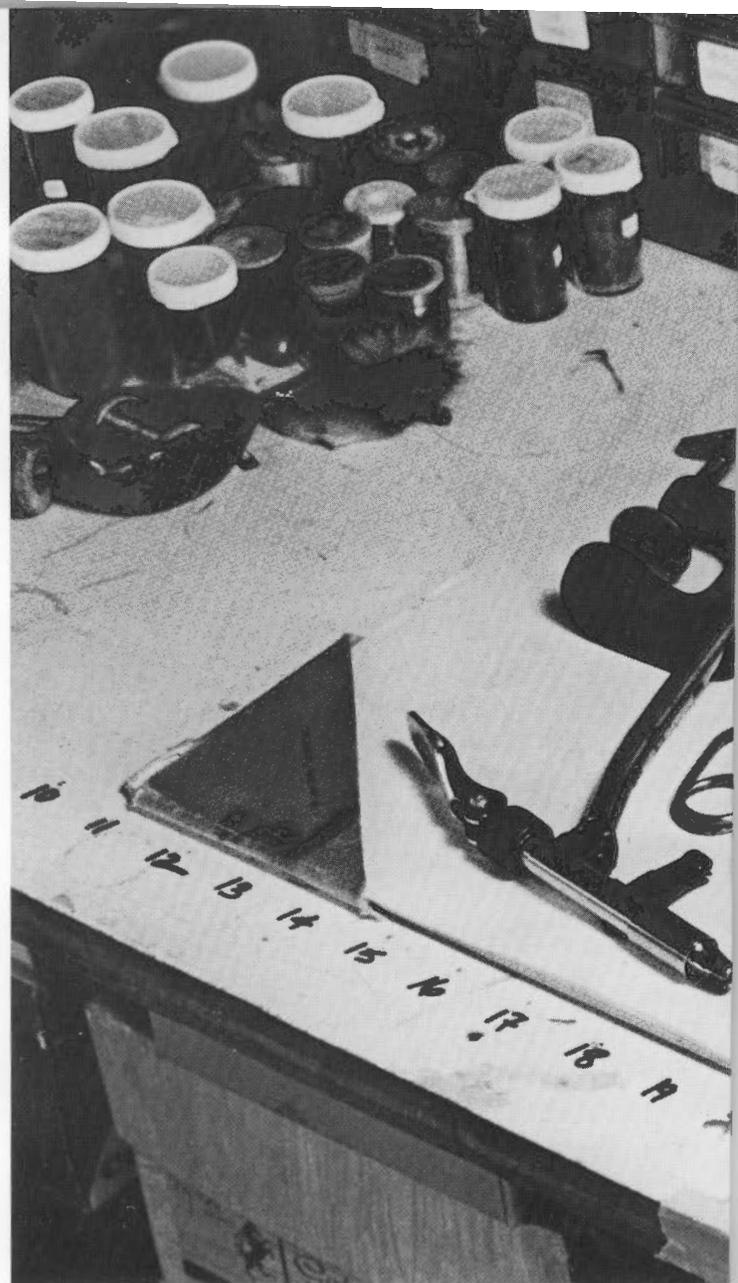
BY MARY S. MATLACK

Most fly fishermen end up as flytiers as well, or at least give tying a try. There are several reasons for this phenomenon; one of the most often cited is economy. The average non-tying angler just can't afford to carry as many flies or as many fly patterns as he'd like to. His effectiveness on the stream is likely to suffer, not only because he may not have an adequate selection of flies, but because of a certain excess of caution used in fishing the flies he does have. It is quite easy to lose 10 to 15 dollars' worth of flies in the course of a day's fishing. (For someone who ties his own flies, this loss is reduced to about 50 cents, plus tying time.) So the non-tier, in fear of losing a lot of hard-earned dollars, is likely to spend his valuable fishing time climbing trees and scaling cliffs to recover snagged flies, use heavier tippets than he should, avoid casting to fish rising under overhanging vegetation, and not fish his nymphs *quite* on the bottom (where they should be most of the time).

