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New Jersey OUTDOORS



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from the editor

We Can't Pull the Plug . . .

And drain off the massive algae blooms, the sewage sludge that contributed to the "blooms," and the tens of thousands, or hundreds of thousands of fish and shellfish that perished in the 2000 square miles (or much more) of "dead sea" that plagued the New Jersey shore for most of the bicentennial month of July 1976. American Littoral Society co-chairman Eugene Geer, an experienced diver, said during diving operations offshore: "This is probably the worst kill that's ever been reported."

Our oceans are wide and deep, and stretch out beyond the horizon—seeming almost limitless. But we are learning that there are limits to what these vast bodies of water can absorb and digest from a world population that expands at an alarming rate.

To focus our attention on these limits, we can review and recall the "strange disease" that came to Minamata, Japan, in the 1950's, which to date has taken over 100 lives and maimed, blinded, and permanently damaged over 700 residents. Minamata is a fishing and farming village on the island of Kyushu, and Minamatans, as was their custom, ate the fish from the bay and seas around the town. A chemical plant in Minamata had been dumping sludge containing methyl-mercury chloride into the waters. The

mercury become concentrated in the fish which, in turn, were eaten by the people. Some local doctors estimated that as many as 10,000 people may be affected by this mercury poisoning.

Earlier this year, the fishermen of Deauville, France, in protest against the pollution of the Seine River estuary, blockaded the harbors of Deauville and Trouville, carrying banners which said: "The ocean is being turned into a garbage can."

Closer to home, a Long Island beach was temporarily closed this summer because of sludge contamination of the waters; still closer, the Beach Haven bathing beach was off limits to bathers on July 22 because of murky water and strange odors.

When we, in New Jersey, travel to our sandy shores to try our hand at fishin' or crabbin', or to take a dip in the refreshing surf, or just to walk along the beach to clear our heads and uplift our spirits—but find instead a beach smelly with dead fish or littered with throwaways, a surf poisoned with sludge, or a shoreline streaked with oil—then we're being cheated out of a vital piece of our heritage. And if it happens often enough, on countless other beaches, on other continents, then we're all in trouble.

But not for long—because we can't pull the plug.

IN THIS ISSUE . . .

Coastal Zone Management in New Jersey—how it operates, what it hopes to accomplish, and why it was necessary in our crowded state—by John Weingart, Office of Coastal Zone Management. The Coastal Area Facility Review Act (CAFRA) was enacted to balance the environmental and economic requirements of a coastal region by regulating the type and location of planned construction for commercial, industrial, residential, or public facilities.

Roy Elicker, Wildlife Education Specialist with DEP's Division of Fish, Game, and Shellfisheries, toured our County Parks to bring us up to date on the environmental education programs available in the County Park systems.

Liberty Park, New Jersey's first urban state park, occupies a harbor site just opposite two national monuments, the Statue of Liberty and Ellis Island. The text by Janet Bamford and photographs by Harry Grosch document the utilization of the park by the surrounding city dwellers and the color photographs illustrate the dramatic renovation

of a decaying, depressed area.

Why should the Pine Barrens be saved? Author David Moore, Executive Director of the New Jersey Conservation Foundation, asks this question, then proceeds to tell us *why* and *how* we can help save this priceless resource.

You may not know a *Morchella esculenta* from an *Amanita muscaria*, but you should—especially if you enjoy eating wild mushrooms—because the latter is very poisonous! Bob Byrne, Wildlife Education Specialist in DEP's Division of Fish, Game, and Shellfisheries, would like us to become amateur mycologists before we become mushroom eaters.

Orienteering in New Jersey—By Larry Crane. An introduction to an exciting outdoor activity for the whole family and for all seasons. Larry's description of how two top competitors negotiated the course he designed will probably leave you ready to grab a "topo" map and head for the woods!

Sant Punt, Ho! Sandy Hook Lighthouse celebrated its 212th birthday along with our bicen-

ennial. Author Al Nunes-Vais has written numerous articles for a variety of consumer publications. His credits include boating, fishing, science, photography, and airline magazines.

A wildlife weekend for teachers was held at the School of Conservation in Stokes State Forest this past spring. The courses were developed and taught by DEP's Division of Fish, Game, and Shellfisheries personnel and teachers from the School of Conservation. Text by Bob Byrne and photos by Harry Grosch. Senior Wildlife Biologist Fred Ferrigno writes about Snow Goose Management in New Jersey and why it should be continued.

Dick, The Gunshy Beagle, a nostalgic tale about a gunshy beagle and how he was cured by the author, J. Rutherford Stout. All this happened in the "good old days"—the early 1920's.





CAFRA and Coastal Zone Management in New Jersey

by John R. Weingart

*Canvasback ducks on Tackanassee Lake, Long Branch, New Jersey —
St. Michael's Church and condominium in background*

RICHARD KANTOR

The coastal area of New Jersey is special. It is special because it presents to us the gift of the state's beautiful beaches, because it is replete with unique plants and wildlife, and because for the most part it is an open expanse of bays, estuaries, and meadows less densely populated than the rest of our urbanized and populous state. It is a treasure prized by people from all corners of New Jersey and beyond, and it is also a precious legacy for future generations.

These features encourage diverse conceptions of the future of the coastal area. Some say its relatively large amounts of available open space make the coastal area the ideal site for meeting much of the state's housing needs. Others say the area's low population makes it well suited to accommodate major energy facilities such as additional nuclear power plants and offshore

oil and gas drilling. Still others say that much of the area should be maintained as it is—that its natural features are valuable both ecologically and as contributors to the state's resort economy.

The role of coastal zone management is to consider these often conflicting viewpoints while attempting to create a coherent design for the area. This process is coordinated by the state's Office of Coastal Zone Management in the Department of Environmental Protection's Division of Marine Services. The Office works in cooperation with the federal Office of Coastal Zone Management in the United States Department of Commerce.

Coastal zone management is a new concept; it made its first major public appearance in the federal Coastal Zone Management Act of 1972. This act recognized the coastal zone as an area "rich in a variety of natural, com-

mercial, recreational, industrial, and esthetic resources of immediate and potential value to the present and future well-being of the nation." But it also noted that "increasing and competing demands" are irretrievably damaging or destroying the "important ecological, cultural, historic, and esthetic values" of the coastal zone.

Accordingly, the federal act authorized funding to the coastal states for the development of management programs for the land and water resources of their coastal zones. The act also promised that, once a state's management program was approved, all federal actions in the state would be consistent with that program. Inclusion of this "consistency clause" has contributed to the view that the Coastal Zone Management Act is a unique piece of legislation embodying a new form of federalism which could serve

as a model for future federal land-use and regulatory activity.

The optional program was offered to the states and territories which border the Atlantic, Pacific, or Arctic oceans, the Gulf of Mexico, the Long Island Sound, or one or more of the Great Lakes. Although all 34 eligible coastal states and territories now participate, the definition of coastal-zone management is still evolving.

Coastal Zone Management in New Jersey — CAFRA

In New Jersey, the Coastal Area Facility Review Act of 1973 (CAFRA) authorized the state's first coordinated effort to address many issues essential to the protection and enhancement of the coast. CAFRA covers an area stretching from the Raritan Bay in Monmouth County to the Delaware Bay in Salem, including 18 percent of the state's land and 75 percent of its waters, and encompassing the entire region generally referred to as the "Jersey shore."

Under CAFRA the Department of Environmental Protection (DEP) must regulate current major development in the coastal area and also prepare a plan for the area's future. CAFRA declares that "the coastal area should be dedicated to those kinds of land uses which promote the public health, safety and welfare, protect public and private property, and are reasonably consistent and compatible with the natural laws governing the physical, chemical and biological environment of the coastal area."

CAFRA's charge, and the range of possible uses for different parts of the coastal area, necessitate consideration of a wide variety of issues. Already, in the two and one-half years since CAFRA's enactment, coastal zone management has had to deal with questions and policies raised by proposals for campgrounds, public buildings, sewer connections, wastewater treatment plans, sanitary landfills, marinas, motels, shopping centers, industrial parks, nuclear power plants, and residential housing developments ranging from 25 to 2600 dwelling units.

Three Coastal Decisions

An examination of DEP's decisions on three of the 160 applications submitted for CAFRA permits may illustrate the growing importance of

coastal zone management in New Jersey.

Toms River Condominium

The first CAFRA permit application

to be denied by DEP was for a proposed 220-unit high-rise condominium in Toms River, Ocean County. The proposal was rejected after review by

(Continued on page 30)



environmental education in our county park systems

Roy Elicker



Morris County naturalist and class

With a heritage reaching back to 1895, our County Park Systems have evolved to help answer New Jersey's growing need for recreational open space. These park systems, established in most of the 21 counties, make possible countless recreational hours in areas close to people's homes. Activities as diverse as wildlife observation, baseball, tennis, hiking, boating, and winter sports keep the county parks in year-round use. The maturing of the county park systems, however, brought the realization that recreation should not be their only concern. Increased public awareness of the environment, and the continued loss of land to industrial and residential building, created a need for public environmental education. The present county park systems provide for both recreation and education.

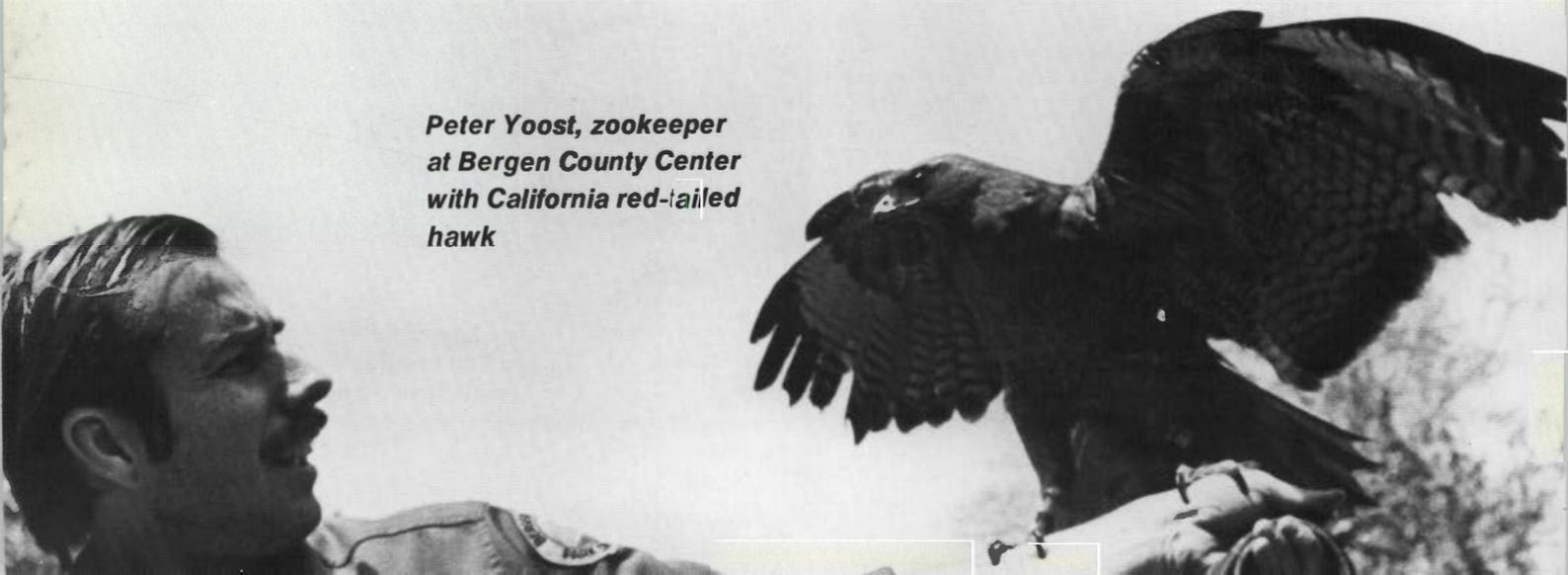
Experienced naturalists provide environmental education in facilities ranging from simple offices to

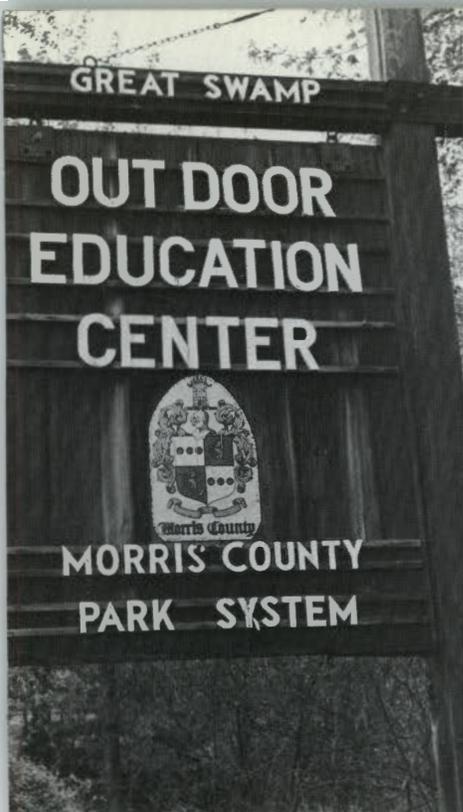
million-dollar showplaces. A staff of one to six present programs to groups from 2nd grade to college level. They use a central theme of nature and the environment in discussing a variety of subjects: tree and bird identification, geology, pollution, ecology, and early colonial crafts are always popular. Naturalists in the more elaborate facilities can teach specialized pursuits such as meteorology, bird banding, and solar technology.

