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New Jersey OUTDOORS

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from the editor

Happy Holidays

Happy Holidays, Merry Christmas, and a prosperous New Year to you all — and much more. We also wish you cleaner beaches, no fish kills, no trash on roadsides or on public recreational areas, less air pollution, and cleanup of our waters in 1977. We wish you all these things but, realistically, we'll achieve but a few.

Why? Because too many people are too lazy to get off their duffs to take action and get involved. We want you, the public, to get angry when the surf smells like rotten eggs, when dead and rotting fish deny you that piece of beach, when you see slobbs littering a roadside with trash or tossing it overboard while fishing. But we also want you to *take action* by joining in grass-roots efforts to get things done.

This summer the New Jersey Beach Buggy Association, alarmed by the increasing amounts of litter on our beaches, contacted via letters, news releases, and telephone calls, most of the environmental organizations in the state, and many other groups and individuals, in the hope of forming a coalition to work toward the banning of nonreturnable beverage containers in New Jersey.

Many groups and individuals expressed interest and promised to attend a meeting

at 10 a.m. Saturday, July 17, in the Seaside Park Borough Hall.

I drove the 70-odd miles to Seaside Park on that warm and sunny morning and was greeted by Beach Buggy Association President Bob Lick and several other representatives. Over a cup of coffee we discussed some plans for action and waited for the expected crowd of maybe 50 to 100 environmentalists. Seaside Park had provided us with an excellent meeting room, offering seating accommodations for about 150. We had another cup of coffee and waited until 11 o'clock, then 12 o'clock. But very few showed up — maybe 10, or 12 at the most. We were, of course, very disappointed.

And as I mentioned earlier in this piece, too many New Jerseyans were too lazy to make a small sacrifice on that sunny Saturday morning, thus missing the opportunity to initiate some grass-roots action on a problem that concerns many of us.

In our democratic form of government, our politicians and lawmakers react to public actions. If the public fails to act, the lawmakers will surely react to special-interest actions. It's as simple as that.

IN THIS ISSUE . . .

'Tis the season to purchase Christmas trees but may also be a good idea to grow Christmas trees for fun and profit on any unused or submarginal land. Author Richard F. West, Head of the Forestry and Wildlife Section at Cook College, Rutgers University, introduces our readers to the varieties of Christmas trees being grown and tested at Experiment Station farms in New Jersey.

Robert McDowell, Education Specialist for the Division of Fish, Game and Shellfisheries, and James E. Applegate, Assistant Professor of Wildlife Biology at Cook College, explain "Operation Good Neighbor," a program designed to introduce the hunting ethic to the suburban dweller and to prevent confrontations and misunderstandings between hunters and their neighbors during the hunting season.

"In the Boots of a Delaware River Gunner" is an introspective article on the outdoor experience and waterfowl hunting by Robert Michalsky. When the author is not waiting for a sunrise from a

cramped crouch on the damp bottom of a duck blind, he functions as Deputy Director of The Conservation and Environmental Studies Center at Whitesbog.

This year it will be legal to hunt with a "muzzle loader" in New Jersey. In the article "Is Daniel Boone Hunting Up Here This Year?" author Don Reinhart tells us of his hunting experiences in other states with the frontier Kentucky rifle.

"Pulling The Plug on Wildlife" by Jerry Schierloh, Assistant Professor of Environmental Studies at the New Jersey School of Conservation, Stokes State Forest, is a must teaching tool for the educators involved in environmental studies. Upon request, *New Jersey Outdoors* will send readers the plans and directions for construction and use of the Wildlife Population Simulator which is illustrated and explained in this article.

Author Louis S. Cherepy, Superintendent of Stokes State Forest, writes about New Jersey's public open space and the many uses the public makes of these

lands.

In the article "Trees are Historical Too" Santiago Porcella III of the Bureau of Forestry, recalls the history of some of the largest and oldest trees in New Jersey. The conservation efforts of a fine group are explained in "Wearing This Shield Means Doing the Work" by Associate Professor Jim Fitzsimmons of William Paterson College. And read "The Good Old Days" by Wildlife Biologist Joseph Penkala and be surprised. In the article "Return of the Ruffed Wonder," author Art Weiler introduces us to the exciting, heart-thumping experience of ruffed grouse hunting in the mountainous areas of New Jersey.

For a special holiday gift, consider the illustration on the inside back cover with the accompanying explanation. Of course, *New Jersey Outdoors* itself is a fine gift for all seasons.





Experiment Station Farm at New Brunswick

HARRY GROSCH

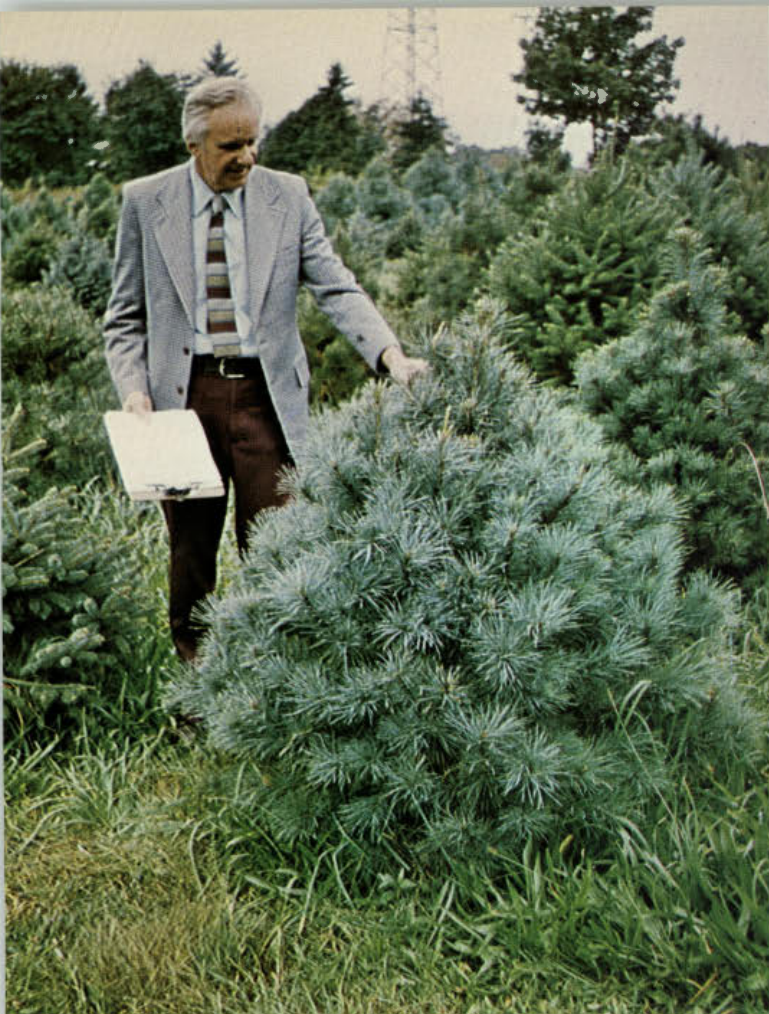
comparative
growth and
value of
selected
christmas
tree species
in new jersey



Himalayan Pine



HARRY GROSCH



Author with Mexican Border Pine HARRY GROSCH



Douglasfir RICHARD F. WEST

Scotch Pine



RICHARD F. WEST

BY RICHARD F. WEST

Head, Forestry and Wildlife Section, Cook College, Rutgers University

The growing of Christmas trees in New Jersey has become a widespread, interesting, and profitable enterprise. Widespread because landowners from the rocky hills and fields of the Kittatinies in North Jersey to the flat sandy land of Cape May in the south are growing Christmas trees—many for the first time. Interesting because it is fun and a source of satisfaction to watch and nurture the small seedlings as they grow and take form into beautiful Christmas trees. Profitable because it can become a worthwhile commercial business if done properly. New Jersey growers have a ready market for "home grown" plantation trees. The buying public—which includes most of us—wants a well shaped, fresh, and good looking tree which can be decorated nicely. For the most part, locally grown trees meet these quality requirements better than trees imported from distant areas.

Besides the commercial angle, the growing of Christmas trees provides some important side benefits. It is good conservation and use of otherwise unused or submarginal farmland. While they are growing, the trees provided cover and habitat for wildlife and birds, protect the soil, and of course enhance the landscape.

Choice of Species

All growers—new and experienced alike—are interested in the comparative survival, growth, and quality of different species. Which species to grow is the most common ques-

tion. How does Scotch pine compare with Douglasfir? And what about some of the untried evergreens such as Fraser fir, Himalayan pine, and Mexican Border pine—will they survive and grow in New Jersey? Is there much difference between the geographical strains of Scotch pine from various areas, such as Scotland, Turkey, Greece, the United States or Spain? These and similar questions prompted the Forestry Section of the New Jersey Agricultural Experiment Station to initiate a research project in 1968. Seedlings of 16 different species and varieties which were certified as to their geographical source were planted in three locations in the state, on the Experiment Station farms at New Brunswick, Cream Ridge, and Centerton. These areas differ considerably in their soils and growing conditions.

Test Species and Varieties

The test species and varieties were: Scotch pine (5 sources), Douglasfir (3 sources), blue spruce (3 sources), Fraser fir (2 sources), and one seed source each of white fir, Himalayan pine, and Mexican Border pine. Scotch pine, Douglasfir, and blue spruce are familiar species to most New Jersey growers but as the others are relatively unknown and untested, a short description of these "exotics" is in order.

White fir (*Abies concolor*) is somewhat similar to the balsam fir of New England but with longer flat needles of a silvery greenish-blue. It is a western tree growing in scattered locations throughout the south central Rockies and the Sierra Nevada mountains of California. Although its altitudinal range in the mountains is between 3,000 and 11,000 feet, it also grows at lower elevations. Its configuration, silvery appearance, and soft flat needles make white fir a very beautiful Christmas and ornamental tree.

Fraser fir (*Abies fraseri*) is also a true fir which grows in the higher elevations of the Southern Appalachians in North Carolina and Tennessee. It is very similar to balsam fir but has somewhat shorter, dark green needles.

Himalayan pine (*Pinus Griffithii*) is a native of southeast Asia, where it grows in pure or mixed stands from 4,000 to 12,000 ft. It is a 5-needle pine like our white pine but the needles are longer, have a distinct silver-green cast, and tend to droop downward, giving the tree a unique exotic appearance.