In addition to economy, you as a flytier enjoy certain other advantages. You always get exactly what you want, rather than settling for "almost right." You become more familiar with a variety of fly patterns and the insects they are designed to imitate, and more knowledgeable about the many birds and animals from which tying materials are obtained. Many a long winter evening can be whiled away tying up a supply of flies for the coming season. Your tying will keep your anticipation stirring over the winter, and you will not be as likely to wait until the last minute to get your tackle in order for opening day. You may even find yourself sneaking out to wet a line for a few hours on unseasonably warm days in late February and early March before the streams close for stocking.

Although it is possible to learn to tie on your own, it is best to get some help from an experienced tier in the beginning. Some high schools and colleges offer a fly-tying course as part of their adult education program. Your local Trout Unlimited chapter may offer a free tying course of some kind. If there is a tackle store in your area that carries fly-tying materials, they can probably supply you with information about what is available locally in the way of tying lessons.

If you decide to strike out on your own, it is essential that you first obtain a good reference book. Until recently very few fly-tying references were



ROBERT S. KUSS, JR.

available, but in the past few years the market has been flooded with such books. The old standard (from which your author learned to tie) is *Fly Tying* by Helen Shaw. This book does not deal with specific patterns, but gives excellent, detailed instructions and large, clear photographs illustrating basic tying procedures such as how to tie a hair wing or a quill body, wind a hackle, etc. Other newer books by Paul Jorgensen and Kenneth Bay (among others) give the type of basic instructions, the dressings of some popular patterns, and information on some of the recent innovations in tying materials and styles.

Your biggest investment in fly tying will be for a basic set of tools. All sorts of gadgets are available to the tyer, but the basics are vise, scissors, hackle pliers, dubbing needle, and bobbin. Don't be afraid to spend enough money to get quality tools. Nothing is more likely to discourage the beginner than poor tools. A good vise will cost between 15 and 25 dollars. The type with jaws operated by an adjustable cam lever is easy and quick to operate and will hold the hook