Preparation for a school class to use a center begins with an initial scheduling contact, usually well in advance. Under the guiding hand of the naturalist, each class (one to three hours) is spent observing the subject material outside in its natural setting. Afterwards, the students continue discussion with the naturalist in the center. Some counties have purchased fully equipped vans to send to schools where student transportation is

PHOTOS BY HARRY GROSCH

***Peter Yoost, zookeeper
at Bergen County Center
with California red-tailed
hawk***





Monmouth County traveling van for use at schools. Left to right, naturalists Andy Coeyman and Nick Fiorillo.

limited. The staff naturalist brings to the student a microcosm of nature; more simply, the outdoors are brought indoors.

In addition to organized activities, most centers have miles of self-guided hiking trails open to everyone. Descriptive trail guides and other publications announcing various center activities are available.

Each park system has unique facilities for environmental education depending on location. The four largest outdoor education centers are good examples.

Bergen County has extensive facilities with centers in Wyckoff and Mahwah. Staff naturalists conduct illustrated walks and educational programs, with self-guided trails close by. Outstanding are the live animal exhibits at the wildlife center at Wyckoff. Under the supervision of an experienced zookeeper, these exhibits include mammals, birds of prey, a waterfowl pond, and

Young "naturalist" at Morris County Environmental Center



a deer pen. The animal exhibits are a favorite of the local youngsters.

The Essex County Center for Environmental Studies in West Essex Park was once a riverside tavern. The 1200-acre tract of river bottomland, which provides natural trails and displays, serves also as a research site. Staff personnel conduct water analysis studies for county agencies and bird banding for the federal government. Enviro-vans bring complete environmental programs to groups of students unable to come to the center. In such instances, even local vacant lots and cemeteries yield stimulating material for environmental study.

The Basking Ridge temporary trailer facility in Somerset County will be soon replaced by a million-dollar building featuring solar heating and cooling—only the second public building in the United States designed for use of solar technology. Backed by an auxiliary fuel system, solar power will reduce oil consumption by close to 70 percent. As a model center, the building will house an auditorium, classrooms, a darkroom, and laboratories, as well as administrative offices. With this unique focal point, Somerset County is trying hard to establish a new pattern of environmental learning which emphasizes man in relationship to technology. Meanwhile, a comprehensive program of outdoor education experiences continues.

Monmouth County has perhaps the most impressive program of all. While not having even one special facility, county naturalists reached more than 100,000 people last year. In the Monmouth County System, every park is a nature center. The staff naturalists' major efforts are directed toward an intensive public-relations program to make every county resident aware of the various activities in each park. The public-

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LIBERTY PARK

BY JANET BAMFORD

PHOTOS BY HARRY GROSCH

In the middle of New Jersey's most urbanized region is a place with acres of open land and young trees. There are families picnicking, children straining to see passing boats, and crabbers dozing in the warm sun.

Where? At the newly opened Liberty State Park outside of Jersey City, in the shadow of the Statue of Liberty.

Liberty Park is something special. That's obvious from the time you drive down the entrance road and pass under the flags of the fifty states. Illustrating the Department of Environmental Protection's policy to "put the parks where the people are," the park is easily accessible. Connected to Interchange 14B of the New Jersey Turnpike and closely related to the PATH rail service, Liberty Park is available to a large urban population.

Now being used and enjoyed by these people is a 30-acre completed section containing the access road and parking area, a Hudson River harbor vista, and a picnic area, as well as a dock for sightseeing vessels and a snack bar and pavilion.

At the northern end of the park, work is underway to reconstruct a historic maritime passenger terminal, formerly operated by the Central New Jersey Railroad. This terminal will be restored and reused, helping to recall the part that the New Jersey and New York Harbor played in the development of the nation. Liberty Park sits at the edge of the great harbor within sight of both the Statue of Liberty and Ellis Island.

When the park is completed it will offer something for almost everyone. Major features will include:

- a series of green parks
- a wildlife refuge
- a marina and serpentine waterway
- a crescent-shaped harbor-front willow walk
- shops, restaurants, a hotel complex, and cultural facilities



There's no age limit on enjoying the sun and a refreshing breeze.



In their daily duties, Youth Conservation Corps members Mary Ann Freeman and Elvia Williams raise one of the many flags at Liberty Park.



Senior citizens are among the most avid Liberty Park visitors. A Jersey City bus provides the transportation for those enjoying lunch at the park.

Among the most impressive features now is the display of different flags, fluttering in the breeze off the Hudson. In addition to the flags of the 50 states, replicas of ten historic flags are exhibited, from the banner flown by John Cabot in 1497 to the rattlesnake "Don't Tread on Me" flag of the American Revolution.

The construction of Liberty State Park has put hundreds of people back to work. A federal grant of \$2.4 million, enabling the park to be built, is one of the largest in this area awarded by the Economic Development Administration with the aim of

employing workers. Among those workers are 20 students recruited from the metropolitan area working in the Youth Conservation Corps (YCC) program. Under the largely federally funded program students work for four days a week and spend the fifth in rigorous environmental education programs.

Liberty State Park clearly is a park designed not only for where the people are but for what the people want and need. It is indeed a proud accomplishment in this bicentennial year. □

Checking the crab traps in the Hudson River.



There is a refreshment stand at the park where you can buy lunch as these folks did.



We can save the pine barrens!

DAVID F. MOORE AND PATRICIA J. BAXTER
New Jersey Conservation Foundation

Thumbnail History—Pine Barrens

IN the beginning—Before the advent of human life on this continent, the southern section of what is now New Jersey was under the ocean. The sandy soils, hundreds of feet deep, are a result of the last glacial period more than 12,000 years ago.

1620—Both Indians and early settlers shunned the Pine Barrens; crops, except for cranberries, were impossible to grow in the dry sandy soil. The discovery of iron in the wetlands changed all that; industry grew and new towns were established.

1808—The rare plants associated with the Barrens—some found nowhere else in the world—were discovered by early naturalists. James J. Audubon began collecting species of birds in the Pines. **1850**—Interest in bog iron began to fade with the discovery of coal and

purchasing. Land titles became so confused that no one knew who the true owners were.

1954—The 95,000-acre Wharton tract was purchased by the State of New Jersey to become Wharton State Forest. This was the first major step toward conservation of the fragile area. The town of Batsto, which fought off a flotilla of English ships in 1778 seeking to destroy its ironworks, was restored as an historic village.

1964—Plans for a new city and the largest jetport in the world were proposed. The plans faded, but the federal government failed to take advantage of the opportunity to acquire the area as a means of preserving its natural and historic values. **1967**—Land speculators were still busy in the Barrens—but as John McPhee put it in his book *The Pine Barrens*: "[The Barrens] seem to be headed slowly

Wild mushrooms are generally associated with such things as toads' eyes, lizards' tongues, and bats' wings—all, of course, essential ingredients in witches' brew.

A knowledgeable few, however, look upon wild mushrooms in an entirely different manner. For the amateur mycologist (a person who studies mushrooms, fungi, etc.) mushrooms provide a fascinating hobby as well as some excellent eating.

That's right, many common species of wild mushrooms are not only edible but delicious! A word of warning, however: DO NOT EAT ANY MUSHROOM THAT HAS NOT BEEN POSITIVELY IDENTIFIED AS AN EDIBLE SPECIES. I cannot stress this warning enough. Some mushroom species contain poisons that are *fatal* if eaten in sufficient quantities. Fortunately, these mushrooms number but a few. Many other types,

however, can produce undesirable side effects such as severe abdominal pain, nausea, diarrhea, hallucinations, headaches, and loss of muscular control.

Most mushroom toxins must be absorbed into the bloodstream before symptoms become evident. By this time the mushrooms have passed through the stomach into small intestines—ruling out the possibility of using a stomach pump to avoid poisoning after eating the wrong species. This aspect makes the positive identifications of mushrooms especially important if they are to be used for food. These warnings should not frighten you from partaking in this part of nature's bounty, but rather encourage you to exercise extreme caution. With a little work and study you should be able to enjoy a few of the many edible species found in New

(Continued on page 12)

photos by stanley tyler

PLEUROTUS OSTREATUS One of the most delicious mushrooms a mycologist can find is the oyster mushroom (*Pleurotus ostreatus*), which usually grows in overlapping clusters on injured or dead trees. Since this mushroom decays rapidly, it is a real treat to find it in edible condition.



POLYPORUS SULPHUREUS The sulfur mushroom is characterized by its bright orange top and sulfur yellow underside. It is usually found on injured living trees in the fall.

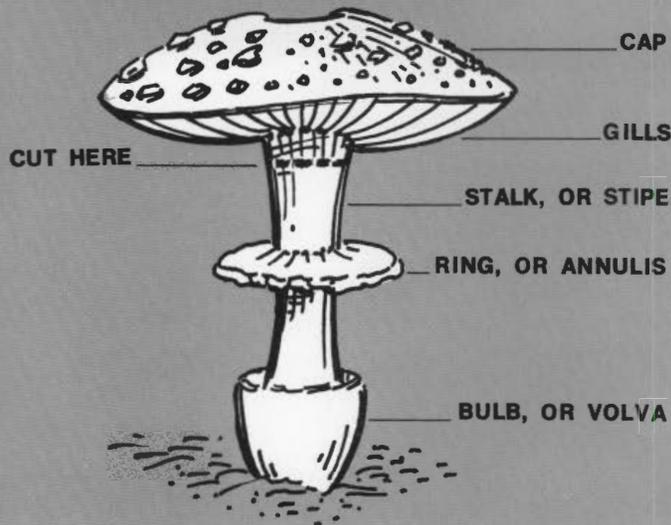


LYCOPERDON SPP. Puffballs (*Lycoperdon* spp.) are a very common and easily recognized edible mushroom. Very large fruitings of these mushrooms can be found in the spring and fall. Only those specimens that are white throughout should be consumed.



AMANITA MUSCARIA Mushrooms of the genus *Amanita* contain some of the world's deadliest toxins. **DO NOT EAT ANY MUSHROOM THAT HAS NOT BEEN POSITIVELY IDENTIFIED AS AN EDIBLE SPECIES.** However, with a little work and study, identification of poisonous and edible species of mushrooms becomes a fascinating and rewarding pastime.

THE PARTS OF A MUSHROOM



To make a spore print, cut stalk at base of cap. Place cap, gill side down, on a piece of plain paper and let stand for several hours. When cap is removed, spores that have fallen from gills will remain on the paper. Color of spores is an important identifying characteristic of the mushroom.

Figure 1

Jersey. I am not an expert by any stretch of the imagination and yet I'm able to enjoy more than a dozen types of wild mushrooms each year.

If you become interested in mycology I would highly recommend purchasing *Mushrooms of North America* by Orson K. Miller. Unfortunately the book is expensive, but it is beautifully illustrated and covers more than 400 species. It will be a welcomed addition to any library.

Many other books are available, but in my opinion most do not cover enough species for the amateur to feel comfortable about making a positive identification. I would like to caution you again and recommend that you do not eat any mushroom that you have identified from a book alone. If at all possible take it to someone with greater experience in mushroom identification. The New Jersey Mycological Society, 709 Reba Road, Landing, New Jersey, would be happy to help you get in contact with the right people.

Because mushrooms play a valuable role in decomposing organic matter and stimulating plant growth, you may expect to find them anywhere that there are large quantities of old logs, stumps, leaves, or manure. The actual plant (mushrooms are nongreen plants) grows beneath the soil or in the decaying wood itself. The visible, obvious part of a mushroom which grows above the ground or on old logs is a fruit similar in many ways to an apple. Picking either type of fruit has no effect on the plant itself. The smart mushroom hunter remembers where and when he finds edible species because quite often they will appear in the same location for many years. Mushroom fruitings are usually very abundant during the spring and fall; they can, however, be found at any time of the year.

When gathering mushrooms it is important to collect the *entire* mushroom. In many species a cup-like structure grows beneath the ground—without it, identifica-

tion is impossible. Other important field observations for identification include where it was found (on or under what type of trees), how it was growing (in clumps or singly), color, and the texture of the cap. After returning home a spore print should be taken (see Fig. 1). The arrangement of gills or tubes should be noted as well as how the gills are attached to the stalk. With this information identification is a simple matter using the key in your field guide.

Mushrooms of the *Morchella* genus (commonly called morels) are some of the easiest to identify and are gastronomic delights. The fruits of these mushrooms are generally found in upland woods or old apple orchards, during April and May. A dinner of fresh-caught trout and morels is a treat you'll remember for a long time.

Identification of these mushrooms is relatively easy. No spore print is needed. The cap, or top part, resembles a pine cone, with deep ridges and chambers. The stalk is usually lighter brown in color than the head. The entire mushroom is *hollow*. When you find such mushrooms it is wise to split them lengthwise to clean out any insects or slugs that might be inside. A non-edible type of mushroom (genus *Gyromitra*, or False Morels) closely resembles morels to the untrained eye; these mushrooms, however, are solid rather than hollow. They should be avoided.

Puffballs are another easily identifiable type of mushroom with excellent flavor. Only those puffballs that are white throughout should be eaten. Any black, brown, yellow, or light green showing on the inside or outside of the mushroom is reason enough to discard that specimen.

The giant puffball, which often grows to basketball size or larger, is one of the better finds when mushroom hunting. Its large size makes this mushroom appropriate for a main course in a meal rather than a side dish. Puffball casserole is a favorite that will win the hearts of your family and friends. The economical aspect of this meal is definitely an asset too! Puffballs can be found during June and again, in great abundance, in September and October.

Another very distinctive mushroom is the sulfur mushroom (*Polyporus sulphureus*). This species is usually found in the fall growing in large overlapping clusters in the sides of injured living trees. The color is a distinctive orange-red on top and sulfur yellow underneath. If found and harvested at the right time the entire mushroom can be consumed; usually, however, the mushroom is past its prime and is for the most part quite tough. If this is the case, only the tender outer edge should be trimmed off and eaten. Unlike many mushrooms the sulfur mushroom is edible uncooked. It has a flavor similar to chicken and is an excellent addition to any salad. The large fruitings that are usually encountered are an added bonus because some can be preserved (frozen) for later use.