Mexican Border pine (*Pinus strobiformis*) is found natively in the mountains of northern Mexico and southwest United States where it grows at altitudes of from 5,000 to 10,000 ft. It is also a 5-needle pine but with somewhat shorter needles than the Himalayan or native white pines. The tree has a more compact "bushy" appearance than the other 5-needle pines.

Tree Care and Measurements

In order to duplicate actual practice as closely as possible, we maintained the experimental plantations by mowing and limited weed control, spraying occasionally to control tip moth in Scotch pine, and pruning the trees where necessary to improve their form and density. Yearly measurements were taken of survival and height after pruning. Beginning last year, we used the "U.S. Standards for Grades of Christmas Trees" to grade each tree into one of four classes: Premium, Choice (No. 1), Standard (No. 2), and Cull. Although these grades have not been used to any extent by growers to date, they do provide a measure of quality which can be reflected in price. We also wanted to determine their practicability—can they applied easily and objectively or are they too cumbersome or subjective for reliable use?

Survival and Growth

High survival of the seedlings is of course essential to the success of a Christmas tree plantation. Among the many factors which influence initial survival are the general con-

dition and health of the seedlings, planting technique, weed competition, rainfall, soil, and drainage. In the case of exotic species which are not native to or grown in this area, there is the additional question of their adaptability to our growing conditions. A major objective of our project was to test the ability of several such "new" species to survive and grow in New Jersey.

Survival of the seedlings during the first two seasons is critical—after that time we found very little additional mortality. The average survival after two seasons for all seedlings in the three test plots is given below (Table 2) in four percentage groups in ascending order.

We feel that the survival record in our test plots is on the conservative side, since we had appreciable weed competition during the initial season and lost some seedlings from accidental mowing. Survival of the two exotic pines—Himalayan and Mexican Border—was very good. On the other hand, our experience shows that the ability of Fraser fir and white fir to survive and grow in New Jersey as a commercial Christmas tree is very questionable. Survival was also low for the blue spruce from various sources.

Growth is another important aspect of raising Christmas trees which is influenced by both environmental and genetic factors. Ideally the most profitable tree is the species that can be grown the fastest, and that can maintain proper form and density with judicious pruning. Since all our test species were planted at the same time in randomized rows side-by-side in the same plantations, differences in growth rate would be due largely to basic differences between species or to the interaction between species and the environment. The test species did show appreciable differences in average height (after necessary pruning), as shown by the following data in Table 3.

Grading Rules

The grading rules involved measurements of variations in the taper, density, and "completeness" of the trees. It was our experience that the most important single factor in determining grade was the relative freedom from obvious holes or large gaps in the sides or "faces" of the tree. (A tree is considered to have four faces, each consisting of one-quarter of the surface area.) If all four faces of the tree were free from damage and the taper and density were within normal variation, the tree would be graded as Premium, the top quality. With three good faces, the tree would be a No. 1 (Choice). If the tree had only two good faces it would be graded as a No. 2 (Standard), lowest acceptable grade. Any further deficiency would make the tree a Cull.

We started grading the trees after their seventh growing season, in 1974, and continued in 1975 and 1976. The grading of each tree in three successive years would reveal any improvement in quality due to pruning. The grading this year and last was done by two Cook College forestry seniors, Larry Shumway and Eric Schallock. After becoming familiar with the grading rules and practicing a bit, Larry and Eric graded each tree independently; this made possible comparison of their gradings, which we felt would test the relative uniformity and objectivity of the grading rules. In grading some 1244 trees, the two graders agreed on better than 90 percent of the grades they gave. The greatest variation occurred with Scotch and Himalayan pines, both of which exhibit different types and forms of branching and growth. The two graders reached nearly 100 percent agreement on all the other species and varieties.

The amount of pruning needed to produce a well-formed, reasonably dense tree varies considerably by species. We began pruning after the trees had completed four growing seasons, but light pruning could be started after the third

TABLE 1. PERCENTAGES OF PREMIUM AND NO. 1 TREES BY SPECIES IN 1975 AND 1976

Species	Source	Premium		No. 1		Percent Improvement (Both Grades Combined)
		1975	1976	1975	1976	
Scotch Pine —	Boonville, N.Y.	7%	30%	38%	40%	+25%
	Greece	11	26	36	45	24
	Turkey	7	20	35	30	8
	Scotland	8	14	25	42	23
	Spain	7	20	30	37	20
Himalayan Pine		22	37	36	40	19
Mexican Border pine		25	74	33	10	26
Douglasfir —	Arizona	31	51	37	30	13
	Colorado	28	34	28	32	10
	British Columbia	14	39	42	31	14
Blue spruce —	Arizona	39	72	31	22	24
	New Mexico	42	66	29	19	14
	Colorado	21	74	45	10	18
Fraser fir —	Jackson, Tenn.	40	67	27	17	17
	Cherokee, N. Car.	36	50	43	31	2
White fir		24	46	29	35	28

TABLE 2. AVERAGE SURVIVAL AFTER TWO YEARS

80-60%

Mexican Border pine
Scotch pine (Spain)
Scotch pine (Greece)
Scotch pine (U.S.)

39-20%

59-40%

Scotch pine (Turkey)
Himalayan pine
Scotch pine (Scotland)
Douglasfir (Br. Col.)
Douglasfir (Ariz.)
Blue spruce (Colo.)
Douglasfir (Colo.)

Blue spruce (Ariz.)
Blue spruce (N. Mex.)
White fir

less than 20%

Fraser fir (Jackson, Tenn.)
Fraser fir (Cherokee, N. Car.)

TABLE 3. AVERAGE HEIGHT (After Pruning) IN NINE GROWING SEASONS

Species	Source	Height (ft.)
Scotch pine	U.S. (Boonville, N.Y.)	7.0
Douglasfir	Arizona	6.0
Mexican Border pine		6.0
Himalayan pine		5.8
Scotch pine	Greece	5.7
Scotch pine	Scotland	5.4
Scotch pine	Turkey	5.4
Scotch pine	Spain	5.1
Douglasfir	Colorado	4.8
Douglasfir	British Columbia	4.7
Blue spruce	Arizona	4.6
White fir		4.4
Blue spruce	New Mexico	4.3
Blue spruce	Colorado	4.2
Fraser fir	Jackson Co. (Tenn.)	4.1
Fraser fir	Cherokee Co. (N. Car.)	4.1

season. Pruning was done with shears and clippers — all the pines in late June and early July, all other species in the summer and early fall. Scotch pines require heavy pruning, which took an average of six minutes per tree. Moderate pruning was done on Douglasfir and Himalayan and Mexican Border pine, chiefly on the terminal and top lateral branches. Blue spruce and white fir needed only occasional pruning, and Fraser fir none at all.

The value of careful pruning in producing high-quality trees was shown rather dramatically by the significant upgrading of trees which occurred over the past two years, after com-

TABLE 4. AVERAGE VALUE PER TREE AFTER NINE GROWING SEASONS

Species	Source	Average Value Per Tree
Scotch pine	U.S. (Boonville, N.Y.)	\$11.50
Mexican Border pine		11.05
Douglasfir	Arizona	10.88
Himalayan pine		10.08
Scotch pine	Greece	9.14
Blue spruce	Arizona	8.59
Blue spruce	New Mexico	8.01
Scotch pine	Turkey	7.99
Scotch pine	Scotland	7.99
Douglasfir	British Columbia	7.92
Douglasfir	Colorado	7.81
Blue spruce	Colorado	7.79
White fir		7.73
Scotch pine	Spain	7.59
Fraser fir	Jackson Co. (Tenn.)	7.39
Fraser fir	Cherokee Co. (N. Car.)	7.28

pletion of the eighth and ninth growing season. Many trees — particularly the pines — advanced from the No. 1 grade to Premium quality. Also there was a large increase in the percentage of trees in the two top grade classes over the two-year period, as shown in Table 1.

Comparative Value

In order to assess the comparative value of the different species and sources in a way which would reflect both growth and quality, we assigned arbitrary values for the four grades as follows:

Premium — \$2.00 per foot
No. 1 (Choice) — \$1.75 per foot
No. 2 (Standard) — \$1.25 per foot
Cull — \$0.00

A greater differential (50¢) was used between the No. 1 and No. 2 Grades than between Premium and No. 1 (25¢), because there seemed to be a greater difference in quality between the No. 2 and No. 1 trees than between the two top grades of No. 1 and Premium. (The No. 1 has *three* good sides while the No. 2 has only *two*.) These prices per foot were then applied to the trees of each species, according to their height and grade, and averages determined. The results of our evaluation are given in Table 4.

According to our results, we cannot recommend Fraser fir or white fir to Christmas tree growers, chiefly because of their poor survival and growth. The Spanish source of Scotch pine was another disappointment, since it had been highly touted as an excellent Christmas tree because of its dark green color. In our test plots it graded out poorly, having the highest percentage of Cull (15%) and No. 2 trees (28%) of any species and source, primarily because of crookedness and poor form which did not respond to pruning.

Our best species, in terms of growth and quality, turned out to be the U.S. Boonville strain of Scotch pine. The "champ" is closely followed by the Arizona source of Douglasfir, and two newcomers — Mexican Border pine and Himalayan pine. These two latter species seem to be well able to survive and grow in New Jersey, and both are beautiful trees with long graceful needles and good color. The Himalayan pine is inclined to grow a little "wild" and will definitely need careful pruning to form a well-shaped Christmas tree. It is our opinion that the Mexican Border pine and Himalayan pine have real promise as future high-quality Christmas and ornamental trees. □



Dr. Stanley Golub of the Morris County Federation of Sportsmen's Clubs posts the developed areas of a township in "Operation Good Neighbor."