**THE
MANY FACES
OF
WINTER
IN
NEW JERSEY**

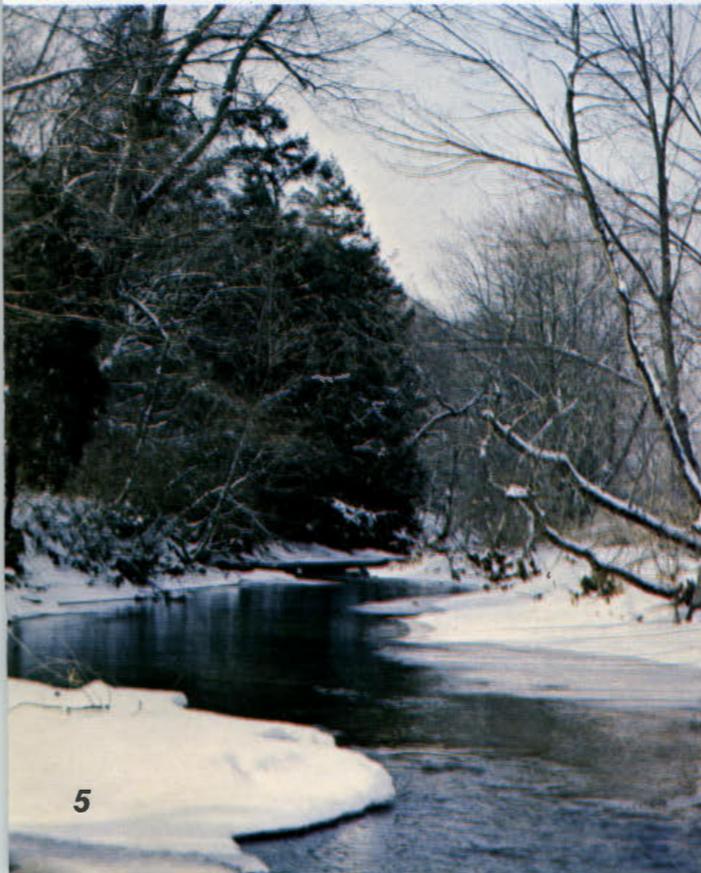




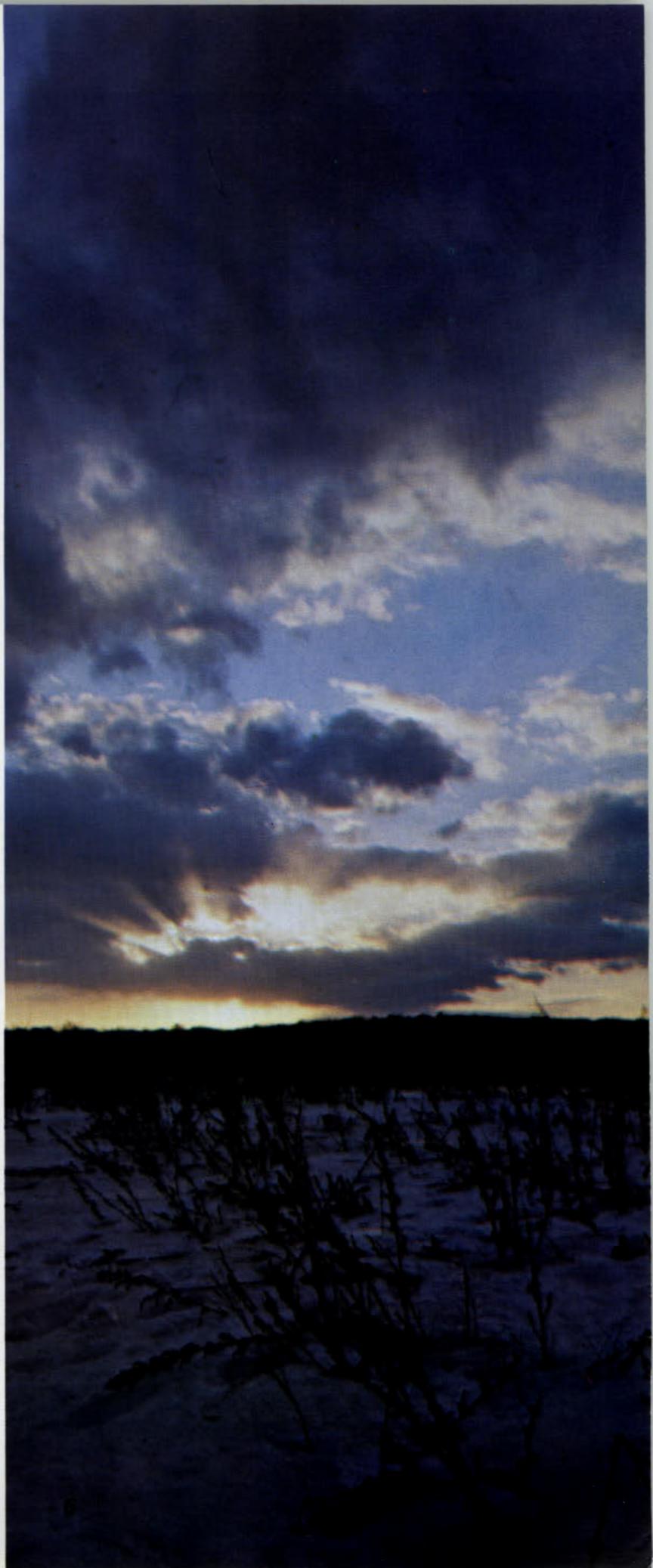
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1. *Iced Acorns in the New Jersey Pine Barrens*
— By David Campione
2. *Nature's Sheltered Places*
— By David Bast
3. *A Meal in the Snow*
— By Ray Underhill Jr.
4. *A New Jersey Snow Scene*
— By Carol A. Zbuska
5. *Winter in Branchburg Township, Somerset County*
— By Bob Mellace
6. *A Winter Sunset*
— By Wayne Berner