These are but a few of the many mushrooms available to anyone who is interested enough to learn how to identify them. Hopefully, the delicious possibilities outlined in this simple introduction to mycology will tempt you, too, to become an "expert" in these wonderful "wild edibles." Good Hunting! □

The sport of orienteering is new to this country. At the turn of the century Ernst Killander of Sweden invented the game as a way of getting the youth of the nation out into the forest. From there it spread slowly across Europe and into Russia. The sport is now distinctly international, with active participation from Japan and Australia in the Pacific to Canada and the U.S. as well as the heavy concentration in Scandinavia, England, and the rest of the Continent. Still, the sport retains its Nordic flavor.

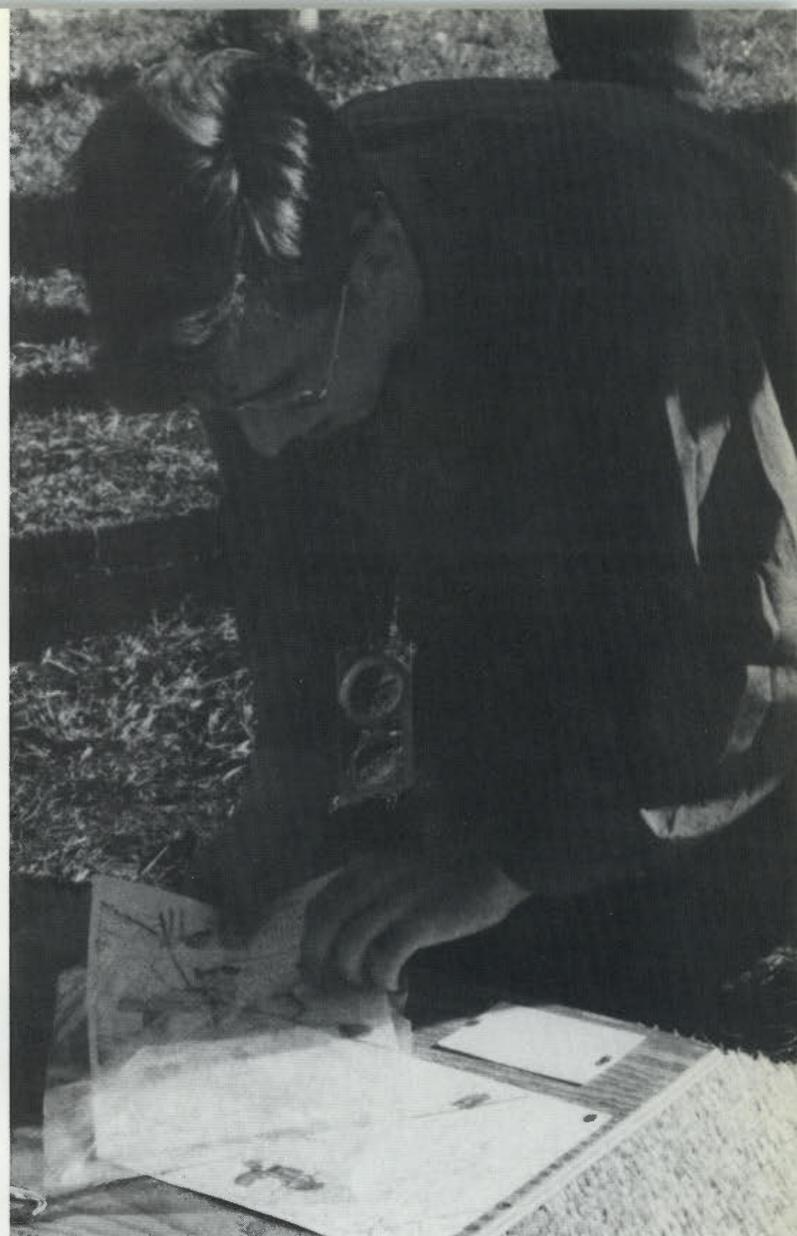
In America, the sport was introduced in 1946 by Bjorn Kjellstrom to a troop of Boy Scouts in the Indiana Dunes State Park. Until recently, the growth of orienteering has been very slow, but since the emphasis in outdoor recreation began to shift to participant, ecologically aware activities, and especially since 1971, orienteering has exploded on the American scene with clubs sprouting from San Diego and Seattle to Kalamazoo, Tallahassee, Jersey, and Boston. The U.S. Orienteering Federation conducts National Championships every year as well as sending American teams to international competitions. It's a sport on the go.

ORIENTEERING IN JERSEY

BY LARRY CRANE

Looking up at clear sky beyond the peak of the ski slope, I took in a big gulp of November air and thanked my lucky stars. When I'd sent out the meet notice I had no idea of how many orienteers would come, and even now I was keeping my fingers crossed that a lot would make the trip to northern Jersey from as far away as four and five hours' driving time. The weather had been rainy, but now it was perfect for orienteering—45 degrees with a slight breeze.

For the uninitiated, orienteering is a sport for everyone. It's "the thinking sport," a game in which the players, equipped with a topographic map and a compass, attempt to find a series of markers that have been strategically placed in "the boondocks" on terrain features such as trails and hilltops. The object is to find all the markers in the shortest possible time. It involves a combination of physical conditioning, woodlands acumen, and skill with the tools of the trade. Route selection and craftiness often overcome speed and stamina. The joy of it all is that you can



PHOTOS BY AUTHOR

Checking out the map

become proficient enough to have great fun at orienteering with about 20 minutes of instruction.

It was more than just a desire on my part to have a lot of participants for my first open orienteering meet. I was into the four-color topo map for \$130, and more than two years of field checking and corrections to the United States Geological Survey quad. A beautiful 1-12000 sheet now, it was hand-drawn with most of the details desirable for orienteering competitions, including most of the stone walls, all the blazed trails and bridle paths, all the open areas, and most of the little patches of evergreen growth found at the Campgaw Reservation in Bergen County. I was looking to recover my almost \$200 in pocket expenses, which included small wooden plaques to be awarded to the first-place winners in ten different competitive classes.

I'd taken Friday off from work to put out all the control markers for the White, Yellow, Red, and Blue Courses that I'd doped out on paper during the

preceding two weeks. With some overlap between the courses, I'd put out 21 control points, and had probably logged about six miles of shoe leather in doing it. But now it would all be worth it if I could just attract the competitors, because there is nothing more satisfying than organizing and setting the courses for a good competitive orienteering meet. If 75 percent of the people completed their course, and only 10 percent or so "burned" it, I'd know that it was a fair meet and a damned good map.

To my way of thinking, Campgaw is one of the best orienteering areas in all New Jersey. Even though it is a mite small, about 6 square kilometers, it has varied terrain and enough water and vegetation to make things interesting. The Reservation is bounded on the east by Campgaw Road, a two-lane highway, and on the west by Ramapo Valley Road, another blacktop surface. The north and south boundaries are unmarked. On the east, the ground adjacent to Campgaw Road is relatively flat with lots of water—fast streams and rivulets, and some marshy areas. Almost all of a maze of three-foot-high, 19th-century stone walls are indicated on the map. The flat area runs abruptly up against the steep side of the Campgaw Mountain Ridge, which bisects the reservation and provides the elevation for the grassy ski slope on the north. Atop the ridge on the south is the Shadow

Ridge riding stable. The west side of the reservation is formed by the gently falling slopes of Campgaw Mountain, with hundreds of knolls, hollows, spurs, fingers, and reentrants, interspersed with slow-running freshets and stands of pine in the midst of deciduous forest. It's an orienteer's heaven.

At about 11 AM the cars started rolling into the parking lot, and by 12 I knew I'd have a crowd. Most of the competitors were signing up for the Red Course; that stands to reason since it is designed to accommodate the person who is just this side of being really expert, yet who is in good physical condition and knows his way around a topo map. There were quite a few novices for the White Course, a handful of beginners and juniors for the yellow, and only three for the monster Blue Course. I was glad I'd spent the hours designing the 6.5-kilometer Red.

As competitors came in, they reported to the huge ski lodge at the base of the slope and registered for the course of their choice. There, each got a map, control card, and control marker clue sheet. Once they were ready to get under way, having studied the map for unusual symbols and the general lay of the land, they reported out to the start point which was right at the base of the ski lift. Once out of the master map area, where they marked their map with the location of the control markers for their particular



- 1** *Pre-start warmups*
- 2** *Getting a start time at the starting line*
- 3** *One down and four to go!*
- 4** *Lost?*
- 5** *Checking in on the last control*
- 6** *The results board*



course, they were on their own to make their way around the course circuit until they emerged from the woods near the top of the ski slope and headed for the finish line in front of the lodge.

As the afternoon wore on and most of the competitors had plunged out on a course, there was a period of real worry for me—a concern on my part that all the controls were properly placed. I knew that no matter how well-organized a meet is, the actual placement of the markers is the most important aspect. If just one marker is placed wrong, all the runners on that course are cheated, and there is no way to make up the minutes spent by competitors looking for a marker that isn't where it's supposed to be. I wasn't worried about a few complaints here and there—you'll always have those. But I knew that a lot of good orienteers were out there, and if they didn't start coming in soon, I'd know that they had met trouble.

Finally they started coming in, a trickle at first, and then a flood at the finish line. As they finished, they stood around the lodge, cheering the other runners and comparing times and strategies. By 4:30 nearly 100 competitors had finished and were lounging around the lodge in front of a big fire. It was good competition on the showcase Red Course with Tim Daniel, a West Point Cadet, emerging the winner in the advanced men's class; Jan Binger from Westchester, New York, in the women's elite; and David Whieldon, a freelance writer from Fort Lee, the winner in the "over-35" class. Half the fun of a meet is the late-afternoon second guessing that goes on; everyone has his or her pet strategies and tactics. I managed to get Tim and Dave together to talk about how they managed to do so well on the Red.

Interestingly, Dave's time on the course was 103 minutes compared to Tim's 80, not a great difference in time considering their difference in age of a good 20 years. Both men have been orienteering only one year. They both thought the first control on the Red Course was easy, and they both burned it. It was an easy lope out of the master map area to the lake and right into the control.

From the master map area, Red #1 was located

almost due east, in the flat part of the reservation at a distance of perhaps 1500 feet. The clue was "stone wall junction." The marker was hung low, with visibility through the bare trees at about 75 feet. I'd intended this leg to be simple, just to get them out of the start area and into the course. To my mind, it involved a straight jog to the north edge of the lake, a rough compass shot to the stone wall north of the junction, and then just home into the flag—five minutes tops.

Leg #2 was supposed to be tougher but not by much. Again the clue was "stone wall junction." The marker was hung about knee-high, just below the top edge of the wall so that you had to be right on it to see it. The distance was about 2000 feet straight-line. I wanted to force the competitor to maintain his concentration in that maze of walls. If he went off half-cocked, he could waste 15 minutes. It involved a quick jog through the twists and turns of the walls, maybe six minutes.

Dave pulled out his compass on this one and navigated straight-line to the flag, ignoring the walls as much as possible. He came out right on it. Tim darted out to the blacktop, skirting most of the walls, and judging from the curve in the road, plunged into the bush, picked up a likely wall and followed it in. There was no apparent advantage to either man on this one.

From #2 to #3 by another 3000 feet of flatland, bare woods, and a ton of stone walls. It was another "stone wall junction" clue. Here, there was a clear-cut route-selection problem. If the competitor felt good about the walls, he might want to guide on them into the marker. If he was wary, he could shoot out to Campgaw Road, jog south to a point he judged to be about right, then plunge back into the bush to find the wall and the flag. In either case, a good pace count and concentration were called for. This one might take another six minutes. I would have taken the road route.

Both Tim and Dave chose the same route here, out to Campgaw Road to a point opposite the stone wall, then into the trees to find the marker. Surprisingly, both men felt they had weak route selection here;



both would have preferred to use the power line to better advantage after looking it over again.

Number 4 was placed to get the competitors in position for the rest of the course; it was a transition leg. They were coming out of the flatland and up onto the ridge. Still, there was an obstacle that had to be taken into account—the marsh. The clue was “the edge of the marsh,” and it was about 2000 feet from #3. I recommend a quick shot out to the secondary road shown on the map, west up to the abandoned toboggan slide, and then due south on the far side of the marsh. Another ten minutes.

Both men got soaked to the knees on this one! Both ran the road to the power line, then followed the power line right into the bog. Tim and Dave felt that they lost a good ten minutes on this control. Looking back on it, I have to say that my clue contributed to the troubles that everyone seemed to have here. I should have said “west edge of the marsh.”

The first potentially disastrous leg was #5. There’s a little spur on the west slope of the ridge that curves into the shape of Ebenezer Scrooge’s nose. I put the flag in the hollow of Scrooge’s left nostril. There are a hundred different routes to this control, and all require climbing 200 feet and locating the exact spot along the bridle path from which to punch into the woods to find the knoll and the hollow. I’d have bush-

whacked up to the bridle path at the top of the ridge, carefully pace-counted from the path junction, and then in to the flag. Fifteen minutes on this one—it’s a toughie. The clue sheet said “the hollow.”

Dave went right to the paths on this leg, and followed them up to the top of the ridge. He perceived this leg as “long and scary with few landmarks and confusing trails.” When he got to the bridle path he guessed his position and plunged into the woods, where he “thrashed around with some other people and finally ran into it.” Tim ignored the paths and cut straight up the slope to the top and the bridle path. Once on the path, Tim ran to the curve and ducked into the bush. He ran past the marker, but recovered quickly. A definite advantage went to Tim here with his bolder approach and confidence in map reading ability.