PHOTOS BY BOB McDOWELL

“operation good neighbor”

BY

ROBERT McDOWELL

Information and Education Specialist,
New Jersey Division of Fish, Game and
Shellfisheries

AND

JAMES E. APPLGATE

Assistant Professor of Wildlife Biology,
Cook College, Rutgers University

Imagine, if you will, a former city dweller who purchases a home on the fringe of New Jersey's expanding suburbs. Here is the country, beautiful and tranquil, as he has pictured it when he purchased the property. Suddenly, on a Saturday in November, that peace is broken by the discharge of a 12-gauge shotgun. He goes to the window to see several armed individuals, wearing strange regalia, each topped with a flaming orange hat, intruding on the tranquillity that is his. Knowing little or nothing of hunters or hunting, or of local hunting traditions that he has intruded upon, he is angry, appalled, frightened, and opposed to the existence of hunting in his community. He is likely to demand its abolition.

As a result of many such incidents in New Jersey there has been an increased number of attempts to close entire townships to hunting. In fact, township closure to hunting is the most common ex-

pression of antihunting sentiment in this most urban of states and, as such, is one of the more pressing problems facing New Jersey's Division of Fish, Game, and Shellfisheries. To gain an understanding of why township closures occur, the Division formed a study committee in September, 1974, to review the problem of township closure and to recommend a course of action. Case histories of townships that had passed ordinances to stop hunting and Conservation Officer reports on the problem were reviewed. Similarities in townships passing ordinances soon became apparent.

Most of the townships and towns expressing concern about hunter activities had experienced rapid residential growth in traditional hunting areas. Each township had people publicly expressing fear of "children, pets, and citizens" being shot by hunters. In all the townships the closure was triggered by one or two incidents where hunters

reportedly violated existing regulations. Only in a few cases had violations been prosecuted by local police or conservation officers. However, in no case had there been any "children, pets, or citizens" shot or injured by hunters. When police reports were examined, the committee found that the word "hunting" also covered incidents of indiscriminate target shooting with air rifles and .22's by local citizens. Even though this is not hunting, anyone with a gun in the woods or fields seems to be a hunter to the urban or suburban dweller newly transplanted to a rural area.

The course of action for this new resident of the township, who fears people with guns, is always the same. He requests the township committee to solve the "hunting problem" by passing an ordinance that regulates hunting. Such ordinances are drawn up by the

township attorney at the request of the committee. When the first open meeting to discuss the ordinance is held, the township authorities are greeted by opposition from local sportsmen and people who target shoot. The committee finds itself in the uncomfortable position of being in the middle—between those who wish to regulate "hunting" and the sportsmen who wish to continue hunting.

In addition, the township finds the situation confounded by legal problems. The authority of the state to regulate hunting and fishing is defined quite clearly by law, and subsequent court decisions have re-emphasized this authority. An example is a 1971 case in Edison, in which the State Appellate Court ruled that the state's authority to regulate hunting cannot be pre-empted by municipal

ordinance. However, in other cases such as the 1972 State Supreme Court decision in *Township of Chester v. Mario Panicci* the courts have said that even though the municipality cannot regulate hunting it *can* regulate the discharge of firearms to protect the health and safety of the citizens. The township committee frequently changes the proposed ordinance to reflect the court rulings. The ordinance is revised to ban the discharge of firearms or to extend the Safety Zone, established by state law at 450 feet, to 750 or 1,000 feet. If there is huntable land in the township, the intent of the law is obviously to restrict hunting. This raises still more legal questions and the township officials find themselves sinking deeper and deeper in a pit of legal and public relations problems.

The basic problem cannot be

The co-operative efforts of hunters, landowners and local police in Denville, New Jersey have solved hunting related problems in the town.



resolved by passing more laws. The problem is the confrontation between hunters and nonhunting homeowners who lack knowledge about hunting and hunters. The existing state law which establishes a Safety Zone by prohibiting the carrying of a loaded firearm within 450 feet of an occupied dwelling is not being enforced by local police, and the landowners are not aware that such a law exists.

The committee devised a program called "Operation Good Neighbor" as an attempted solution. Operation Good Neighbor involves local sportsmen working with local property owners and township officials in a program of posting zones around built-up areas with Safety Zone signs. Division of Fish, Game, and Shellfisheries Area Biologists and Conservation Officers co-ordinate the program and provide the signs. Local sportsmen contact the landowners and post the signs. The program works in the following manner.

A newspaper article or a phone call from a concerned sportsman alerts Division personnel that a township is considering some type of hunting regulation. The Area Biologist and the Conservation Officer are assigned to meet with local sportsmen leaders. The Division personnel, along with the sportsmen, meet with the township council and discuss the problem. The local sportsmen offer to contact property owners in the problem area and post the perimeter of the trouble spot with Safety Zone signs. Thus, local hunters interact with local authorities and property owners. They knock on the door and say, "I am your neighbor. I am also a hunter, and my group will post your property line with signs that say 'Safety Zone—hunters must not be within 450 feet of a dwelling with a loaded firearm'." When the posting is done it usually involves the landowner, hunters, and local police, and is accompanied by newspaper coverage.

The first test of Operation Good Neighbor came in September, 1974, in Denville, a town that is typical

of many growing communities in our state. Denville is located in northern Morris County in northern New Jersey. Route 80 is close at hand and provides easy access for commuters working in New York or in the commercial and business areas in Essex and eastern Morris counties. The township consists of 8,250 hilly, wooded acres, 50 percent of which is developed and occupied by 16,000 people. Most of the development is clustered in the center part of the township and is bordered by a 50-foot-wide stream, the Rockaway River.

The original property owner-hunter conflicts occurred along the Rockaway River where duck hunting is popular. Hunters on open land on one side of the river and houses on the other with available ducks in the middle set the stage for conflict. In 1973, local police recorded 26 citizen complaints about hunters in the area and a closure ordinance seemed imminent.

At the request of local hunters, the police, and the township council, division personnel attended a public meeting to discuss the problem. At the meeting property owners related their fears for safety; hunters told their side of the story; local police and town officials explained their position; the division spokesmen explained the law, the role of hunting in wildlife management, and Operation Good Neighbor. All parties agreed to give the program a try. In October of 1974, a group of sportsmen introduced themselves to the troubled property owners in the conflict area, and with them posted the area with Safety Zone signs. The local police helped and the newspaper carried a positive account complete with photos. During the 1974 hunting season the police received only two hunting complaints and made one arrest; in 1975, three complaints of Safety Zone violations were reported. There has not been any drive to ban hunting in Denville.

Since the Denville case in September, 1974, division personnel have been involved in 21 township closure actions; closure was avoided in 19 of these. In 17 of

these successes, Operation Good Neighbor was instrumental, and so far no attempts to restrict hunting have reappeared in these townships. The success of Operation Good Neighbor has saved 200,000 acres of New Jersey open space from closure to hunting by local ordinance. This is extremely important when we consider that this is almost 10 percent of the state's huntable land and that the loss could have occurred in just over one year. More than a million and a half acres of New Jersey's 4.8 million acres are already closed to hunting because of development. If the remaining acreage were closed at the rate of 10 percent a year, hunting as we now know it would be eliminated in New Jersey in ten to fifteen years.

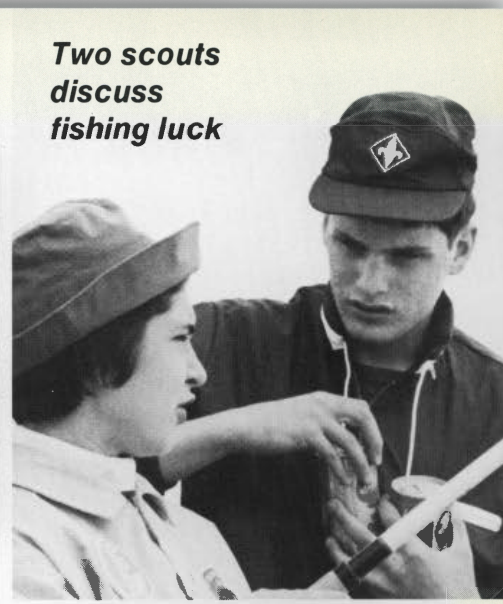
Operation Good Neighbor works, and we believe it works because it helps the new person in the community who is not familiar with hunting and hunters to meet and get acquainted with a hunter. He becomes more aware of hunting as a part of rural life, gains knowledge of the rules governing hunting and protecting his safety, and feels more secure when he realizes that these rules can and will be enforced. The program also works because it removes pressure from local authorities by separating them from the public relations and legal problems associated with the drive to do something about hunting in their township.

We feel that with proper application this program will maintain the maximum amount of huntable land in the future. To accomplish this, Operation Good Neighbor will have to be expanded into pre-crisis areas where a potential conflict can be recognized before a closure is threatened. The Atlantic County Federation of Sportsmen's Clubs has taken the initiative and has begun to do this in their county. Several other sportsmen's organizations in other counties are also considering an aggressive program of landowner relations. This is how it must be in New Jersey, the most urban of states. The hunter must become a neighbor, not a stranger with a gun, to the nonhunting public. □

Chow Time



Two scouts discuss fishing luck



National Hunting and Fishing Day September 25, 1976

The N.J. Beach Buggy Association sponsored its annual surf fishing program for the handicapped scouts from the American Institute of Mental Studies of Vineland, N.J. on the beach at Brigantine.

The festivities started at 9:30 with a parade of mobile sportsfishing buggies, beginning at Atlantic City State Marina and traveling north to the North Beach Parking Lot, opposite the Brigantine Castle. After assembling, the Beach Buggy caravan transported the handicapped scouts to the beach fishing area.