5



how to make your gals. go farther

SPEED—Gas consumption increases sharply at higher speeds. The dumbell who tries to turn the highway into the Indianapolis Speedway might as well take his gas and dump it on the roadway. The best fuel economy and emission levels occur at speeds between 30 and 40 miles per hour. Of course, the good driver observes all speed limits at all times, this includes the national limit of 55 miles per hour. CB radio notwithstanding, Smokey Bear still has a bag of tricks up his sleeve for separating the speed demon from his money.

After all, speed really saves very little in the way of time, except that it gets you to the accident sooner. It takes only 24 minutes longer to drive 100 miles at 55 miles per hour than it does to zoom along at 70. Besides, you save a bunch of gasoline and a lot of wear on your vehicle.

COMBINED TRIPS—A neat trick used by good drivers is to combine several errands into one trip whenever possible. This allows the engine to run for a longer period at operating temperature, thereby using less gas and emitting fewer air pollutants. The total distance traveled also may be reduced.

CARPOOLING—Carpooling is a great idea for saving gas, holding down pollution and making the drive to and from work more interesting. If you can carpool with three other individuals, you cut your gas bill by 75 percent. The author personally recommends a compatible mix of guys and dolls. Although this may make the spouse unhappy, it will make the trip much more interesting.

Many firms have entered into the spirit of the thing. Some offer preferential parking for carpoolers. Others go a step further by providing vans for groups of employees, making one individual responsible for the chauffeuring and the maintenance of the vehicle.

ROUTE SELECTION—Believe it or not, but you can save gas, pollution, and your nerves merely by giving a little thought to route selection. If you have a choice, pick the one which is least congested. This will make your travel more enjoyable, and you will not burn up gasoline fighting the traffic.

That's about it in a nutshell, or should I say in a gas tank? Not only does the good driver save money, he also conserves a precious resource, creates less air pollution, and lives longer. The dumb bunny, on the other hand, is throwing away his money, is leading us down the road to economic disaster by placing us at the mercy of foreign oil sharpies, and is making the undertakers richer.

Which is your category, my friend?

DUMB BUNNIES

1. Make like a jackrabbit and weave in and out of traffic
2. Try to get to the accident sooner by ignoring speed limits
3. Help the Highway Department by surfacing the road with rubber.
4. Scare the daylights out of little old ladies by roaring up behind them
5. Stay alert for any emergency by driving with their left foot resting on the brake pedal
6. Drive with the accelerator mashed to the floor
7. Wait until ten feet before a traffic sign, or behind a slower vehicle, to stand on the brakes
8. Goose the engine to keep it charged up while waiting for a light
9. Can't stand the sight of a car on the road ahead
10. Zoom to the corner store for a pack of cigarettes
11. Consider the most congested routes a good challenge of driving skill
12. Enjoy the solitude of driving to work alone
13. Tune up engine only to crank in more pizzazz
14. Squawk about the higher gas prices which they help cause

GOOD GUYS

1. Avoid ulcers, fender benders, and blackened eyes by conservatively utilizing their own space on highway
2. Avoid traffic tickets and premature funeral by obeying all speed limits
3. Save money by accelerating with moderation—letting the Highway Department do its own thing about road surfacing
4. Enjoy driving more by being courteous to others
5. Prevent cramps in left foot by resting it where it belongs—on the floor
6. Avoid hassles by driving defensively, adjusting speed to flow of traffic
7. Save gas and brakes by coasting up to traffic controls and slow-moving vehicles
8. Save engine by letting it rest at stop lights
9. Let the dumb bunnies play King of the Road
10. Combine individual errands into a single trip whenever possible
11. Enjoy, whenever practicable, the pleasant absence of hurly-burly usually found on less-congested thoroughfares
12. Enjoy the company of others while driving to work
13. Lengthen life of engine and save gas money by having tune-ups as recommended by manufacturer
14. Have a heck of a good time on vacation with help from the money saved by driving like a good guy