The next leg, #6, I intended to require the use of an attack point and precision compass. I must have spent two hours crisscrossing the area between the lower stream and the south bridle path to find a suitable solitary boulder that provided a fair test. I think the one I came up with was too easy. It was about 500 feet due south of the bridge. Using the attack-point technique, it might require another ten minutes. If you went off on a lick and a prayer, you could spend 30. The clue: “a boulder 6 ft. West Side.”

(Continued on page 17)

CAMPGAW RESERVATION

Field checked and drawn by Larry Crane, Ramapo Orienteering Club, Ridgewood, New Jersey, from USGS base map, October, 1975.

DAVE ●●●●●●

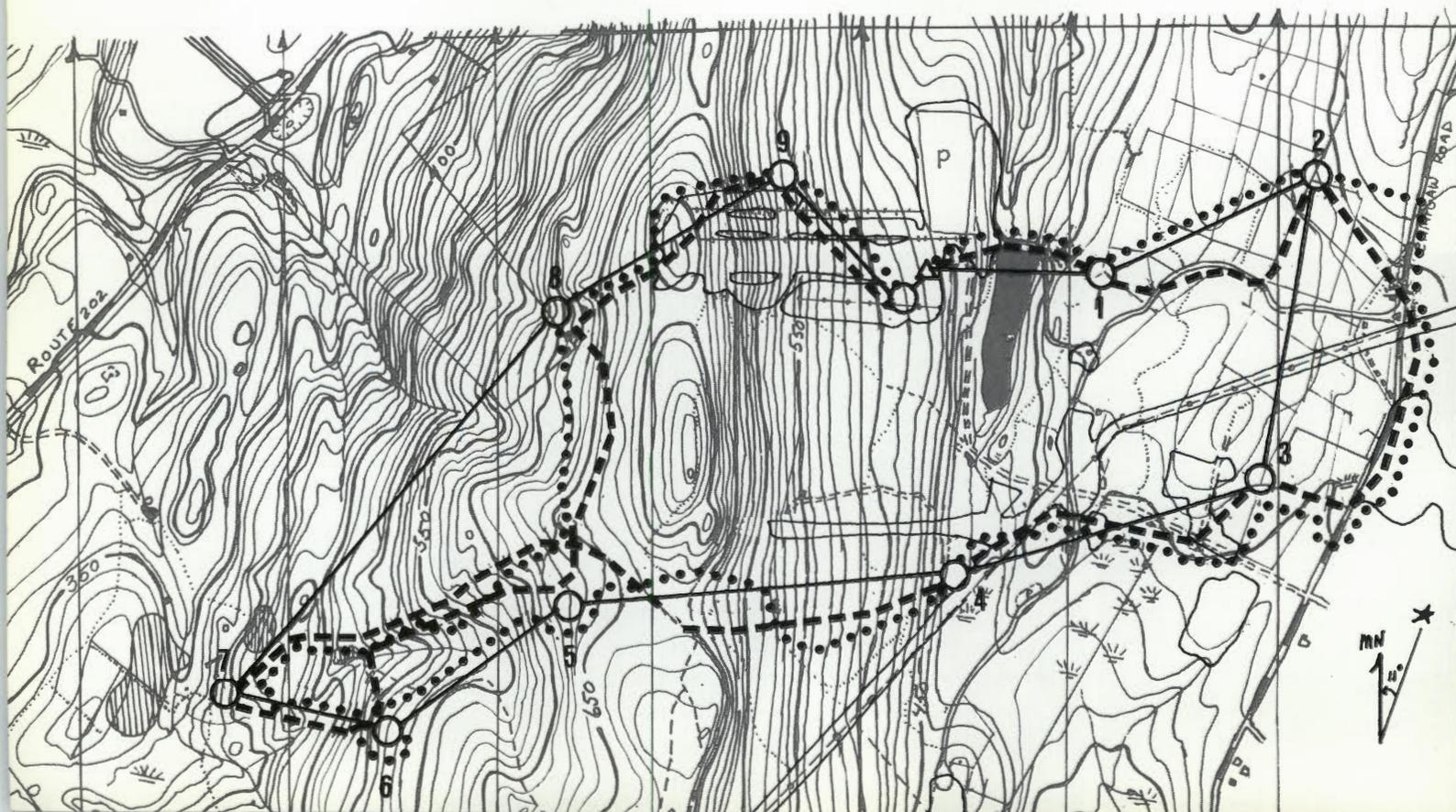
TIM - - - - -

SCALE: 1/12000
CONTOUR INTERVAL 10 FEET

meters 0 500 1000 1500
feet 0 500 1000 1500

LEGEND:

- | | | | | | |
|---------------|--|------------|--|----------------|--|
| Main Road | | Pond, Lake | | Open Area | |
| Blacktop Road | | Stream | | Evergreens | |
| Dirt Road | | Powerline | | Ski Lift | |
| Bridle Path | | Building | | Toboggan Slide | |
| Trail | | Ruins | | Marsh | |
| Stone Wall | | Cairn | | Parking | |
| Wire Fence | | Boulder | | | |





Environmental News

PHOTOS BY JOE KLEIM



A GRAND DAY FOR NEW JERSEY

The raising of more than 80 flags—American flags, state flags, historical flags—highlighted the June 14 (national Flag Day) dedication ceremony at Liberty State Park on the Jersey City waterfront. In the picture above, Jersey City Boy Scouts and Girl Scouts raise the flags of the 50 states along the park's entrance drive. Environmental Protection Commissioner Bardin (center, between the two foremost flags) applauds in appreciation of the sight. Governor Byrne officially opened the first section of New Jersey's first urban state park, a 35-acre development made possible by federal grants received by DEP and

the N.J. Bicentennial Commission. Liberty State Park, which eventually will embrace 800 acres, is New Jersey's largest Bicentennial project. The park is open to the public free of charge, seven days a week from 8 a.m. to 10 p.m. with parking for 200 cars and 20 buses. The day-use park offers a sweeping view of the Statue of Liberty and New York harbor, picnic facilities, walking and resting areas along with restroom and information display pavilion. Located just off N.J. Turnpike Exit 14-B at Jersey City, Liberty is the 24th park operated by DEP's Division of Parks and Forestry. □

CAFRA ISSUES PERMIT FOR 2,600 HOMES: LARGEST TO DATE

DEP issued a final construction permit in late July for the expansion by 2,600 units of Crestwood Village, Ocean County, the largest residential project reviewed and approved to date under the Coastal Area Facility Review Act (CAFRA). Crestwood Village, Inc., revised its plans to meet conditions set forth in February of this year when it was given conditional approval for the project. The revised site plan includes a pedestrian path system, more open space, and efforts to preserve more of

the native trees and vegetation at the 563-acre woodland site. Crestwood Village has agreed, as a condition of the permit, to offer for sale a mix of dwelling units that the state Department of Community Affairs has found to be within the spirit of the Mt. Laurel decision. Crestwood will offer units for sale at prices such that at least 4 percent of the dwelling units are within the economic reach of low-income households and 20 percent are within the reach of moderate-income households. □

Public hearing, Sept. 29 & 30

PROPOSED CHANGES IN AIR POLLUTION REGULATIONS

A public hearing will be held on September 29 and 30 on DEP's proposed changes in New Jersey's air pollution control code, including a new particulate emission standard for the glass industry and streamlining of several other portions of the code. The two-day hearing will be held in Trenton (Mercer County) at the State Museum Auditorium, State Cultural Center, West State Street, from 9 a.m. to 5 p.m.

The proposed standard, similar to Pennsylvania's, would allow the glass industry to meet air pollution control requirements at costs lower than required for compliance with the existing standard. It would also encourage process changes, such as use of more recycled glass. (The glass industry, which has not complied with the existing standard, currently emits approximately 2,800 tons of particulates per year. Under the proposed new standard, particulate emissions would be reduced by an estimated 1,000 tons per year.)

DEP also has proposed minor technical changes for the control of smoke and particulates from fuel-burning sources. Another proposed change would enable the department to deal better with localized air pollution nuisance situations.

Copies of the amendment document are available at the Bureau of Air Pollution Control's main office: Room 1108, Labor & Industry Building, John Fitch Plaza, Trenton 08625, and at the following field offices: Atlantic County Health Department, 1200 Harding Highway, Mays Landing, 08330; N.J. Bureau of Air Pollution Control (APC), Metropolitan Field Office, 25 Route 22, Springfield 07081; N.J. APC, Newark Field Office, Room 510, 1100 Raymond Boulevard, Newark 07102; N.J. APC, Southern Field Office, 5635 Westfield Avenue, Pennsauken 08110; and Warren County Health Department, 151 West Washington Avenue, Washington 07882. □

Registration in jeopardy:

KIN-BUC CHEMICAL LANDFILL CLOSED BY ORDER OF DEP

The Kin-Buc chemical waste landfill in Edison Township, Middlesex County, was closed by DEP in mid-July because of continuing violations of the state's environmental standards. These violations had persisted despite penalties and administrative orders issued by DEP to Scientific, Inc., of Scotch Plains, owners of Kin-Buc. At the same time, Kin-Buc's current engineering design was disapproved and its registration permanently revoked.

The landfill occupies about 40 acres and fronts on the Raritan River; waste fill at the dumpsite rises about 85 feet above the river. Liquids were discharged from tank trucks into a large pit at the top of the fill. The site had been the scene of fires and chemical spills into the Raritan River.

Beatrice S. Tylutki, director of DEP's Solid Waste Administration, said Kin-Buc stopped taking any liquid chemical or hazardous wastes on July 18, the date the closure became effective. (Until then, Kin-Buc had received up to 150,000 gallons a day of noxious liquids and chemicals that polluted surface and possibly ground waters and escaped as vapors into the air.) State inspectors, who visit the landfill at unscheduled hours at least once each day, report that Kin-Buc has started some of the remedial work DEP hopes will mitigate the results of past pollution.

DEP and the Board of Public Utility Commissioners (PUC) held a joint public hearing in Newark on DEP's permanent revocation of the registration certificate of the Kin-Buc chemical waste landfill. Both State agencies have regulatory authority over sanitary landfills. The first day of the hearing was August 3. At the request of the attorneys for Kin-Buc, the hearing will be resumed on September 20. □

TRENTON WATER CRISIS REPORT IS AVAILABLE

Single copies of "The Report on the Trenton Water Crisis," prepared by Environmental Protection Commissioner Bardin and a board of experts appointed last year to study the situation, are available upon request from DEP's Documents Distribution Center, Box 1309, Trenton 08625.



JATCZAK APPOINTED DEPUTY DIRECTOR OF SOLID WASTE UNIT

Henry A. Jatczak, 52, of Roseland (Essex County) has been named deputy director of DEP's Solid Waste Administration. Jatczak is an engineer with 30 years' experience in the field including research, assessment of alternative energy sources, technical services, and management. He is co-inventor of a combustion improvement device granted a patent in 1965. Jatczak, who assumed his duties in July, will supervise the engineering activities as well as assist in resource recovery planning and development. He received both his mechanical engineering degree and master of science degree from Stevens Institute of Technology. □

Steuber project

CONDITIONAL APPROVAL FOR TANK FARM/TERMINAL

The department in mid-July approved—with conditions—the Steuber Company's proposed fuel oil and chemical storage terminal project at the Port Jersey industrial complex on the border of Jersey City and Bayonne in Hudson County. Steuber must revise its project plan for the Hudson River terminal and pier facilities to comply with safety and environmental provisions.

DEP's conditional approval followed more than a year of investigation of the project which included a thorough study of public health and safety factors, a comprehensive environmental assessment, and a public hearing in December 1975. As a result of the findings, the conditions described below must be met by Steuber to ensure the greatest degree of safety and minimize the potential for pollution.

Requirements for safety include: additional spacing between storage tanks; the establishment of buffer zones and

Environmental Action Line Marks Sixth Anniversary

Thousands of New Jerseyans have dialed 609-292-7172 to report abuses of the environment in the six years since DEP's *Environmental Action Line* was inaugurated in October 1970. Mrs. Mary Capitani, who has been the hotline's daytime "voice" for the entire six years, said that the calls cover a wide range of pollution problems—noise, use of pesticides, suspected illegal dredging operations, dumping, discharges into waterways, poaching on fish and game preserves—but the greatest number of complaints are about air pollution (odor, dust, smoke). The information supplied by citizens has often been very helpful and has made it possible for DEP to put a stop to violations of state laws and regulations by polluters. In a sense, the people of New Jersey act as the "eyes and ears" of the department, for it would be financially and physically impossible to maintain the huge staff necessary for detailed monitoring of the whole state. *Environmental Action Line* is a 24-hour telephone service.

Note: To accommodate the large number of off-hours air pollution complaints, a companion hotline was begun in January 1976. Called *Air Pollution Nightwatch*, the telephone service handles reports of smoke or odors at night and on weekends and holidays. The numbers to call are 609-924-2043 or 201-747-2662. □

relocation of the utility building, which houses the main control room for pumping; fire and spill detection systems. (The 49-acre facility, to be located on a manmade peninsula, will include 242 storage tanks—10 fuel-oil storage tanks with a total capacity of 2 million barrels, and 232 chemical storage tanks also totaling 2 million barrels in capacity.)

Requirements for environmental protection include: increased emission-control systems, DEP review of spill-prevention plans, termination of the facility at the end of its economic life, and permanent retirement from hydrocarbon storage of leased tanks at Carteret (Middlesex County), which will reduce the regional hydrocarbon emissions by 100 tons per year.