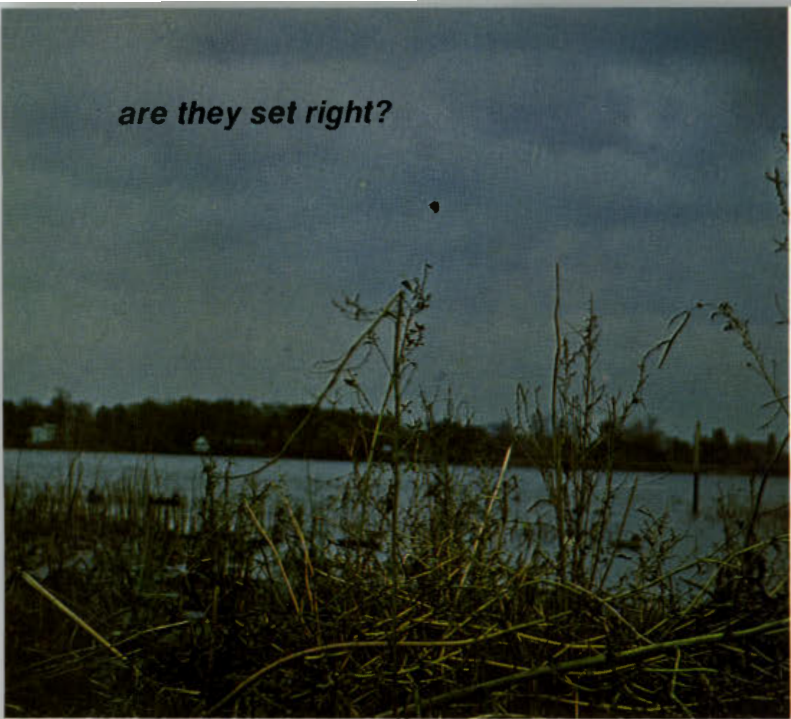
PHOTOS BY PATRICK BOFFO



Bob Lick, President, N.J. Beach Buggy Association, discusses sea robin caught by Scout Irving. Except for several snapper blues, most catches were inedible sea robins, which were tossed back into the surf.

Let's start fishing





are they set right?

In the Boots of a Delaware River Duck Gunner

By Bill Michalsky


Writing an article on New Jersey duck hunting presents on the one hand, a special opportunity and on the other a variety of frustrated emotional responses. This paradox probably has roots in the fact that this individual author is among the fortunate few who are unable to divorce avocation and vocation. Facetiously, that is to say that my boss allows me to believe that my vocation is duck hunting and my avocation is to be his assistant, especially in the fall.

The situation is further compounded because being afflicted with waterfowl fever, it naturally runs against my grain to read articles that start out with breakfast, describe an encounter with a "Nor-easter," terminate with a few recipes, and categorically emphasize that if you love these things you will grow up to be a good American. This is because such stories are condensations of perfect days—which in reality can be counted only once or twice in a waterfowler's lifetime.

Working at an educational-environmental corporation like the Conservation and Environmental Studies Center is a privilege because the citizens of New Jersey with whom we interact pour into our "environmental" education-impact statement hopper many diverse ideas, values, philosophies, and opinions that are representative of the entire spectrum of environmental concern. Some, for example, espouse complete preservation, others seem to want complete destruction of all wild and free things. Moreover, CESC staff in their travels throughout New Jersey have encountered every shade of grey between the extremes mentioned above. Hence, the paradox position is familiar—I seem to be in it daily.

Further, though it brings me great pleasure to talk about ducks and duck hunting, there is simply *no way* I will share the number of ducks I have taken in any single day, or where I harvested them, to anyone but a very select few. There is no reasonable way

PHOTOS BY AUTHOR



*just time for another
cup of coffee, a
shiver and
contemplation.*

to do that in the most densely populated state in the Union. You understand that it has taken 22 years to find the right "meada" (meadow) where I am now privileged to watch sunrises and sunsets, and see ducks.

Instead this article is about some emotions that duck hunting in New Jersey has contributed to some beautiful people. It's about Dad V, Jim, Stu, Big Ed, the Stickles, Gerkens, Randy, George, Lester, Terry, Steve, the Hamlins, Hutchy, Markie, Chiefy, Buddy and all the Schaeffer gang, Turtle, Big Don, Capt. Steele, Rev. Bradway, Subie, John, Little Donnie, and others past, present, and future who feel like they swallowed a basketball at the sound or sight of one sprig or a thousand. It is about the individual love affair that each of these people has with the River and its moods. Further, it is about what these people have taught each other and will teach to generations yet to come.

What consumes 33.1 million man-days per year, harvests 28.5 million pounds of meat, contributes an estimated \$710 million per year to the national economy, gladly taxes itself to preserve 9.7 million acres of migratory-bird habitat, never ceases of talking to itself, wishes for a windy, cold day every day in the fall, and is infectious to a greater or lesser degree. The answer is "gunning" and "gunners," everywhere.

Someone once described the term "gunner" as the ultimate compliment that could be paid to the gentry in his day and age, and locale. In the Delanco-Riverside area, as in many small towns along the Delaware River below Trenton, it is probably not the ultimate compliment. Yet for most of the waterfowlers living in this area of New Jersey it is a title that is unceremoniously earned, respected, and treasured, even guarded with a fervor completely foreign and useless to some folks' thought patterns.

Along the river, being a "gunner" has nothing to do with socioeconomic status, or where one is born. It has nothing to do with schools, religion, national origin, academic background, jobs, material possessions, or other common social denominators of society. Instead, being a "gunner" means commonality. It means a person who knows waterfowl identification, winds, tides, boat building and handling, decoy carving, reads everything he can on the subject, never misses a day when he doesn't "do down 'ta river," and can count among his friends people from all walks of life and many age levels. It also means that usually one belongs to Ducks Unlimited and/or New Jersey Waterfowlers and other organizations that preserve what they treasure and is evangelistic to the point of boring the uninitiated at times. More often than not a gunner is a traditionalist. In fact from Bordentown "on down the river" it is not at all uncommon to find a family where three or even four generations are "guilty" of infecting younger members of their families with waterfowl fever.

Another feature of being a "gunner" is that it means one is guilty of absolute and total recreation.

That is to say that a gunner never quits. He is totally absorbed in preparation, anticipation, the activity, and in reflection. Indeed gunners have experienced the joy of a fulfillment that never ceases to grow and never ceases to intrigue their minds. All gunners know deep in their emotional recesses that "throwing down and pulling the trigger" must happen eventually, but it is the smallest most infinitesimal part of being a gunner. At least, in a small part of New Jersey called Delanco, all of these things are true in all the hearts and minds of those about whom this is written.

A Delanco Scenario

The northwest wind pushes and pulls the wild rice and pulses through the thousands of plant stalks across the meadow. The audience viewing this scene are a man and his dog, supinely spread on the floorboards of a venerable Barnegat Bay Sneak Box.

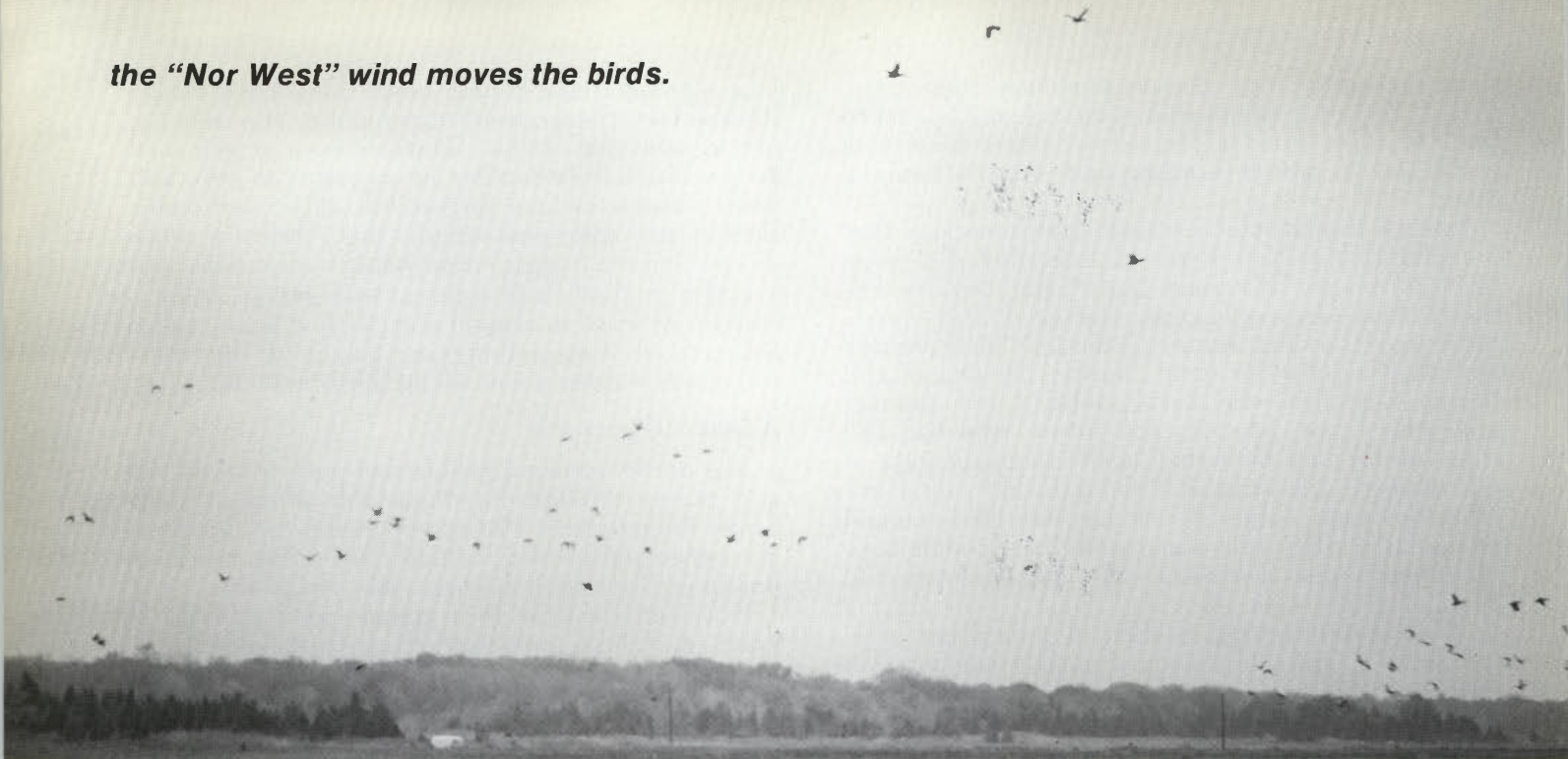
Now and then the ever-present wind gusts to 40 knots, and the temperature hovers just below freezing. The "big Lab" shivers and shakes, but not because the wind-chill factor has reduced the temperature to -6 degrees. The dog has no dislike for the weather, and four generations of cumulative experience on the marshes have instilled a mystical confidence in the hunter that he has no need for concern, as long as he is properly clad and doesn't over-extend his equipment. Together their respect for the environment borders on the religious in its character and execution.