SOME CAR FACTORS

1. Heavier cars use more gas—a 5,000-pounder usually guzzles twice as much as a 2,500-pounder.
2. Optional equipment reduces mileage because of its weight and energy demands; for example, an air conditioner in use can reduce city driving mileage by more than 10 percent.
3. Radial tires can get about 3 percent better mileage than conventional or bias-ply tires.
4. A tuned engine averages 6 to 12 percent better mileage than an untuned one, and emits less pollutants.
5. Underinflated tires can reduce mileage by as much as a mile per gallon.
6. As little as 0.25 inches improper front wheel toe-in alignment causes excessive tire wear and can cause a fuel economy loss of as much as a third of a mile per gallon.
7. A bum radiator thermostat can increase fuel consumption during cold weather by lengthening the engine warm-up time.
8. Filling the gas tank to the brim invites fuel loss through spillage. □

Remember to observe the 55 miles per hour speed limit

A STRATEGY FOR THE COAST

lands and flood plain maps have delineated such areas, the *Coastal Management Strategy* does not identify such individual sites. The *Strategy* is a tool for making decisions on CAFRA permits, other coastal permits and planning. Through the *Strategy*, decisions are made after a thorough analysis of the advantages and disadvantages individual sites offer for specific development proposals. Rather than relying on a static inventory alone, the *Strategy* creates a procedure to gather facts and weigh them against each other. The specific decisions

and the detailing of the *Coastal Management Strategy* must move forward in conjunction with the responsible local planning agencies.

The *Coastal Management Strategy* is a tool for coastal decision-making which can indicate in advance the probable outcome of a specific decision. In the short term, DEP's next steps under CAFRA will be to achieve still greater predictability through mapping and analyses, particularly in very sensitive areas and locations facing special development pressures. Assuming the continuance of federal funds, DEP, in cooperation

with local governments, expects to complete a more detailed and increasingly site-specific *Strategy* for New Jersey's coastal regions in two years.

The *Strategy* is designed to remain flexible and responsive to change. This capacity will enable DEP to respond to new and better information, improved technology or unforeseen events (such as the relatively recent sharp rise in gasoline prices, and the passage of the casino gambling referendum) while still carrying out the policies articulated in the *Strategy* to encourage appropriate development and protect the coast. □



Photo by Harry Grosch

Wildlife Management Area Dedicated in Memory of Conservation Officer Gallo

At a ceremony this fall attended by the family and many friends of Conservation Officer Joseph F. Gallo, the Port Republic Wildlife Management Area in Atlantic County was dedicated in memory of Officer Gallo, deceased June 1, 1976.

Joe Gallo was appointed a Game Warden in Atlantic County in 1948 and served the Division of Fish, Game and Shellfisheries for 28 years. Officer Gallo was a thorough and widely-respected officer who dedicated his working life to the Division and Law Enforcement.

He was instrumental in the Division obtaining the Imbesi property which is now part of the Peaslee WMA, and played a large part in selling the farmers in Atlantic County the deer fencing program to minimize deer dam-

age. Officer Gallo had a fine working relationship with the Farm Bureau and the farmers in his area.

He cooperated with other law enforcement agencies and provided valuable aid to the State Police, A.B.C., and other law enforcement units. To all who knew him and worked with him, he was the consummate professional.

In the photo above, the immediate family of Joe Gallo are photographed after the ceremony.

The Division of Fish, Game and Shellfisheries was represented by Director Russell Cookingham, Law Enforcement Chief Tom Mulvey, Fish and Game Councilman P. K. Hilliard and many who worked with Joe and remembered. □



PHOTOS BY PATRICK BOFFO

The Muzzleloading Rifle

BY WILFRID E. FELDMAN

This hunting season possibly more New Jersey hunters will take to the field with muzzle loading rifles than in any season during the eighteenth century. Since these relatively unknown and fascinating weapons need more careful handling than breech loading arms, a proper respect for their safe and efficient use prompts the following background information.