Other safety and environmental provisions include: relocation of tanks containing benzene, toluene, and xylene to corner of site farthest from adjacent land uses; emergency situation training

(Cont. on page 16D)



NEXT STOP: LAKE HOPATCONG

Public bus service with free entrance to Lake Hopatcong and Washington Crossing state parks was initiated this summer under a joint plan of the state departments of Environmental Protection and Transportation (DOT), with approval of the state Commuter Operating Agency (COA). DEP Assistant Commissioner Betty Wilson (center, left) and DOT Assistant Commissioner for Public Transportation Peter Stangl (center, right) were on hand to greet a busload

of passengers leaving Newark for a day at Lake Hopatcong. The experimental bus service was provided from June 21 to September 6, seven days a week. The fares were minimal (Round trip Newark-Hopatcong, \$2; Round trip Morristown-Hopatcong, \$1.50; Round trip Trenton-Washington Crossing, \$1). The program was sponsored by COA through its bus demonstration funds, with costs offset by fares. □

Semiannual Update: State Register

The semiannual updating of the **State Register of Historic Places** shows that as of June 1, 1976, more than 300 properties, both public and private, met the criteria needed to be included in this permanent record. They were determined to have significant historical, archaeological, architectural, or cultural merit. Being listed on the State Register is a prerequisite for obtaining federal funds for acquisition, preservation, restoration, or maintenance of an historic place or site, structure or object. The federal program is administered in New Jersey by DEP's Historic Sites Section. The 334 sites listed on June 1 include such diverse items as Lucy the Elephant (an architectural folly located in Margate, Atlantic County) and the Cape May Historic District, an entire city in Cape May County.

National Register

Many of the sites on the State Register also appear on the **National Register of Historic Places**. As of June 1, 264 such places met federal criteria. A site must

first be placed on the State Register in order to be eligible for national listing. Two of the places holding dual recognition are Batsto, restoration of a colonial village founded in 1766 (Wharton State Forest, Burlington County), and the Delaware and Raritan Canal (Hunterdon, Mercer, Middlesex, and Somerset counties).

National Historic Landmark

Twenty-two of the 334 sites have been recognized by the federal government as having significance for the country as a whole. Among the places designated as a **National Historic Landmark** are the Old Barracks (Trenton, Mercer County), the Walt Whitman House (Camden, Camden County), Sandy Hook Lighthouse (Monmouth County) and Morristown National Historic Park (Morris County).

The listing of properties on the State and National Registers of Historic Places is available from DEP's Historic Sites Section, Box 1420, Trenton 08625. □

Would create nearly 10,000 jobs:

DEP CERTIFIES \$189 MILLION PASSAIC SEWER PROJECT TO EPA

The state's overall program to improve water quality in Upper New York Bay took a giant step forward recently when DEP certified a \$189 million program to upgrade the treatment of Passaic Valley wastewater to the federal Environmental Protection Agency (EPA). DEP certified the project for 75 percent federal financing through a \$142 million sewerage construction grant. The application by the Passaic Valley Sewerage Commission (PVSC) has been forwarded to EPA for final approval and grant award. It is the largest single project ever certified by DEP.

According to the state Department of Labor and Industry, the PVSC project would create nearly 10,000 jobs. The PVSC treatment plant, located on Newark Bay, currently provides primary treatment. The plant is scheduled for expansion and upgrading to secondary treatment by 1983.

The PVSC system serves 1.2 million persons and more than 7,000 industrial and commercial customers in 29 municipalities. It discharges up to 300 million gallons per day—approximately 25 percent of the total municipal wastewater flow in the state.

As of July 1, DEP had committed \$925 million of the \$1.3 billion Congress made available to New Jersey in 1972—\$711 million of that amount since January 1974. □

ROUND VALLEY PIPELINE ON SCHEDULE

Approximately 60 percent of the work had been completed on the initial section of the Round Valley reservoir outlet release pipeline by midsummer.

When finished, the pipeline will run 3.6 miles and carry water from the North Dam to the South branch of Rockaway Creek near Whitehouse Station in Readington Township, Hunterdon County. The water will enter the north branch of the Raritan River and at the confluence of the north and south branches enter the Raritan. An average yield of about 80,000 gallons of water daily will be available to water purveyors/users from the reservoir. Completion of the job is expected in early 1977. □

DEP 1975 ANNUAL REPORT AVAILABLE

The Annual Report of the New Jersey Department of Environmental Protection for fiscal year 1975 has been published.

To obtain a copy, please write to DEP Documents Distribution Center, Box 1390, Trenton 08625.



KEEP OLD HUNTING LICENSES

DEP's Division of Fish, Game and Shellfisheries reminds New Jersey hunters to save their old hunting licenses to avoid being required to take, or repeat, a hunter education course. State law mandates that both adults and juveniles applying for a firearm hunting license or a bow and arrow hunting license must present to the issuing agent their previous hunting license (any state for any year) or a properly signed certificate showing that the applicant has satisfactorily completed the appropriate hunter education course. □

GREEN ACRES APPROPRIATION

Legislation appropriating \$25 million from the 1974 Green Acres bond issue for the acquisition and development of lands for recreation and conservation was signed into law by Governor Byrne on June 3. The measure, Chapter 29, P.L. 1976, provides \$10 million for acquisition of parkland and \$15 million for development of lands owned by the state. Among other tracts, the law will enable the state to acquire for public use the 2,323-acre MacEvoy estate on Ramapo Mountain in Bergen and Passaic counties, to be known as Ramapo Mountain State Forest. The Green Acres program is administered by DEP. □

USE FALLEN LEAVES AS BASE FOR COMPOST PILE

By the end of October the trees will be shedding their leaves and it will be raking time in New Jersey. Before bagging the fallen leaves for the trash collector, consider recycling them through a compost pile. Leaves make an excellent base for such a pile. Add grass clippings, vines, dead flowers, vegetable waste, kitchen scraps, and weeds. These materials become rich organic matter after a winter in compost.

To make a compost pile, mark out a spot 3 to 5 feet square. Heap organic matter in layers about 6 or 12 inches thick, layering with commercial fertilizer if you wish, and one half layer of soil. To eliminate odor, keep the compost heap damp and maintain a top layer of soil. In the spring, work the compost material into garden soil and into soil around trees and shrubs. It is an excellent soil conditioner. □

BIRD SEED SAVINGS DAY

The National Science for Youth Bird Seed Savings Day will be held on October 10, 1976. The Conservation and Environmental Studies Center, the New Jersey Audubon Society, and the Nature Center at Lincroft, Monmouth County, are all participating in the cooperative program. Please call 609-893-9151 for information about the competitive, non-profit prices and how you can participate in this unique, satisfying program of education and fun. □

NATIONAL STANDARDS ADOPTED FOR OIL AND GREASE LIMITS

DEP has proposed a revision to its surface water quality standards which would create a distinct classification for the discharge of petroleum hydrocarbons, instead of grouping them with more readily biodegradable animal and vegetable oils as before. Because many hydrocarbon compounds derived from petroleum are potentially toxic in an aquatic environment, DEP has established more stringent goals for limiting these substances.

Over the next few years, while the new limits for such discharges are being developed by DEP, the department will enforce federal Environmental Protection Agency (EPA) standards for oil and grease. In addition, DEP's Division of Water Resources will develop a monitoring program in cooperation with EPA to determine the levels of petroleum hydrocarbons present in the state's waters. □

For sand mining:

DEP APPROVES WETLANDS PERMIT

The department approved a wetlands permit to the Pennsylvania Glass and Sand Corporation (PGS) in mid-June allowing construction of two roads through wetlands in Downe Township, Cumberland County. The roadways will provide access to new pipelines which will carry sand slurry from a new mining area to the firm's processing plant in Newport. PSG supplies 85 percent of the melting sand—a basic raw material—used by the New Jersey glass industry, which employs more than 18 percent of the work force in Cumberland County.

DEP scientists found that the PGS proposal sufficiently deals with erosion control, preserves portions of the floodplain, and does not alter the water course, natural water flow, or water temperature. The roads and pipes, which will total 1,270 feet in length, will cross Dividing Creek and Cedar Creek and occupy 1.3 acres of wetlands. □

DEP'S PESTICIDE APPLICATOR PROGRAM WINS FEDERAL AID

The department's Office of Pesticide Control will receive \$72,627 from the federal Environmental Protection Agency (EPA) starting September 1 for use in administering the Pesticide Applicator Certification Program, which is mandated by federal law. Under this program, persons applying pesticides in New Jersey are trained and tested for competency. The funds will be used to employ three environmental technicians and one full-time chemist and for the purchase of laboratory equipment for the certification enforcement project. The state will provide an additional \$5,278 (12.42 percent of the total cost) for the program. By midsummer approximately 11,000 people had become registered as approved pesticide applicators. The Office of Pesticide Control is part of DEP's Division of Environmental Quality. □

DEP AND COASTAL COUNTIES SHARE U.S. PLANNING GRANT

DEP and the 12 coastal-zone counties are sharing a \$337,000 grant received this summer from the U.S. Department of Commerce. The department will use its share (\$157,000) to formulate a program to deal with problems expected as a result of offshore oil and gas exploration and production, and from the construction of energy facilities in the coastal zone. The 12 coastal counties will share \$180,000 of the planning grant to enable them to participate in the energy facility planning; each county will receive approximately \$15,000. The counties are Atlantic, Burlington, Camden, Cape May, Cumberland, Gloucester, Hudson, Middlesex, Monmouth, Ocean, Salem, and Union.

The grant supplements the ongoing development of New Jersey's coastal management system. The program, administered by the National Oceanic and Atmospheric Administration (NOAA), is a cooperative federal/state effort to develop rational and balanced coastal land and water uses. □

(Cont. from page 16B)

TANK TERMINALS

for employees of adjacent sites; a water curtain along the Steuber waterfront; installation of overflow alarms and emergency venting on each tank; construction of a firefighting system on the loading racks and a standby pumping system for water and foam; air pollution control devices at the new facility to maintain hydrocarbon emissions at or below 100 tons per year; and installation of a wastewater treatment plant. □

(Continued from page 16)

Dave chose to go to his strength again on this leg, the compass. He shot straight through the brush, using the stream and bridle path as checkpoints. Unfortunately, in the general area of the flag, having erred on his line, he wandered without a method until he stumbled on the flag. Tim went right out to the northern bridle path and down to the bridge, which he used an attack point, easily finding the marker. Another advantage to the bold approach, which puts a premium on map reading and terrain appreciation. Ironically, Tim felt that he should have beelined to the flag, and Dave thought he should have run to the bridge!

The 7th leg of the course is the kind that can rear up and bite if you don't watch it carefully. The distance is only about 800 feet, but it is located on a little knoll that looks a lot like a bunch of other knolls out there. I wanted to test the competitor's concentration toward the end of the course by keeping him completely off the trails and making him read the map. The clue is "southwest side of the knoll, a boulder 6 ft." This one shouldn't take any more than eight minutes.

Both men ran right to this one. "A piece of cake."

Number 8 presented the most interesting problem on the entire Red Course. It was designed to make or break the competitor. Once again a multitude of viable routes could be chosen, but on #8 the distance involved was much greater so that any errors made in navigation would be magnified, and just as important, the leg involved a climb of 200 feet at a time when energy was already waning. The marker was located in a long, narrow reentrant, visible from perhaps 150 feet away approaching it from the top. Basically, the competitor could tackle the leg by attempting a shorter straight-line approach, carefully noting the terrain enroute and approaching the flag from the bottom, or by taking a bridle path to the top of the ridge, and approaching from the top. The top route would be more sure, with more distinct features to use in navigation plus better visibility near the flag, but it is half-again longer than the lower route. A confident navigator could make up a lot of time on a straight-line shot to the flag here, but it's a gamble. This one might take 15 minutes.

Tim elected to run up the bridle path to the curve, then he struck out cross-country, contouring the west slope. He happened on an unmarked trail which led him straight to the control. Who said there was no element of luck in this game? Dave also ran up the bridle path. He wanted to be more precise, so he took a heading from the knoll near the curve and came out only about 15 feet to the left of the flag, and 50 feet short on his pacing. Phenomenal!

The last leg, #9, was simplicity itself. The marker was located 150 feet in from the edge of a big clearing near the ski lift halfway down the slope, really just a detour on the run into the finish line. Once you reach the top of the ski slope, the lodge and the finish line are clearly visible. It might take another six minutes to get into the finish line, with a total average elapsed time on the course of 71 minutes.

Both men burned #9.