The man is aware that pride is a dangerous entity and that overconfidence is really the only thing that

the big Lab is impatient to go — even at home.



the "Nor West" wind moves the birds.



he and the dog need fear. Yet, he is unable to control the urge to commune with the past, and to control his own confidence, and that's why he is here on such a day.

The man contemplates that even the equipment seems to have a confident functionalism, for nothing is present that is not going to be used. Even the "rig" is almost ashamed to be here, yet it would be here every day if it could. The functional history of the "rig" transcends a time prior to 1918, when it helped to feed a family. And the man thinks that if he had a dollar for every waterfowl that has been taken over the decoys he now absently gazes upon he would not need to go to work on Monday.

Indeed, perhaps this individual is an environmentalist only because it is now illegal to hunt for the market. His vocation is concerned with improving degraded environments and maintaining optimum environments as well as seeking experiential ways and means to enable others to feel and see the phenomena he is hopelessly enslaved to and with which he is incredibly in love.

The man through his vocational training and associations with colleagues has been taught that many paths lead to a transcendental relationship with things wild and free. He smiles as he reflects on the many instances where the hairs on his neck literally stand on end when a student or an associate asks him or teases him about an inhuman, atavistic fascination about killing. He has attempted hundreds of times to explain his emotions to others. He has tried to explain that, without the waterfowl hunting context, many individuals would make little or no contribution toward a quality environment. Our reflective hunter, lying on the floor is his "rig", realizes that he is at

once alone and also in concert with others, for the hunt provides for him a channel to the natural world second to none and far richer than most. Simply, he realizes that without a family, God, job, and hunt, he would have no self-image.

Yet he is content that he is able to philosophically integrate his family, God, job and hunting with life, and as such to be totally immersed and committed to each. He likes to view all things systematically, holistically, and disdains atomistic viewpoints.

He just missed taking a shot at four magnificent Canada geese because of his habit of frequent day-dreaming and contemplation during the hunt. He knows that his father-in-law or his own father and their fathers before them would not have missed the opportunity. At least they would never admit the same. The man makes a mental note not to allow it to happen again, and rationalizes with his dog that the missed opportunity wasn't as important as the mental gymnastics anyway. But the big Lab thumps his tail and doesn't believe his master, and shakes and shivers even harder, with a mixture of affection and impatience.

The rising tide, increasing wind, and closing day have combined to put thousands of ducks, geese, and swans aflight in search of shelter, food, and other waterfowl. He questions the pattern made by the decoys, because the birds are not "han'ling" to him (not coming into the decoys), but time is running out for this particular day.

The man's mind flashes to a class lecture and discussion he recently participated in at a local state college—time ran out that day too! Discussion centered on an indictment of the hunting behavior of modern mankind, by several of the students. Some

sincerely needed and wanted to understand the "hunting" ethic, others knew the man as an environmentalist and therefore assumed he must be against hunting. After all, they considered themselves *environmentalists* and *they* were against hunting. All the students were surprised and puzzled to see the man in front of the class not defend himself any further than to go on record saying he could not function without duck hunting.

The man admitted when indicted by these defenders of wildlife and environment, to being addicted to the gadgetry of hunting (all his briefcases and professional bookshelves are laced with catalogs from Herter's, Eddie Bauer's and L. L. Bean). To compound the situation it was well known that in slow moments a penknife and duck head would magically emerge from one or more of his pockets. Moreover, on his desk right next to a picture of his wife and kids, is a picture of a dog and a waterfowler's boat. Still others identified in the man a noticeable change from normal speech patterns to an almost ritualistic language that binds duck hunters socially but is downright false and boring to non-fowlers. He brushed that criticism away by explaining it was part of an image, and that it was a tradition that he didn't care to change anyway.

Some of the students felt that hunters enjoy the kill and that it was less than civilized, indeed was less than humane. He did not deny that these things yield great pleasure for him, even more than that he said that for many hunters "killing was where the action was." However, he pointed out that many people fish, and therefore kill, that many folks eat other forms of life and therefore kill, and that many play golf, and therefore have killed by destroying what was formerly a "natural" environment. Above all, he insisted that we must view all things holistically, placing all in an interrelated perspective. Then a light blinked in the professor-hunter's mind and he realized that he was trying to argue specific points in 10 minutes that had been growing in him for nearly four generations and countless hours of meaningful experience. One of his teachers, and indeed the man who had extended his very essence and taught him more than all his many teachers, had a precept. That precept is that people learn best by doing the thing they are trying to learn about, collecting information and then interpreting it. These people haven't even collected the information—how could they possibly hope to decide?

His mind flashes back to the present. You dummy, the man thought to himself, I did it again, there goes a brace of bull sprigs and I was daydreaming again. He quickly contemplated the ritual rationalization with the big Lab who just gloried in being alive and with his master. By now the air was filled with waterfowl, not with birds who were already on the marsh, but from the hard northwest wind which was bringing still more "flight birds"! He knew that they would be tired and hungry after flying all day, would seek food and shelter. He capitalized on this knowledge and soon shot three drake mallards and a drake pintail

in that order. In the next 15 minutes he could have shot 23 more ducks but he did not. Instead, he had another cup of coffee, shivered, and contemplated all that was around him and tomorrow—every minute of tomorrow and the next day and still more days to come.

And the next day he was there and so was his dog!

Some Thoughts

We need not return far into the history of the Atlantic Flyway to find a time when greater concentrations of waterfowl traversed the eastern continental United States than perhaps anywhere in the world. The contemporary menaces of urbanization, poor agricultural practice, industrialization, highway construction, wetland drainage, pollution, and overhunting in some areas are massed to deliver the death blow to "gunning."

Proponents of every single one of the above categories are able to defend their interest with righteous evangelism. Very often they point out in no uncertain terms that if it were not for modern technology, the rest of us would not have time to lobby for conservation and environmental quality. However correct they are, they forget one thing.

"What is that one thing?" you may ask.

It is a rather complicated issue. Essentially and simply it is the fact that humanity is a part of the total environment. Man must learn to view all things systematically. The number of ducks in any flyway is a function of all environmental issues, not just one or two vested interests or agencies. The number of ducks in a flyway is a function of world economics, politics, sociology, history, and other interactions.

For example, big market hunting decimated the great waterfowl population of the flyways in the 19th century. Disregard for the ecological function of wetlands did more damage in the early 20th century, but duck hunting fees and support by sportsmen in the past 30 years have provided the means for a resurgence of waterfowl numbers.

The mere fact that we look to the *past* to experience countless waterfowl indicates that our society does not think of problems holistically, but rather that we think of problems atomistically (as separate entities). And friends, it's not just about waterfowl that we think this way.

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The author wishes to thank Dr. E. Vivian for reviewing the manuscript and offering helpful suggestions.

A Wildlife
Education Teaching
Technique

pulling the plug

simulating life and death
in wildlife populations

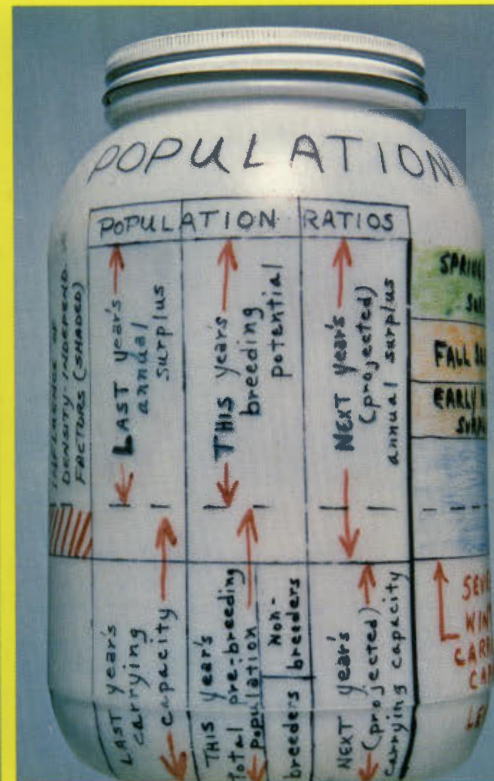
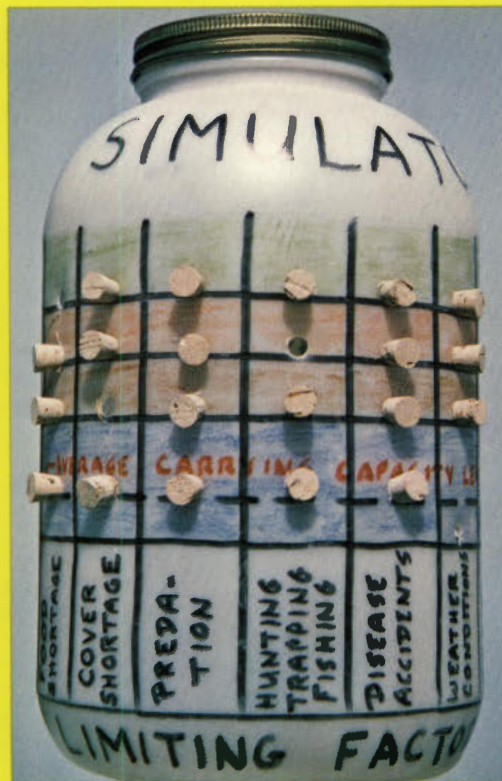
by jerry schierloh *Assistant Professor of Environmental Studies*

As a concerned conservationist, I would like to advocate "pulling the plug" on wildlife. Yes, I am actually recommending the elimination of various wildlife species by selective and deliberate means.