Muzzle loading rifles may be divided into three principal categories: the long barreled full stock flintlock rifle, the long barreled

full stock percussion rifle, and the short heavy barreled half-stock percussion rifle. Daniel Boone and the backwoods hunters of Colonial days carried the long barreled Pennsylvania fullstock flintlock rifle into the Indian lands of "the dark and bloody ground." The first battle-hardened and trained riflemen of the Continental Army were these same backwoodsmen. The Virginia contingent, commanded by New Jersey born Capt. Daniel Morgan, was called by British regulars "shirt-tail men with

The popular belief in Daniel Boone's coon skin hat and buckskin clothing is not substantiated by research. Shown here is an authentic 18th century rifleman's costume—black felt tricorn hat, double-caped homespun linen hunting shirt and the following accoutrements (Shown on the next page) Pennsylvania flintlock rifle, hunting pouch with attached large powder horn, wide waist belt with skinning knife and belt axe in scabbards. Pouch is not sewed but assembled with traditional leather lacing, shoulder strap and waist belt have brass buckles.

their curs'd long barreled widow makers."

In 1807, Dr. Alexander John Forsyth, a Scottish minister and an avid hunter, invented percussion ignition adapting the explosive force of fulminate of mercury. Dr. Forsyth's invention sounded the death knell of flintlock ignition. During the following decades various improvements in percussion ignition were developed. The flintlock hammer, pan, frizzen and frizzen spring were removed from the lock plate and a percussion hammer was added. A drum and nipple were screwed into the barrel side flat with a copper cap on the nipple. A quicker handling and more waterproof ignition system was developed. During the early 19th century hundreds of flintlock rifles were converted to the percussion system by this method.

In the middle 1830's the Hawken brothers of St. Louis, Mo. began to supply mountain-men fur trappers with a short barreled half stock percussion rifle ideally suited to a man on horseback. Historically, this weapon became known as the Hawken rifle.

Fifty caliber is the ideal size for a modern muzzle loading rifle but the bore should never be smaller than .45 caliber. The bullet, a round pure lead ball, should be about .005 smaller than the rifle bore; for example, a .445 ball for a .45 caliber rifle. The very effective standard charge for a .58 caliber Civil War rifle musket was 60 grains of FFFG black powder in back of a 500 grain Minie bullet. This same charge, 60 grains of FFFG black powder, is an acceptable testing charge for a .45 or .50 caliber round

TOP—.45 caliber custom made flintlock rifle, octagon to round 41½" tapered barrel, carved curly maple full stock, brass furniture.

2nd—.45 caliber custom made flintlock rifle, octagon tapered "swamp" 40 1/4" barrel, plain curly maple fullstock, brass furniture.

3rd—.45 caliber original Pennsylvania percussion rifle, straight octagon 41" barrel, brass furniture, attributed to Ezra Engle, Washington Township, Penna., circa 1840.

4th—.52 caliber curly maple percussion half stock Hawken type percussion rifle, heavy 30" straight octagon barrel. brass furniture.



Sixteen gauge fowling piece, octagon to round tapered barrel, carved plain maple stock, brass furniture attributed to John Newcomer, Hempfield Township, Lancaster County, Penna., circa 1760; .45 caliber custom made flintlock pistol, octagon to round tapered 10" barrel, curly maple stock, brass furniture; large buckskin hunting pouch with powder horn attached, adjustable charger, small priming horn, screw driver, bullet bag, loading block, spare flints, feather pan cleaner, bullet starter and touchhole picks.



ball rifle. To assure tight bore fit, round ball bullets must be loaded in a greased cloth patch. Patching material may be pure linen, coarse cotton shirting (Oxford cloth), or cotton ticking. Depending on the kind of cloth, thickness is from .010 to .018 and accuracy with different patches determined only by test firing. While the bullet should be firmly seated on the powder charge, it should not be rammed home with sharp, hammer-like blows. A steady push of the ramrod will seat the bullet properly—then a few light taps are permissible.