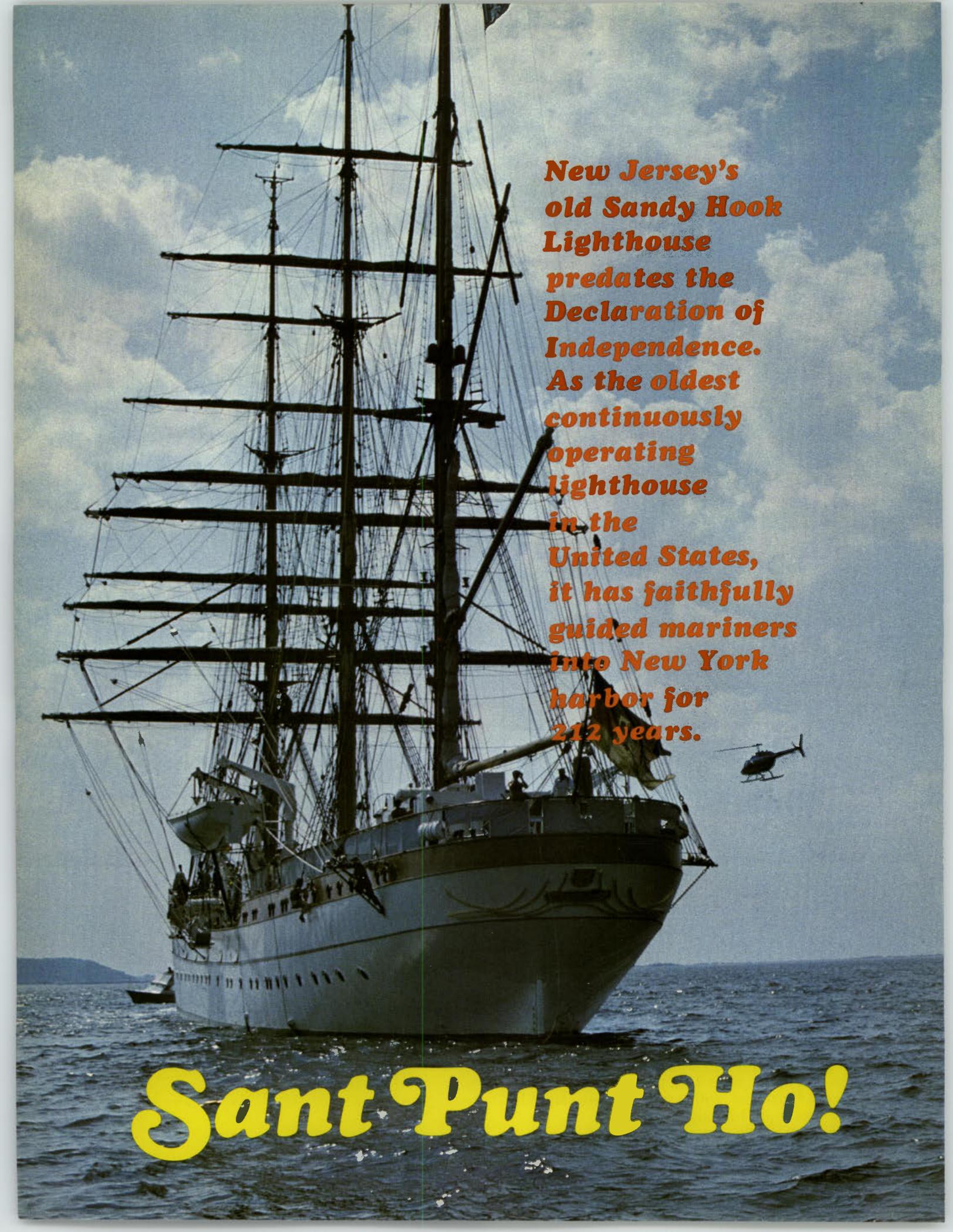
Overall, very little separated these two competitors despite a wide difference in age. Dave took a more cautious approach, and acknowledged that he needs work on reading the map and recognizing land

shapes. He also felt that he wandered about too much without a firm method in the vicinity of the control. Tim's bold approach created several advantages for him on which he did not fully capitalize because of lapses in concentration.

As for the course, it turned out to be about standard for a Red in America. Undoubtedly, Scandinavian orienteers running this course would have recorded times of close to 50-60 minutes and better!

By five o'clock, almost everyone had headed back home, and there was just a little cleaning up left to do. Me, I was glad it was over! Every day prior to the meet I worried about all the details, especially the designs of the courses. Were they too hard, too easy? Was the map good enough to make it a fair competition? Well, maybe there are never clearcut answers to these questions, but one thing *was* clear. I'd attracted a lot of novices and some of them did very well. I'd attracted a lot of near-experts and they'd had fun. So, as it turned out, the challenge was worthwhile to these people, at this place, at this time, and I guess that's what we've come to expect from a participant sport, right? □





**New Jersey's
old Sandy Hook
Lighthouse
predates the
Declaration of
Independence.
As the oldest
continuously
operating
lighthouse
in the
United States,
it has faithfully
guided mariners
into New York
harbor for
212 years.**

Sant Punt Ho!

BY AL NUNES-VAIS

PHOTOS BY AUTHOR

When the sun set in the western sky on June 11, 1976, the beacon in the old Sandy Hook lighthouse came alive. On that date, it started on its 213th year of faithfully guiding mariners, and continued as the oldest operating lighthouse in the United States. There is no question that Sandy Hook lighthouse has played a vital role in the development of New York Harbor—and hence, the nation.

Sandy Hook became the center of national attention during the fourth of July week-end, when we celebrated our 200th anniversary as a nation. It was there that many of the tall ships staged, and anchored overnight before participating in the much talked about Operation Sail. In that event, most of the world's remaining tall ships paraded into New York harbor to commemorate America's founding by men of the sea—who arrived from distant lands by sailing vessel. Thus, it was only fitting that the OPSAIL tall ships, representing the vestige of a past era, pay homage to that light, by spending a night in its shadow!

To understand the role that Sandy Hook and its lighthouse played in years gone by, it is only necessary to look at a current navigational chart covering the approach to New York Harbor. Sandy Hook peninsula juts out towards Brooklyn to form the Lower New York Bay. The waters in that vicinity are shoal and full of sand bars that are forever shifting due to the action of tide, sea and the confluence of the Hudson River with the Atlantic Ocean. The main shipping lane into the harbor, Ambrose Channel, is only kept open by constant dredging by the Corps of Engineers—as it crosses over the shoal East Bank. The other channel into the Bay, the Sandy Hook channel, passes a stone's throw from the Hook.

(Continued on page 26)



Sandy Hook Lighthouse



Aerial view shows distance of Light from beach

One of "Tall Ships" on July 4th weekend



Photos by Harry Grosch

Walt Murawski, the instructor for the Warm Water Fisheries Management course, and a "teacher-student" check a trap-net used to sample the School of Conservation's lake.

TEACHERS' WILDLIFE WEEKEND

BY BOB BYRNE

Through a cooperative effort by the New Jersey Division of Fish, Game, and Shellfisheries and the New Jersey School of Conservation, New Jersey's first Teachers Wildlife Workshop was held on May 21, 22, and 23, 1976. The School of Conservation, directed by Dr. John Kirk, was host for the event. Located in Stokes State Forest, this school is the largest residential environmental study center in the Northeast.

The workshop featured subjects of general interest as well as techniques for teaching wildlife conservation in the classroom. Instructors were supplied by the Division of Fish, Game, and Shellfisheries.

Ninety-seven teachers from throughout the state participated. A large number were science teachers; however, all grade levels and courses of study were represented. Many of the teachers were enabled to attend by scholarships made available by county sportsmen's federations.

Plans are being formulated to make this weekend seminar an annual event. The possibility of holding a second wildlife weekend in South Jersey is also being studied, as is offering college credit for the workshop. If you are a teacher interested in participating in forthcoming wildlife weekends, write to the Division or watch for announcements in your local papers.



"Teacher-students" study anatomical difference in animal skulls in the Wildlife Materials course taught by Jerry Schierloh of the School of Conservation staff.



Bird banding was featured in the Critter Catching course taught by the author.



A group of "teacher-students" look over a simulated wildlife problem in the Wildlife Simulation course taught by Steve Toth. In this course a contrived man-wildlife conflict was presented to the class and they had to work out a solution.



George Howard, the Bureau Chief of Wildlife Management, and Dave Burke, Deer Project Leader, lead discussion concerned with habitat requirements of deer in the Deer Management course.



Russ Spinks, the instructor of the Beaver Management course, shows his "teacher-students" an example of man-beaver conflict and an acceptable solution to the problem.



Aerial census and photography are essential in population surveys.

SNOW GOOSE MANAGEMENT

BY FRED FERRIGNO

Senior Wildlife Biologist

During 1975, the first snow goose hunting season since 1931 was held in the Atlantic Flyway. The season lasted 30 days and a two-bird daily bag was allowed per hunter. Biologists estimated a harvest of 1,885 snow geese in New Jersey. This harvest stimulated considerable public discussion for and against the season. Opinions varied from "Why shoot such a pretty white bird?" to "It's about time conservation agencies permitted the harvest of the greater snow goose."

Prior to the 1975 season, considerable work was done by biologists in both

Canada and the United States in monitoring snow goose populations in the Atlantic Flyway. Population densities and annual reproductive success were determined in both the Arctic breeding and mid-Atlantic Coast wintering grounds.

PRODUCTION

On the breeding ground, snow and ice cover in mid-June is a good indicator of nesting success. Satellite photographs of snow cover taken on June 22, 1975, in the Arctic nesting grounds indicated an early thaw; as a result, an excellent

production year was predicted. Clutch sizes ranged from 3 to 7 eggs, with an average of 4.7.

The early June forecasts were verified by observation of the population on its wintering grounds. The important wintering states are New Jersey, Virginia, and North Carolina. With the use of spotting scopes, biologists separated the dusty brown and gray juveniles from the white adults. Of approximately 10,000 snow geese aged in New Jersey, 35 percent were immatures. The average family size was 2.9 young.

During the 1975-76 winter freeze thousands of snow geese fed on cover crops in Cape May and Cumberland counties.



An expansive eat-out can adversely affect the flora and fauna of the marsh.



Photos by Harry Grosch



Family of Snow Geese



Author examines the "hatchet breast" and emaciated condition of a snow goose that succumbed to starvation. A neck-collared adult and an immature bird are seen in the background.

POPULATIONS

Snow goose populations have fluctuated at relatively low levels for several years. However, recent surveys indicate that present populations are among the highest ever recorded for the Atlantic Flyway, with over 70,000 snow geese in New Jersey.

Populations, which showed low-level fluctuations from 1950 to 1968, increased from 40,000 in 1968 to 200,000 by 1975. With a more than 30 percent increase in young, and a May 1970 count of 153,000, approximately 200,000 snow geese were believed to be in the flyway. During the same period, the New Jersey snow goose population increased from 12,000 to over 70,000 birds. The population increase in New Jersey is attributed to the establishing of a flock along the Atlantic Coast and a spreading of the Delaware Bay population. In 1963 a small flock of 300 snow geese wintered in the east pool of the Brigantine National Wildlife Refuge. This population had increased to over 40,000 birds by 1975 and had extended its range from Great Bay to Absecon Bay. In Delaware Bay, the Egg Island population of 10,000 birds increased to over 33,000, extending its range from Dias Creek, Cape May County, to Sea Breeze, Cumberland County.

MARSH EAT-OUTS

Of the six major flocks found in New Jersey (Table 1), all have exceeded the carrying capacity of the natural environment in their established areas. Such large populations have been responsible for extensive marsh eat-outs.

A recent aerial survey of Brigantine National Wildlife Refuge showed that most of the vegetation from the impoundments north to Great Bay had been severely overgrazed by snow geese. The effects of eat-outs on the flora and fauna of the salt marsh are now being studied. Preliminary results indicate that these eat-outs have a potential for good as well as harm. Some denuded areas revegetate, while others that are repeatedly eaten remain as mudflats; those that retain water develop into ponds utilized by wildlife and hunters. In areas of large snow goose populations, the expansive eat-outs have adversely affected the nesting cover and food for other marsh wildlife. These eat-outs eliminate salt marsh snails and other invertebrates, which in turn lowers marsh carrying capacities for black ducks and other birds.

CROP DEPREDAATION

With the increase in the snow goose populations, crop damage has become a reality in New Jersey. When natural food sources are unavailable because of over-

| 1975 Location | 1975 Population estimate | 1975 Harvest estimate |
|---------------------------------------|-----------------------------|--------------------------|
| Atlantic Coast | | |
| Absecon-Reeds Bay | 8,000 | 571 |
| Brigantine National Wildlife Refuge | 35,000 | 730 |
| Delaware Bay | | |
| Back Creek (Nantuxant WMA, Dix WMA) | 10,000 | 146 |
| Dennis Creek Wildlife Management Area | 7,000 | 183 |
| Egg Island Wildlife Management Area | 9,000 | 65 |
| Heislerville Wildlife Management Area | 7,000 | 190 |
| Total | 76,000 | 1,885 |

Table 1.

Location of the major flocks of wintering snow geese in New Jersey and their harvest

grazing or frozen marshes, the geese turn to neighboring croplands for food. In the spring of 1974, a survey of salt hay damage in impounded marshes indicated that seven percent of the sampled area was severely eaten by snows. Damage intensified during the prolonged freeze from December 22, 1975 to January 24, 1976. Geese were observed feeding on cover crops from Sayre's Neck in Cumberland County to Cape May, Cape May County. Over 1,400 acres of cover crops were affected.

In the southern states of Virginia and North Carolina, after adversely affecting natural food plants, snow geese have utilized croplands regularly. In late October 1975, depredation by snow geese on corn and sprouted wheat had already been recorded at Bombay Hook, Delaware, and Back Bay, Virginia.

WINTER MORTALITY

During the prolonged freeze, 2,600 snow geese remained in the vicinity of Brigantine Inlet. These birds, unable to feed because the marshes were frozen and they could not dig up root-stocks, suffered winter hardships. Ground and aerial counts of dead birds revealed that at least 300 snow geese had starved. Aerial counts before and after the mortality period showed a reduction in population possibly due to starvation of an estimated 1,000 snow geese. Autopsies performed on seven immatures at the Federal Pathology Laboratory in Wisconsin indicated that all were highly emaciated and that starvation was the major cause of death. There was no disease involved, no evidence of lead poisoning, and no lead shot in the gizzards of the geese. Only slight mortality occurred along the Delaware Bay, where 13,000 snow geese overwintered. Most of these birds shifted to winter wheat, rye, and other cover crops when the marshes froze. In Cape May and Cumberland Counties, biologists recorded as many as 4,000 snow geese per field. A biologist has been assigned to monitor the

crop depredation by snow geese and investigate complaints, damage, and methods of reducing crop losses.

HARVEST

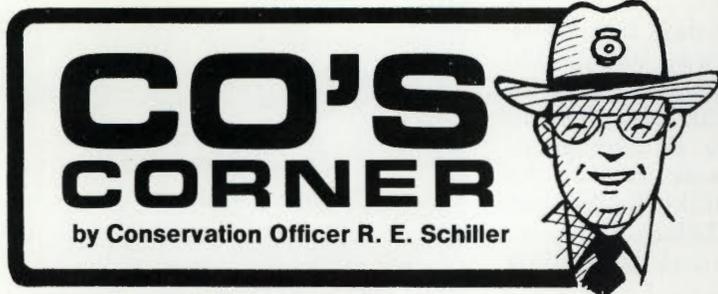
Snow geese have been hunted in Canada since 1916. Waterfowl biologists have recommended a limited harvest in the United States for the past few years, based on the substantial increase in the snow goose populations. The estimated harvest for the United States portion of the Atlantic Flyway in 1975 was approximately 5,000 greater snow geese. In Canada, it was less than 12,000.