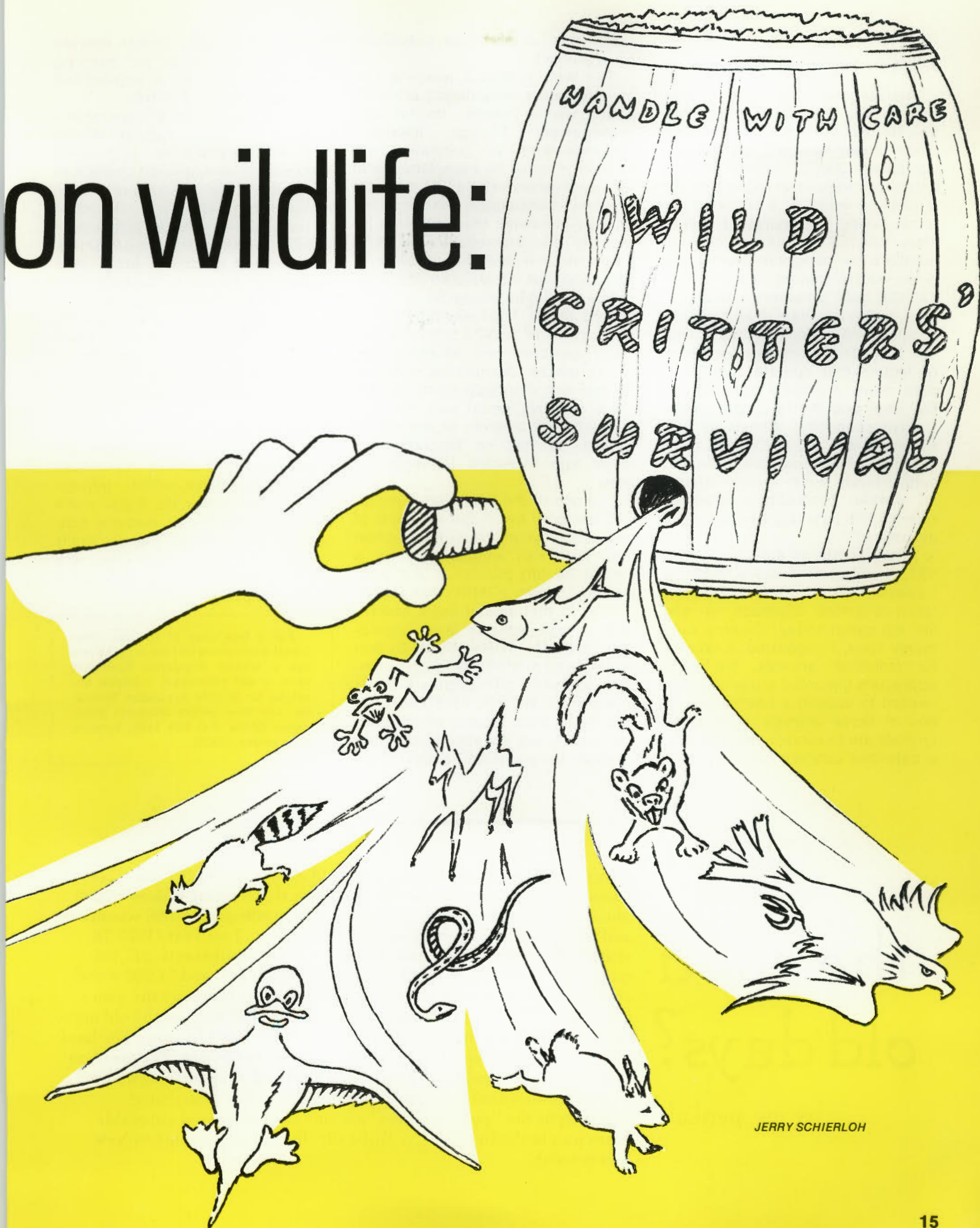
Fortunately, the "plug-pulling" in this case refers only to the actual pulling of plugs from a device suggestive of a space-age porcupine. The device—a teaching "gimmick"—is called a Wildlife Population Simulator (WPS) and merely *simulates* the actual loss of wildlife through such factors as disease, predation, food/cover shortage, hunting/trapping/fishing, weather conditions, etc. The WPS, although outwardly looking quite sophisticated and complex, is quite an elementary teaching/learning device and is made from such non-sophisticated items as a one-gallon plastic jar, some glue, clear lacquer, a handful of miniature corks and a variety of crayons and felt-tipped pens. Actual assembly time: 1-2 hours.

Continued on page 16

PHOTOS BY BOB McDOWELL



on wildlife:



JERRY SCHIERLOH

pulling the plug on wildlife

The purpose of this curious container, once assembled, is to simulate life and death in a wildlife population of any selected species. The container (WPS) holds different levels of water that represent the fluctuating levels of a wildlife population during the course of a year. Thus, WATER is used to simulate numbers, or population levels, of a given wildlife species, and the CONTAINER itself simulates a given land area which supports that particular species. The various PLUGS (corks) can be pulled to simulate the variety of factors that operate together to pare down a wildlife population to the level that the land can support (carrying capacity). What is primarily simulated with the WPS, then, is the interplay of life and death that occurs annually within a given species of wildlife. Professional biologists refer to this interplay as "population dynamics."

In an article in the March-April, 1975, issue of *New Jersey Outdoors*, I stressed the importance of a population-dynamics approach to wildlife education today. Citizens commonly have, I suggested, a concern for *individual* animals, but rarely appreciate the broad range of factors needed to support a healthy *population* of those animals. If individual animals are to survive, we must have a balanced concern for the popula-

tions from which those individuals have evolved.

The WPS is thus a teaching tool for promoting enlightened attitudes about wildlife needs, habitat and management through improved understandings of population dynamics. It could be especially useful for youngsters since it can be touched, manipulated and visualized to learn concepts that are quite intangible and theoretical. The WPS can also simulate the passage of time, and thus integrate an additional factor difficult for youngsters to grasp in their minds. The lower age threshold for use of a WPS would necessarily coincide with whatever age level a teacher deemed it appropriate to deal with life/death concepts; this most certainly would vary with the students, the teacher, or the school system so that no recommended lower age threshold is suggested here.

The use of the WPS can illustrate and reinforce five major concepts of population dynamics: 1) that a given land area can annually support a limited, healthy population of a given wildlife species (CARRYING CAPACITY); 2) that annual death and rebirth is high within a given population (ANNUAL TURNOVER); 3) that an interplay of mortality factors combine to "skim off" surplus animals annually (LIMITING FACTORS); 4) that the limiting factors which operate weakly are substituted by other stronger factors (COMPENSATION);

and 5) that limiting factors operate less efficiently when the carrying capacity of an area is approached (DIMINISHING RETURNS).

An individual with a clear understanding of these natural wildlife population-dynamics principles should be in an improved position to comprehend the influence of human activities on wildlife (i.e., reduction of habitat/living space, pollution of habitat, hunting/trapping/fishing, management practices, etc.). It is possible, of course, to illustrate most of these principles through a "dry-run" use of the WPS (without water); but a wet-run should be more interesting, meaningful and "absorbing" for the participants!

Regardless, users of the WPS are likely to come away with a keener appreciation of the necessity of professional habitat maintenance and management practices to insure healthy and stable wildlife populations in New Jersey. So, if you're one of those teachers or citizens concerned about other people *really* "pulling the plug" on wildlife, why not get some of them to join you in pulling the plugs on a WPS?

For a free copy of specific, illustrated instructions on how to make and use a Wildlife Population Simulator, send a self-addressed, stamped envelope to: Wildlife Population Simulator, c/o New Jersey Outdoors Publication Office, P.O. Box 1809, Trenton, New Jersey, 08625.

the good old days?

by joe penkala

Recently, while going through some old division records I came across a hunter harvest survey from 1924. During that hunting season 48,000 pheasants, 363,000 rabbits, 11,000 grouse, 59,000 quail, 9,000 woodcock, and 95,000 ducks were harvested in New Jersey. Last year (1975-76 season) Garden State gunners harvested 478,000 pheasants, 247,000 quail, 40,000 grouse, 483,000 rabbits, 214,000 ducks, and 74,000 woodcock. It's true that there were a lot fewer hunters to spread the game over and a lot more open space to hunt in 1924 but some of the old memories of more game harvested have been exaggerated by time. The land today is just as capable of producing game as it ever was. The problem today is loss of open space in which to hunt and an increasing number of hunters on whom the game is a little more thinly distributed.

So maybe the "good old days" are fine as memories of enjoyable times past in the field; but, realistically, there is more game in New Jersey today.



Environmental News



PHOTO SUPPLIED BY DEP

OLD BARRACKS. Two hundred years ago, at the time of Washington's surprise attack on Trenton (December 26, 1776), the barracks (above) housed Hessian mercenaries who fought on the side of the British. The barracks, the only one remaining of five built by the British in the 1750's to house soldiers serving in the colonial wars, is a fine example of the architecture of the period (note the random ashlar construction in the stone of the officers' quarters). This historic site is owned by the state but administered by the Old Barracks Association, which receives a yearly maintenance subsidy from DEP. Located on Willow Street near East Front Street, Trenton, Mercer County. Contains period furnishings. Open year-round on the following schedule: May through October, 10 a.m.—5 p.m. daily, Sunday, 1 p.m.—5 p.m.; November through April, 10 a.m.—4:40 p.m. daily, Sunday, 1 p.m.—4 p.m. Closed Thanksgiving Day, December 24, 25 and 31, and on New Year's Day. Admission charge.

Camden pilot program

Composting sewage sludge to replace ocean dumping

Camden will be the site of the state's first full-scale test to dispose of sewage sludge by composting rather than by dumping it into the Atlantic Ocean. The pilot program, announced in late summer, aims to replace the city's ocean dumping of about 600 dry tons of sewage a month with the safer and more economical composting method within 18 months. Among the reasons Camden was selected as the pilot site is that the city is under orders from the federal Environmental Protection Agency (EPA) to halt its ocean dumping of sludge by December 1979.

DEP and the city have applied to Region II of the federal Environmental Protection Agency EPA for a grant which would cover 75 percent of the \$1.5 million cost of the project with the balance to be furnished by the city.

The project will adapt techniques pioneered by Cook College of Rutgers University and demonstrated at the U.S. Department of Agriculture's experiment station in Beltsville, Maryland. Approximately 50 tons of wet sludge (23 percent solids) are composted daily on the 15-acre Beltsville site. This is equivalent to two and one-half times the sludge production from a city such as Camden.

In addition to saving money in the sludge treatment process, the compost itself is valuable as a conditioner of soils, increasing the water-holding capacity of soils and

stabilizing nitrogen in an organic form so that it is released slowly over many years. During the composting process, enough heat is generated to destroy disease-carrying bacteria and viruses. (Sludge from industrial communities has a high level of heavy metals, and therefore the application of sludge compost from such sources must be carefully managed.) The peat-like material that results from the composting process has a clean odor and is no harder to apply than any other soil conditioner. In many cases, a one-time application of 20 to 25 dry tons per acre of compost will provide all the essential soil nutrients to parklands, sod farms, and nurseries without polluting the groundwater.