Because of ever present carbon fouling, black powder muzzle-loaders require meticulous cleaning procedures. A ¾" fiber glass cleaning rod is far superior to the traditional hickory ramrod. Equipped with an interior 10" x 32" threaded brass ferrule pinned to the rod and a .50 caliber bronze cone shaped cleaning brush attached, it is an excellent ramrod and cleaning rod. Ten or twelve

gauge shotgun patches are ideal cleaning patches. The bore, flintlock touchhole or nipple aperture should be cleaned after each shot. Black powder fouling will decrease the size of the bore and very effectively block the priming apertures after five shots. The bore, breech area, lock and priming apertures should be carefully cleaned and oiled as soon as possible after each shooting session.

Unlike modern arms, muzzle-loading rifles are fitted with rather primitive V-notch rear and blade front sights and must be carefully sighted in. Both sights may be driven laterally with a brass punch and the rear sight V-notch filed if necessary. However, fine accuracy will not be obtained unless the muzzle is crowned and the rifle bore-sighted. A competent muzzle loader gunsmith can perform these two operations.

Complete deluxe accoutrements for the muzzle loading rifleman would include a hunting pouch with

shoulder strap and attached large powder horn, waist belt with scabbarded skinning knife and in the pouch a small priming horn of FFFG powder, touchhole pick and flints (for the flintlock rifle), nipple pick, graduated brass charger with hinged pouring spout, bullet pouch, loading block, bullet starter, small screw driver, greased patches, supply of #10 or #11 percussion caps and a container of black powder fouling cleaner.

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new jersey state alliance for environmental education

The N.J. State Alliance for Environmental Education has been founded by a group of organizations in New Jersey dedicated to the concept that environmental education is a first step towards meeting the complex problems of our State.

The State Alliance is an organization of organizations committed not to any one issue or any single position, but to the proposition that environmental education should be a part of the educational process of all the people of New Jersey regardless of age or economic circumstances.

We invite the participation of all organizations both public and private who support our purposes and are willing to commit talents and resources to this end.

For further information on the Alliance contact:

Dr. John Kirk — President
Montclair State College
N.J. School of Conservation
Branchville, N.J. 07826

Mrs. Betty Little — 1st Vice Pres.
Passaic River Coalition
246 Madisonville Road
Basking Ridge, N.J. 07920

Dr. Joseph Weisberg — 2nd Vice Pres.
Dept. of Geoscience
Jersey City State College
Jersey City, N.J. 07305

Mrs. Richard Farrar — Treas.
New Jersey Audubon
790 Ewing Avenue
Franklin Lakes, N.J. 07417

PURPOSE

1. "All Alliance members shall expend appropriate efforts toward the creation of public awareness and the development of laws, rules, regulations and other activities designed to assure appropriate funds for environmental education.
2. The Alliance urges the New Jersey State Board of Education, and the Board of Higher Education and their respective chief officers to implement environmental education through the New Jersey Administrative Code.
3. The Alliance urges that environmental education become an integral part of the many functions of every appropriate level and branch of New Jersey government.
4. All Alliance members may collectively and informally seek funds and services supportive of the Alliance and environmental education programs.
5. All Alliance members pledge cooperation and encouragement to community and school programs for environmental education.
6. All Alliance efforts will be planned in a spirit of mutual cooperation and respect. Appropriate mechanisms and procedures shall be developed to coordinate and facilitate activities and in general to act as a clearinghouse.
7. The Alliance recognizes its responsibility and shall provide leadership for assisting in the updating of the New Jersey State Master Plan for Environmental Education.
8. All future Alliance policies shall be mutually agreed upon by consensus of the signatory members of the group."