To monitor the harvest in New Jersey, both state and federal biologists conducted hunter surveys on five of the six established snow goose flocks. Biologists checked 1,312 hunters and examined 537 geese. As a result of the surveys it was estimated that hunters spent 4,990 days hunting snow geese and harvested 1,885 birds—2.5 percent of the hunting season population of 76,000. Cripple losses were less than 10 percent. Of the 399 snow geese aged in the field, 237, or 59.4 percent, were immatures.

During most of the season, the geese remained in large flocks and were quick to seek sanctuary in natural bays and other refuges. Later in the season, cold weather forced them to use the marshes more frequently, and the few hunters who braved the low temperatures usually obtained their daily bag limit of two birds. On the Brigantine National Wildlife Refuge, the snow goose was the species most commonly taken.

FUTURE

From the standpoint of the number of man-days of recreation provided, the 1975 special snow goose season was a success. However, the number of birds harvested was too small to have a significant effect on marsh eat-outs and crop depredation. With the increase in snow goose populations, an annual harvest is necessary for the management of this valuable wildlife resource. □



a shocking tale



One of our largest birds of prey, the Great Horned Owl, is a common resident in many areas of New Jersey. The bird in this photograph was discovered by biologist Joseph Sweger on the Assunpink Wildlife Management Area. The victim of a freak accident, the owl, having caught a rabbit, apparently decided to alight on a utility pole, and was subsequently electrocuted. While one foot was burned, the other foot still held the remains of the rabbit when the bird was found at the base of the pole. Such accidental electro-

cutions have been a particular problem especially in western states, where natural perches and nest sites are so few that large birds readily adopt utility poles and transmission-line towers. It has become evident that our raptor populations, many of which are already seriously threatened, must be protected from this additional source of mortality. Biologists, concerned citizens, and utility companies are cooperating in the installation of poles designed to prevent such literally shocking deaths. □

JOE GALLO

Conservation Officer

On June 2, 1976, Conservation Officer Joseph F. Gallo of Atlantic County passed away after a short and sudden illness, just 28 days short of having completed 28 years of service in the field of conservation.

His work as a conservation officer was noted by his division and many conservation groups.

He was the recipient of many awards for the quality of his work. To name a few:

In 1969, he was recognized by the Atlantic County

Federation of Sportsman for his dedication in the field of conservation.

He was a recipient of an award from the Shikar-Safari International Organization for meritorious service in the field of wildlife conservation and law enforcement.

In 1972, he was awarded a certificate for outstanding performance by the N.J. Fish and Game Division.

The woods and fields will not be the same without Joe Gallo, Conservation Officer.

THEODORE PATRONI

(Continued from page 19)

Sant Punt Ho!

A study of an 1804 Coastal Pilot chart shows existence of a form of natural channel in that location, and before the advent of dredges it was the only way into New York harbor.

Thus, it is likely that early explorers of North America and New York Bay passed Sandy Hook, and came ashore there. Henry Hudson is credited with first discovering New York in 1609. The diary of one of his sailors aboard his "Half Moon" implies that he could not make a northerly approach to the Bay. So he headed south until he came upon a way to get through. There is little doubt that this was the Sandy Hook Channel.

A 1666 Dutch map, available in the Library of Congress, clearly shows "Sant Punt", as well as the shoals guarding New York. Other key landmarks shown on that chart are "Staten Eylant" and "Man-nathan's Eylant-N. Amsterdam". Today's modern ships that approach New York harbor take a pilot aboard to help them steer through those difficult waters. But believe it or not, the literature indicates that the local governing body made pilots available as early as 1694 to aid vessels then bound for the port of New Amsterdam.

In spite of this, numerous shipwrecks continued to occur in shoal waters. By the year 1761, there was sufficient maritime traffic into New York Bay that local merchants, unhappy with their cargo losses, urged the Provincial Council to build a lighthouse at Sandy Hook. Agreement was reached and it was then built and lit for the first time on June 11, 1764.

The scheme was for the lighthouse to pay its own way, and a duty was levied on passing ships. Said duty consisted of three pence a ton, and a copy of a receipt dated 3 May 1768 shows the Master of the "Brigg Cornelia" as having paid 23 shillings and nine pence for his 95-ton vessel. The receipt states that payment was for "maintenance of a lighthouse upon Sandy Hook by virtue of an act of this

Colony." In those days lighthouse annual revenue was about 450 pounds a year. If we consider a 95-ton vessel as typical, then this can be extrapolated to an average of about one vessel a day passing the lighthouse. Just think—better than 200 years ago, before we ever became a nation, over 300 sailing vessels a year made the long voyage from a distant land to enter the port of New York.

In 1764, the lighthouse was called the "New York Lighthouse" and described as follows: "This house is of an octagon figure; the diameter of the base 29 feet and at the top of the wall 15 feet. The Lanthorn is 7 feet high; the circumference 15 feet. The whole construction of the lanthorn is iron, the top covered with copper. There are 48 oil blazes. The building from bottom to top 103 feet."

Of course, the lighthouse is now electrified and listed as a "45,000 candlepower, third-order electric light, fixed white, in a white stone tower—visible for 15 miles." It is operated by the United States Coast Guard, and the electric installation was made within the confines of the old lanthorn. In fact, the conduit for the oil to fuel the blazes is still in place, as it runs down the center of the spiral staircase that takes one to the top. The fuel arrived there by wick action from a reservoir at the base of the tower.

When that lighthouse was first built, it was located about 500 feet south of the tip of that Sandy Point, but now 212 years later as a result of sand buildup, it is about a mile and a half south of Sandy Hook's northernmost tip. The topography there changes a bit with every storm, a constant reminder of the power of the sea and the shifting sands.

In view of Sandy Hook's strategic location at the entrance to New York harbor, it also has played an important role in its defense over the years. Gun batteries were known to exist as far back as 1778, and major fortifications were built during the Spanish-American War era. One of America's earliest Ordnance Proving grounds was established there by the Secretary of War in 1874 and used as such

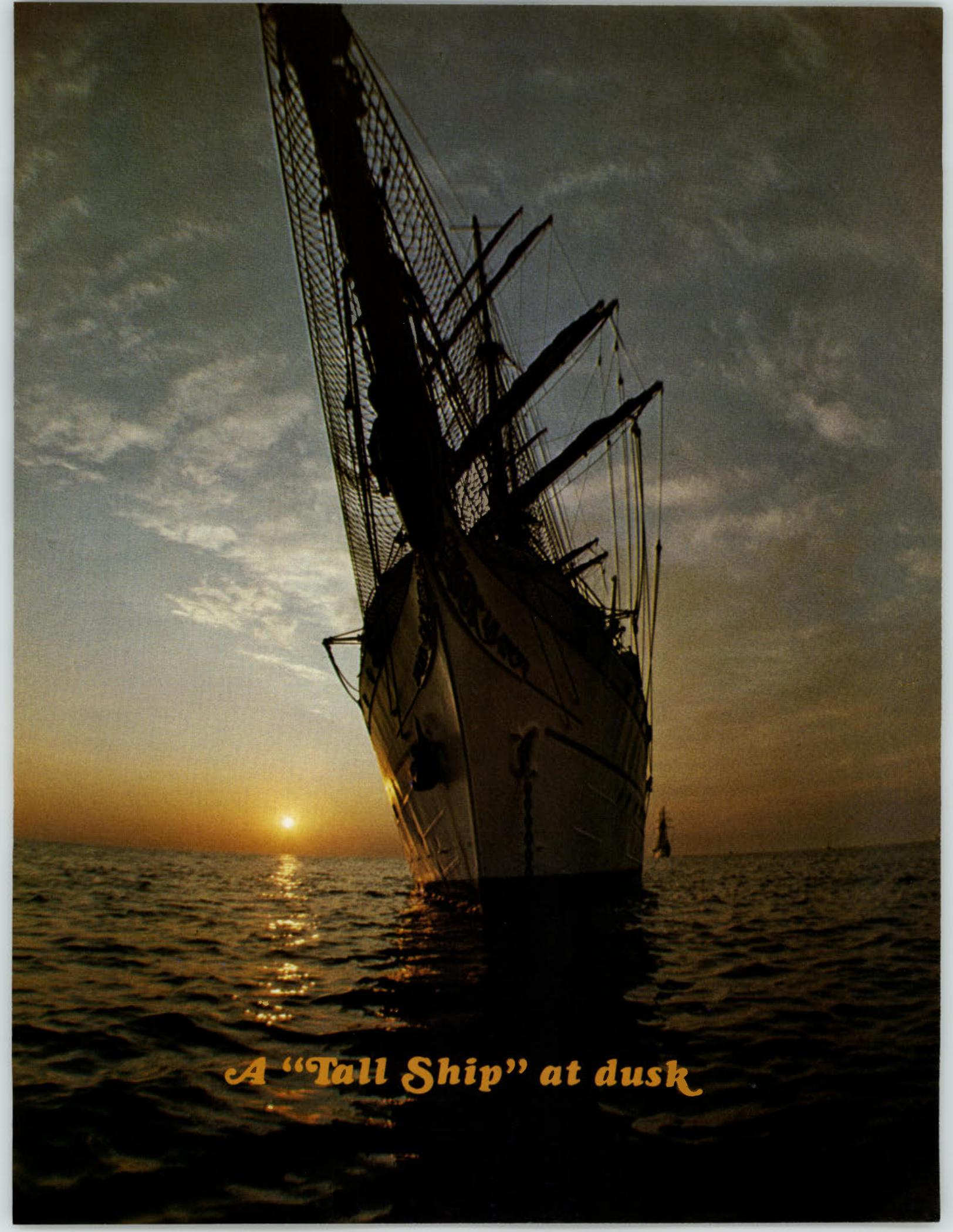


20-inch Rodman cannon

until 1920, when modern guns outgrew the available ranges. A 20-inch Rodman cannon, representing the ultimate in smoothbore muzzle loading weapons in the Civil War era, is still on display.

In 1895, the area was designated as Fort Hancock—and by the time of World War I formidable coastal defenses had been installed in the shadow of the lighthouse. The Sandy Hook role as defender of New York harbor continued into 1964 when Nike missiles were installed—and most recently phased out due to obsolescence. In 1962, the area south of the Fort became a New Jersey State Park, and in 1964 the lighthouse was designated as a National Historic Monument by the Department of the Interior.

As Fort Hancock phased out, more lands have become public and the Sandy Hook area is now part of the National Park Service—opening new historic lands to the public. The only exception is the northern section of the "Hook." There, a modernized US Coast Guard station stands guard near that old lighthouse, ready to help mariners on their way into New York's busy harbor. □



A "Tall Ship" at dusk

DICK the gunshy Beagle

BY J. RUTHERFORD STOUT

Ed Everett (in a 1920's photo), with old Bess on his left and Dick as a pup (facing camera). Dick's sister (with lowered head) is to the right of Ed.



Photo supplied by the author

I have written this article in the hope that it may save some valuable dog that might otherwise be written off as worthless.

The accompanying photo shows Dick and Ed Everett, his original owner. Ed, about 30 years my senior, was a good friend, a carpenter and cabinetmaker by trade; well versed with most of the woodland in Monmouth County, he was an excellent shot.

One day while Dick was real young, in company with other gunners, the party started out rabbit hunting just as it was getting light. They had no sooner started from their car when Ed jumped a rabbit. Dick saw the fire coming out of the gun barrels and he was through, racing back to the car and crawling in on the seat. The next time I called on Ed he told me of the mistake he had made, admitted he didn't have the patience to work with Dick, and offered to sell him to me for \$10. Knowing what kind of stock he came from, I quickly took him up. Dick's mother, Old Bess, also owned by Ed, was the best I have ever had the pleasure of walking behind. During our preparation work around October, I have known her to stay on a rabbit for three hours and then if you didn't get down in the swamp and catch her, she would keep it up until the rabbit became tired and stiff and catch it and eat it. I have seen her walk the trail up the middle of a hot, dry, white sand road so as not to lose it.

Well, to go on with Dick, he was not only gunshy but manshy as well when I took him. His barrel was on one side of our backyard and a grape arbor on the opposite side. I used a .22 handgun loaded with blanks and with Dick watching me from his barrel, I would creep up to a small piece of meat, previously planted under the grape arbor, fire my blank, pick up the meat and walk toward Dick. At first he retreated to the back of his kennel, but after a few

such episodes he was standing on his hind legs in front of the barrel and begging with his front paws for the meat, gunshy no more. To cure his manshyness I would take him on the lead for a walk each day, going by the Steiner Shirt Factory when the crowd was coming out and along Broadway where I could meet the most people. He would shy off the sidewalk and try to climb out of his collar, so manshy. But with patience and kindness, I soon had him ready for the woods and hunting again. Now he was worth \$100.

In company with Ed's new dog, we started eleven Ocean County swamp rabbits and killed nine. Those runs were anywhere from a half to two hours long. As long as it stayed on the ground, you were sure of your rabbit with Dick. Sometimes the quarry would crawl in a hollow tree or stump to fool the dogs, many times a good ways from you in the middle of the swamp. One time, while hunting near Tinton Falls, we had started a rabbit on the high ground along the rim of a cattail slough where the Tintern Manor Water Co.'s three-foot main lay on top of the ground. The rabbit went down in the cattails with Dick and after two or three doubles I found Mr. Rabbit was not coming back on the upland, so I told my partner I was going down there and kill that rabbit. I quickly saw that the rabbit was taking first one side of the water main and then the other, so I walked the main 'til I could hear Dick coming toward it, held my gun leveled down the pipeline and when our bunny jumped up on the main, I pulled the trigger and laid him across the pipeline. I had many similar pleasant hunts with Dick until he died at about eleven years old.