The Camden project begins another effort in New Jersey's drive to end pollution of the sea. □

Will create 55,000 jobs

MORE THAN \$1 BILLION IN FEDERAL FUNDS WORKING TO CLEAN UP N.J. WATERS

It has been almost three years since the Byrne administration reassigned priorities and put the cleansing of New Jersey's waters at the top of the "immediate action" list. The concentrated effort being carried out by DEP to make our waterways once more pure and whole depends to a great extent on financing by the federal government through grants authorized under the federal Water Pollution Control Act of 1972 as amended. The grants provide 75 percent of the total cost of wastewater treatment plant construction, with the local or regional agency contributing the remaining 25 percent. Administratively equal in importance is the cooperation among the federal, state, and local agencies involved in a project.

The clean water program in New Jersey passed an important benchmark in September attesting to its success thus far: More than \$1 billion in federal sewerage construction funds has been put to work in our state since 1973 to clean up the state's rivers, bays, and the ocean. The goal is threefold—to reduce effluent discharges into rivers, eliminate discharges into back bays, and end sludge dumping into the ocean.

When completed, the improved and upgraded sewage treatment facilities funded by these grants will reduce the amount of organic waste discharged by 116,000 tons per year—an 80 percent improvement over present conditions.

The anticipated benefits of these new treatment works include:

—The Atlantic Coast bays will be virtually free from sewage discharge. This should lead to a recovery of shellfisheries, healthy habitat for fish and wildlife, and a restoration of swimming in areas where beaches have been closed because of bacterial problems.

—In the Northeast, the Upper Passaic River is expected to improve to the point where desirable fish species will return to the river. Marshland wildlife habitat will be enhanced. The river will improve in aesthetic appearance, allowing greater recreational use.

—In the Lower Raritan River and Raritan Bay, quality should improve considerably. Shellfish harvesting and swimming beaches also should improve.

—In addition to the reduction of pollution loads cited above, an estimated 41,000 septic tanks will be eliminated. Many of these septic tanks have been malfunctioning, causing

Continued on page 16D



Re: 200-mile fishing limit

COOKINGHAM APPOINTED TO MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

Russell A. Cookingham, director of DEP's Division of Fish, Game, and Shellfisheries, has been appointed to the Mid-Atlantic Fishery Management Council, which will develop plans for implementing the 200-mile fishing limit under terms of the federal fishing rights bill signed into law by President Ford in April 1976. Cookingham, along with three other New Jerseyans—William F. Feinberg, an attorney from Ocean County; David H. Hart, a marine fisheries consultant from Cape May County; and Allan J. Ristori, director of field testing at the Garcia Corporation in Bergen County—was appointed to the council in mid-August by U.S. Commerce Secretary Elliot Richardson. The council also includes representatives from the states of New York, Pennsylvania, Delaware, Maryland, and Virginia, and the regional director of the National Marine Fisheries Service. Regional councils will prepare management plans for fish stocks within their respective zones: The 200-mile fish conservation zone will be enforced on March 1, 1977, the effective date of the law.

The federal law gives fishing priority to American vessels within the 200-mile limit and requires all foreign fishing vessels in those waters to obtain permits. Foreign fishing would be controlled through negotiation (with the U.S. Department of Commerce) based upon the available supply of fish. □

OFF-SEASON BONUS FOR PARK PATRONS

Parking fees have been discontinued at 15 state parks/forests and reduced to \$2 daily at Island Beach State Park until the Spring of 1977. This is an annual program. Free parking for the quiet season is in effect at the following 15 areas: Allaire, Barnegat Lighthouse, Bass River, Batsto, Belleplain, Cheesequake, High Point, Hopatcong, Lebanon, Parvin, Ringwood-Skylands, Shepherd Lake (in Ringwood), Spruce Run, Stokes and Swartswood. All are administered by DEP's Division of Parks and Forestry. □



D & R CANAL MAPPING BEGINS. Another step toward improving the Delaware and Raritan (D & R) Canal and its environs was taken in August when the state Treasury Department awarded a \$173,800 contract to John G. Reutter Associates, consulting engineers of Camden, for topographic and photographic mapping of the canal's water supply system. The large-scale maps and data of the historic 64-mile-long canal will be used to develop future water supply plans and will also be available to DEP's Division of Parks and Forestry and the D & R Canal Commission for use in recreational development.

The canal, "once the most important artificial waterway in the state," according to historians, began operations in 1834. Acquired by the state in 1934, it has since functioned primarily as a water supply source—the canal presently supplies about 75 million gallons of water per day for sale to various municipalities, water companies, and industries. It also provides public recreation facilities along its route through Hunterdon, Mercer, Somerset, and Middlesex counties. Listed on both the state, and national registers of historic places, the canal and its towpath became a state park in 1974.

The photo above was taken near Titusville (Mercer County) close to where the canal meets Washington Crossing State Park. This section is a popular canoeing and fishing area—DEP stocks the canal with more than 8,000 trout of catchable size each spring. During the winter, water from the canal is used to make snow for the county ski area upstream.

Tocks Dam Put "On Hold" By U.S. Senate Committee

The Tocks Island Dam project has been kept alive by action of a U.S. Senate committee which rejected a proposal to deauthorize and thereby effectively kill the project. The September 8 decision of the Senate's Committee on Public Works means that while the project will remain "on the books," no further action will be taken toward building it in the near future.

This controversy has involved the states of New Jersey, New York, Delaware, and Pennsylvania as well as the federal government. The governors of the four states make up the membership of the Delaware River Basin Commission (DRBC). In 1975 the DRBC voted not to seek any federal funding to proceed with the construction of the dam, but did not agree to ask that the proposal be deauthorized.

New Jersey, which advocated that the Senate put Tocks "on hold," has been on record for four years as being opposed to the actual construction of the dam until certain environmental conditions have been met and alternative methods of water supply and flood control have been thoroughly explored. The DRBC states cooperated with the U.S. Army Corps of Engineers in a major review of the project and its alternatives which was finished in June 1975. At Governor Byrne's

request, DEP Commissioner Bardin conducted a full re-evaluation of the Tocks Dam project with respect to the specific needs of New Jersey prior to the DRBC decision last year. Currently, DEP has begun the process of developing a statewide water supply master plan that will include the analysis of alternatives to Tocks to meet the state's future water needs.

(The Tocks Island Dam and Recreation Project, as proposed by the Corps of Engineers, includes a 160-foot-high dam across the Delaware River, from New Jersey to Pennsylvania, at Tocks Island in Warren County. If constructed, the dam would create a 37-mile-long reservoir with approximately 12,400 acres of water surface, surrounded by about 60,000 acres of recreational area. Land north of Tocks Island would be flooded to make the reservoir.) □

Tax exemption program update:

Program Opens 10,600 Acres Of Land To Use By Public

More than 10,600 acres of open-space land in New Jersey owned by nonprofit organizations have been certified eligible for local property tax exemption in the two-year history of the Green Acres Tax Exemption Program. These lands become available to the public for recreation and nature observation when the tax exemption takes effect.

This fall, Commissioner Bardin certified applications from 10 nonprofit organizations (e.g., Audubon Society; Southern N.J. Council, Boy Scouts of America; Wildlife Preserves, Inc.) involving 1,836 acres of land located in 18 municipalities as eligible for local property tax exemptions totaling an estimated \$84,000. These exemptions begin on January 1, 1977. The lands, therefore, will be available to use by the public at that time. Added to the 8,800 acres already available, the total amount of land opened to the public under this program will exceed 10,600 acres.

Under terms of the Tax Exemption Law (N.J.S.A. 54:4-3.63 et seq.), the exemptions can be granted for up to three years. At the end of the certification period, the organizations may apply for recertification provided no change is made in the nature of the organization, the ownership of the land, or the public access.

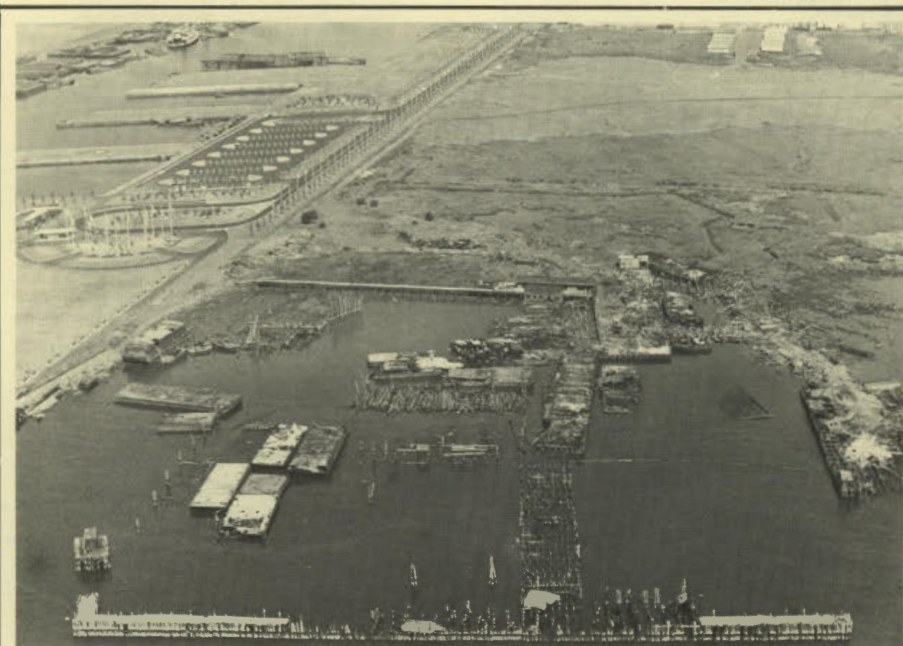
This program, along with the Green Acres land acquisition programs, is helping to decrease the statewide deficit of 185,000 acres of public recreational lands as described in the "1974 Statewide Comprehensive Outdoor Recreation Plan."