By-Laws
May 21, 1977

FRONT COVER

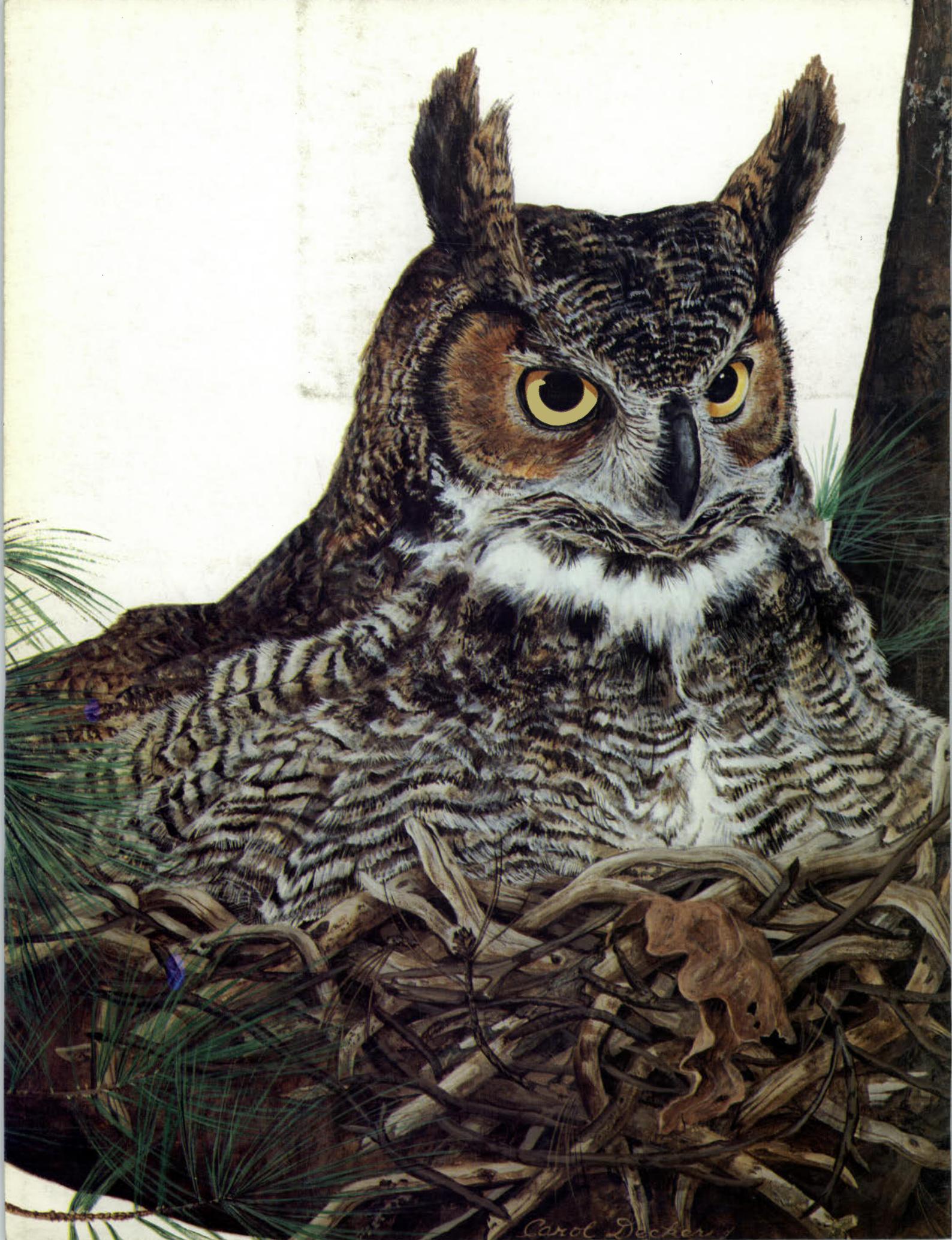
Winter Farm Scene in Mount Laurel, New Jersey — Photographed by David Campione

INSIDE BACK COVER

Ice-Locked East Point in Delaware Bay — Photographed by Wayne Berner

BACK COVER

Great Horned Owl — Illustration by Carol Decker



Carol Decker