Finally, brother, if you value your rabbit hound more than being "high hook", don't fire too close to a young dog, and when making a kill, take time to clean your rabbit and give your ever-valued helpmate the fresh kidneys and heart. This makes him keen to hear the gun crack. □

(Continued from page 5)

county park systems

relations campaign is carried out through the schools, local papers, and special mailings (an estimated seven out of ten Monmouth County residents received the 1976 schedule of events). The county also uses a well-equipped van to take programs to the classroom. An old mansion of a late Remington Farms millionairess houses a complete darkroom and printing press where every piece of county park literature is produced. In Monmouth County little is spent on building facilities, but much is spent on encouraging resident participation in environmental programs.

Though perhaps not as highly developed, the other county park systems in the state are also involved in ensuring an outdoor heritage for all New Jersey residents.

Bergen County Wildlife Center
Crescent Avenue
Wyckoff, New Jersey 07481
201-891-5571

Campgaw Nature Center
17 Pike Road
Mahwah, New Jersey 07430
201-327-7804

Camden County Environmental Center
P.O. Box 5
Cherry Hill, New Jersey 08002
609-858-1237

Center For Environmental Studies (Essex County)
621 Eagle Rock Avenue
Roseland, New Jersey 07068
201-228-2210

Mercer County Park Commission
640 South Broad Street
Trenton, New Jersey 08611
609-989-6530

Monmouth County Park System
P.O. Box 326
Lincroft, New Jersey 07738
201-842-4000

Hunterdon County Park System
Highway 31, Rd. 31
Lebanon, New Jersey 08833
201-782-1158

Morris County Park Commission
Outdoor Education Center
247 Southern Boulevard
Chatham, New Jersey 07928
201-635-6629

Ocean County Department of Parks and Recreation
Toms River, New Jersey 08753
201-363-8712
In the planning stages — will be open next spring.

Passaic County Park Commission
Nature Center
Rifle Camp Park
West Paterson, New Jersey
201-742-6373

Environmental Education Center at Lord Stirling Park
Somerset County Park Commission
P.O. Box 837
Somerville, New Jersey 08876
201-766-2489

Union County Park Commission
Trailside Nature and Science Center
Coles Avenue
New Providence Road
Mountainside, New Jersey 07092
201-232-5930



"Let's net a butterfly" — Bergen County Wildlife Center.



Waterfowl Pond at Bergen County Wildlife Center

View of Somerset County's new solar-powered building.



(Continued from page 3)

CAFRA

several state, county and municipal agencies, and a public hearing DEP cited seven factors including possible adverse effects on air quality, inadequate facilities for solid-waste disposal, and aesthetic objections to locating a high-rise complex in an area of low-density housing.

Lehigh Construction Company, which had proposed the project, appealed the decision to the Coastal Area Review Board. In January 1976, the Board, composed of the Commissioners of the Departments of Community Affairs, Environmental Protection, and Labor and Industry, unanimously upheld DEP's opinion.

The Lehigh Company then brought the first judicial review of a CAFRA decision. The case was heard by the Appellate Division of the New Jersey Superior Court, which affirmed the denial of the permit and went further to validate CAFRA's constitutionality and the right of DEP to consider a broad range of issues, including aesthetics, in its CAFRA permit decisions. The Court's opinion was rendered February 10, 1976, and no further appeal has been filed.

Brigantine Tower/Beacon Beach

In April of this year, DEP conditionally approved a permit for construction of 84 two- and three-story townhouses in the City of Brigantine, Atlantic County. The history of this application demonstrates the constructive role that coastal-zone management can play in promoting environmentally sensitive development appropriate to a specific location.

Originally, the Pinnacle International Corporation sought a permit to construct 404 apartments in two 16-story structures. Following a review which included a public hearing, DEP denied the application because the towers would have presented an abrupt, high-rise, high-density intrusion into a relatively low-rise, low- and medium-density area. The Department said that the project would block the public view of the ocean and unduly alter the visual and aesthetic character of the area.



Wetlands along the Delaware River

PHOTO SUPPLIED BY DEP

In its decision DEP identified other inadequacies in the proposal. The Department noted that although the applicant could perhaps have corrected some of them, a high-rise construction could not, in any case, be permitted in that location. (DEP has issued permits for high-rise buildings in other, more appropriate locations in the coastal area; for instance, Seacoast Towers in Atlantic City.)

A CAFRA permit application denied by DEP can be modified and resubmitted, which is what the Pinnacle Corporation did. The new application for a project called Beacon Beach in-

corporated the major policies outlined in the Brigantine Towers opinion. The proposal was again reviewed by state, county, and local agencies and another public hearing was held.

The proposed project is consistent in character with the surrounding two- and three-story apartments and motels, and the buildings are to be situated to provide maximum public view of the ocean. However, DEP's opinion, while approving the project, included two conditions: Because the area sewage-treatment plant frequently operates in excess of its capacity, the applicant is required to obtain a sewerage permit



STEVE PERRONE

***Bankrupt condominium
at Monmouth Beach—
a monument to overbuilding
in the coastal zone***

(This construction predated CAFRA)

from the City of Brigantine; and Pinnacle must also adopt a conservation plan for the sand dunes adjacent to its site.

Hope Creek Generating Station

The most extensive CAFRA permit decision to date concerned a conditional approval of the Hope Creek nuclear power generating station. The two-unit facility at Artificial Island in Lower Alloway's Creek Township, Salem County, would adjoin two additional nuclear units of the Salem Electric Generating Station, which are already under construction.

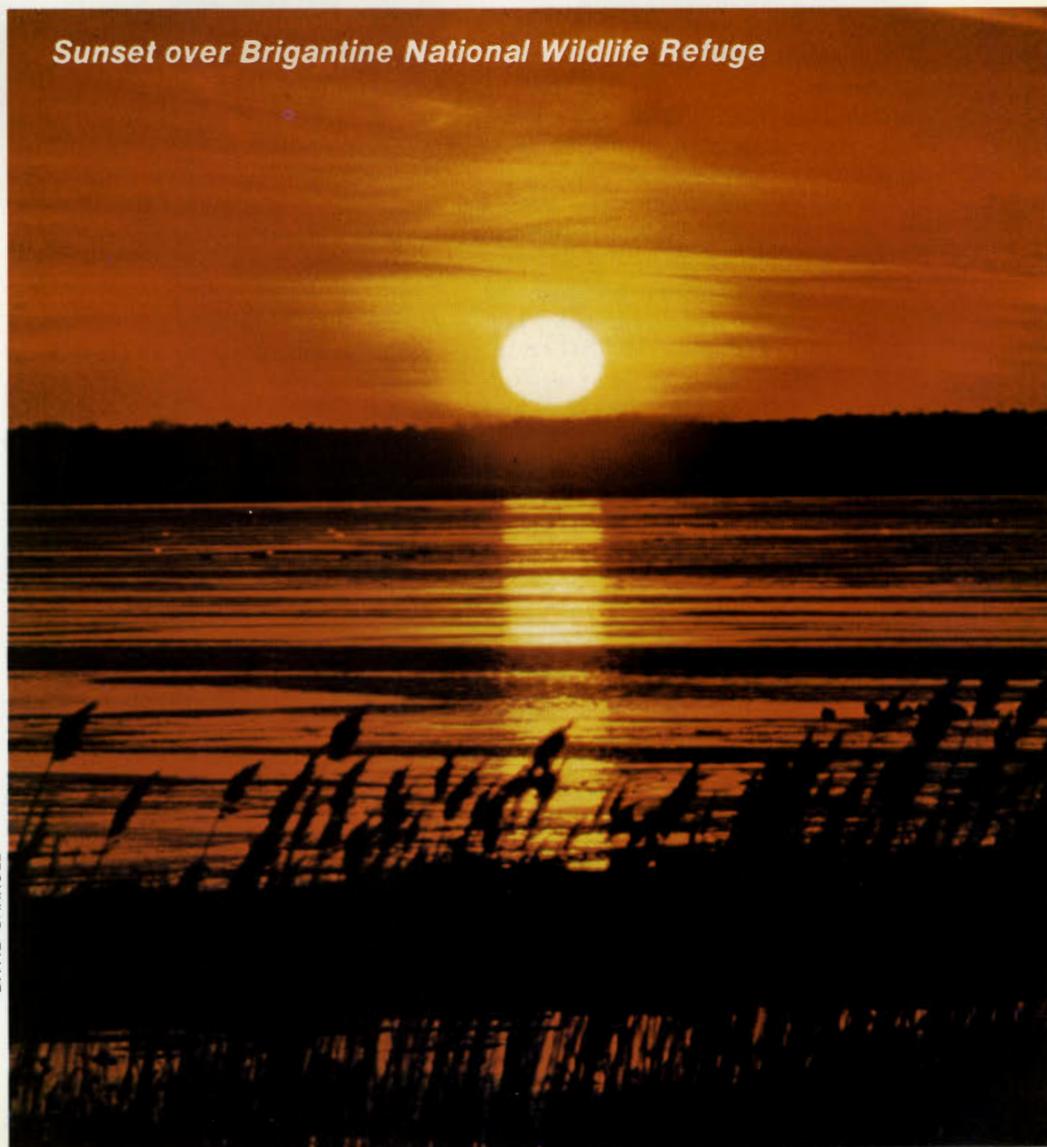
(Continued on page 32)



RICHARD KANTOR

***Scene on shore of Shrewsbury River, Little Silver, New Jersey
— Canvasback ducks feed along beach in ice.***

Sunset over Brigantine National Wildlife Refuge



DAVID CARROLL

(Continued from page 31)

The Hope Creek Station, proposed by Public Service Electric and Gas Company (PSE&G), was the first energy facility reviewed under CAFRA. The statute neither bans nor encourages such facilities. New Jersey is committed to making available carefully limited portions of the coastal area for needed energy operations.

The Hope Creek station was first proposed in 1970 for a site on Newbold Island in Burlington County. Because of the proximity of that site to heavily populated urban areas and because of its lack of water-storage facilities, the Atomic Energy Commission and DEP recommended the Artificial Island location.

Public Service Electric and Gas Company filed a CAFRA application and environmental impact statement (required of all CAFRA applicants) in February 1974. In September 1975, after a lengthy period of review including the submission of requested additional information and two days of public hearings in Salem Township, DEP released a 58-page opinion approving a conditional permit.

As part of the opinion, DEP specified 22 conditions that PSE&G had to meet in order to protect public safety and the surrounding area. These state conditions supplemented others imposed by the federal government.

Among the conditions was a ban on the use of mixed uranium-plutonium oxide fuel rods at Hope Creek. DEP also required monitoring programs for the impacts of radiation, salt, and copper. In addition, PSE&G must determine the station's effects on both terrestrial and aquatic plant life, and on birds. Finally, the utility was required to file a plan acceptable to DEP describing how the facility will be decommissioned at the end of its

useful life and how the site will be restored to its original appearance.

DEP's opinion was appealed by the New Jersey Public Interest Research Group and two individuals to the Coastal Area Review Board, which upheld the Department's decision. DEP then issued the construction permit. The Review Board's decision has been appealed by the N.J. P.I.R.G. to the Appellate Division of Superior Court.

These three examples show the very real effect that coastal zone management is already having in New Jersey. Because of CAFRA, parts of the ocean views and general character of Toms River and Brigantine have been protected, environmentally appropriate housing is being built in Brigantine, and a nuclear power plant, if DEP's opinion stands, will be constructed as a safer and more environmentally sensitive operation than it would otherwise have been.

The examples were chosen because they are more complex, and raise more issues, than many of the other 160 CAFRA permit applications submitted so far. Yet even they provide only a healthy sampling of the issues involved in coastal-zone management. In addition, housing for the poor or elderly, revitalization of coastal cities, access to public beaches, recreation, economic development, and protection of air and water quality have all become part of coastal zone management in New Jersey.

A Strategy For the Coastal Area

DEP is incorporating all these issues in a long-term management strategy for the coastal area. Under CAFRA, this strategy must be prepared by September 1977.

Toward this end, DEP has prepared *An Inventory of the New Jersey Coastal*

Area and Interim Land Use and Density Guidelines. The *Inventory*, completed in September 1975, is a compendium of coastal environmental data to be used by DEP for CAFRA planning and permit decisions. It is also a resource valuable to many other government and educational groups and individuals.

The *Guidelines*, released this spring, state the current policies for DEP's review of CAFRA permit applications. As such, they are useful to potential applicants; state, county, and municipal reviewing agencies; and other interested persons. In addition, the *Guidelines* serve as a foundation for discussion and for further work on the long-term strategy.

The management strategy will be developed from the *Inventory*, the *Guidelines*, further research and analysis by DEP staff, and the results of many meetings and discussions with interested individuals and groups.

This last element—public participation—is a vital part of the coastal planning process. By sharing knowledge of locations meriting special attention, and opinions on particular issues, the public increases the effectiveness of coastal zone management. In fact, the sharing of our individual and collective resources is what coastal zone management is all about.

For further information about coastal zone management in New Jersey, write:

New Jersey Department of
Environmental Protection
Office of Coastal Zone
Management
P.O. Box 1889
Trenton, New Jersey 08625

FRONT COVER

Aerial View of Liberty Park with vista of Lower Manhattan skyline.
(See article on page 6) Photographed by Harry Grosch

INSIDE BACK COVER

Moonlit Patterns
Photographed by David A. Bast

BACK COVER

The Pine Barrens (See article on page 8)
Photographed by David M. Campione

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