Interested groups should write to DEP Green Acres Tax Exemption Program, Box 1390, Trenton 08625. □

Additional grant:

DEP Receives \$600,000 From EPA For Air Pollution Control

A supplemental \$600,000 grant received by DEP from the federal Environmental Protection Agency in September will be used to expand the department's continuously operating air monitoring network and carry out other air quality management programs. Four new sites will be established and additional equipment purchased. The data from the continuous monitoring system are used for comparison with national standards, determining trends, and checking for deterioration in air quality. The system provides a surveillance and warning network for air pollution emergencies resulting from stagnant weather conditions. The EPA grant supplements a previously awarded \$1.9 million air pollution control grant for the last fiscal year. The Bureau of Air Pollution Control is part of DEP's Division of Environmental Quality. □



HARBOR CLEANUP BEGINS AT LIBERTY STATE PARK. The massive cleanup of debris that litters the Port of New York and New Jersey began in early August in the waters and on the shoreline of Jersey City (Hudson County) between Liberty State Park and the Statue of Liberty. The first of four phases of the cleanup calls for clearing the hulks of 96 derelict vessels, 25 shore structures such as rotting piers, and miscellaneous debris from a 75-acre area along 2,500 feet of shoreline adjacent to Liberty State Park. This is but the beginning of a harborwide effort to remove hazards to navigation and halt the recurrence of waterfront blight. The waterfront cleanup project, authorized by Congress in 1974, is being carried out by the U.S. Army Corps of Engineers with the cost shared—the federal government paying 2/3 and the local unit paying 1/3. In the case of Liberty State Park, being developed by DEP, the 1/3 share is being paid by the state. The photo above is an aerial view looking west of the debris next to Liberty State Park (completed section of park, upper left). Shown is just a portion of the debris to be removed.

MANAGEMENT STRATEGIES FOR COASTAL AREAS

"History amply demonstrates man's capacity to mismanage, pollute, and blight the coastal resource. . . . A single uniform strategy is unlikely to respond fully to the diverse purposes the coast should serve. . . ."

Commissioner David J. Bardin

Those words set the general tone of environmental management strategies for the state's coastal area submitted to Governor Byrne and the Legislature by DEP Commissioner Bardin in September.

To illustrate the need for a coherent set of strategies for coastal protection and management, Bardin cited the unusual incidents that recently occurred along the state's "limited, coveted, and fragile resource" which emphasized the need to protect the area from problems triggered by man or nature. Among the extraordinary incidents that plagued the shore this summer were "a killer algae bloom, trash and garbage tides, hurricane damage, oil spills, and contamination of beaches from a malfunctioning sewage plant." These, plus the future problems that may occur from offshore oil drilling, have heightened public concern for the Jersey shore.

DEP's goals and strategies for the area—different strategies will be appropriate for different parts of the coast—will be directed

to at least 12 topics: quality and pollution of the coastal and tidal waters; erosion and flood hazards; wildlife management, including marine fisheries; wilderness and natural areas; protection of groundwater supplies in the coastal plain; public access and privacy; recreation and tourism; energy facilities and other industrial potential; the coastal cities; the existing housing stock; new housing development; and transportation systems.

The set of strategies must be fashioned from choices among many broad alternatives which are being studied and evaluated by DEP. Background work has already been done on a number of these topics. The alternate strategies were submitted to the Governor and the Legislature as required under the Coastal Area Facility Review Act (CAFRA). The strategies will be refined and analyzed by DEP over the next year and then submitted to the public for scrutiny and debate. The first such report, "Interim Land Use and Density Guidelines," was issued this past July. □



FISH, GAME AND SHELLFISHERIES MOVES

The department's Division of Fish, Game and Shellfisheries is now housed in the All-states building, 367 Pennington Avenue, Trenton. The mailing address remains the same—Box 1809, Trenton 08625, as does the phone number—609-292-2965. □

TOPO MAPS: "SILENT GUIDES" FOR HUNTERS, HIKERS, CAMPERS

If you are a sportsman, rock hound, soil/water conservationist, or nature student, the department's Bureau of Geology and Topography probably has just the New Jersey map you need. The topographic maps are color-coordinated for easy reading and are available in different sizes and scales.

Since each state Atlas Sheet covers an area larger than covered by 16 federal quadrangle maps, they are therefore more convenient for use by hunters, fisherman, and others interested in the regional picture of an area. The USGS maps are attuned to local use as they indicate housing areas, factory locations, and the like. For publication and price list write to Publication Sales, DEP Bureau of Geology and Topography, Box 2809, Trenton 08625. □

FARMLAND PRESERVATION EXPERIMENT BEGINS

New Jersey officially began an innovative experiment in farmland preservation on October 1 with the dedication of a project field office in Lumberton Township (Burlington County). The demonstration project, authorized by Chapter 50, P.L. 1976, is to be carried out under the administration of the state departments of Environmental Protection and Agriculture. Known as the "Agricultural Preserve Demonstration Act," the law provides for the preservation of farmland open space and the retention of agricultural activities through the acquisition of development easements by the state. Also, it appropriates \$5 million from the Green Acres land acquisition and development fund to buy and conserve such lands for recreation and conservation purposes. □

Bulletin 70:

CAVES OF NEW JERSEY

The spotlight is turned on the "Caves of New Jersey" in Bulletin 70, the latest publication in DEP's geological technical series. The 8½" x 11" paperback book contains 51 pages plus an insert containing a set of six cave maps and one of the limestone regions of the state with cave locations plotted.

Copies may be purchased at \$5 each from Publication Sales, DEP, Bureau of Geology and Topography, P.O. Box 2809, Trenton 08625. Please make check or money order payable to General Treasury, State of New Jersey (G.T. of N.J.). □

STATE CAPITOL DISTRICT WINS NATIONAL RECOGNITION

The State House Historic District in Trenton (Mercer County) recently was added to the National Register of Historic Places, an honor accorded to noteworthy historic properties. The district, an area encompassing about two city blocks, includes the State House (built in 1793, it is the second oldest state capitol building in continuous use—the oldest is in Annapolis, Maryland); the Kelsey Building (designed in 1911 by Cass Gilbert, it was modeled after the Strozzi Palace in Florence, Italy); the Old Barracks (built in 1758, it is a National Historic Landmark); the Masonic Temple (built in 1793, it contains Masonic memorabilia including the original furniture from the first meeting room); the Contemporary Club Victorian Museum (built in 1860); and a block of 19th-century townhouses scaled to the Capitol Building. The Old Barracks and the Masonic Temple are on Willow Street, the other buildings on West State Street. □

PUBLIC WILL HAVE SAY ON NEW LANDFILL SITES

Public hearings will be held by DEP's Solid Waste Administration before any future sanitary landfill sites are built or expanded. The administrative order issued by Commissioner Bardin in September also requires that all counties and municipalities located within one mile of the proposed facility be notified that the plans have been filed with DEP and are available for review. Administration staff will meet with the governing bodies, upon their request, prior to public hearings being held.

The new order does not apply to the following: composting operations; facilities for the disposal of tree stumps, vegetative matter and the like; facilities which accept less than 50,000 tons annually or that will be in use for less than one year. □

COURT SETS SCHEDULE FOR SEWERAGE PROJECT IN HUDSON COUNTY

North Bergen Township in Hudson County has agreed with the DEP to a court-approved schedule to rehabilitate its sanitary sewerage system. Two treatment plants are involved—one at 91st Street serving the northern area of the municipality, and the other at 43rd Street. In addition to the treatment plants, which serve an estimated 50,000 persons, North Bergen is required to improve its internal collection system. The two plants, processing seven million gallons of wastewater daily, discharge into tributaries of the Hackensack River.

Preliminary planning is in process which will lead to new construction starting by April 1, 1977. The upgraded system should be fully operational by August 1, 1978.

The recent court order establishing the rehabilitation schedule was signed by Superior Court Judge Geoffrey Gaulkin in Jersey City. □

Continued from page 16A

\$1 BILLION IN FEDERAL FUNDS

local well contamination and overload discharge of raw sewage. Correction of these problems will alleviate threats to public health and protect groundwater supply for drinking water use.

The program is not only beneficial to the health and well being of humans and to the environment, it is a boon to the state's economy as well. The \$1 billion in grants for the water pollution control projects will create 55,000 construction and related jobs, according to estimates of the state Department of Labor and Industry. The wages received by the workers will circulate through the area in the normal flow of commerce, benefiting the community.

Over the top

DEP's Division of Water Resources, which administers the federal grant program in New Jersey, reported that the billion-dollar mark was crossed with the recent award of an \$87.4 million grant to Middlesex County Sewerage Authority (MSCA) by the federal Environmental Protection Agency (EPA). The grant represents 75 percent of the estimated \$116.5 million necessary for construction of additional wastewater treatment facilities serving 750,000 persons in 26 municipalities in most of Middlesex and portions of Union and Somerset counties. The MSCA will provide the remaining 25 percent (an estimated \$29.1 million) of the project's cost.

More federal aid needed

In a statement made September 22, Governor Byrne said that "New Jersey has become the foremost state in putting federal water pollution control money to use. . . . In addition to obligating over a billion dollars since 1973, we are well on our way to committing the available balance by the end of this year." The expenditures thus far will provide secondary treatment for one-quarter of the state's population and partial upgrading of treatment for another third of the population. DEP studies indicate that to complete this upgrading for the rest of the population will require almost twice the amount of money—and a continued commitment at the local, state and federal levels.

Commissioner Bardin has urged the Congress and the President to speed the allocation of an additional quarter of a billion dollars to New Jersey in the current fiscal year so that the water cleanup can move forward without losing momentum. □

PESTICIDES RULES ADOPTED

New regulations designed to reduce misuse of pesticides and to cut down on the total amount of pesticides entering the environment were adopted by DEP on September 22. The rules require exterminators, farmers, and plant nurserymen to register with the department and demonstrate their competency in applying pesticides. In anticipation of the new rules, about 80 percent of the state's 1,100 pesticide applicators have completed the first phase of training being given by Rutgers University cooperative Extension Division in conjunction with DEP. For further information write to DEP's Office of Pesticide Control, Box 1390, Trenton 08625. □

attention deer hunters —look for tags!!!

By David Burke

Wildlife Biologist,
Deer Project

As with most programs involving public resources, success is dependent to a large degree on public interest and support. In addition to compliance with the deer reporting regulations, another way that the hunter can help in the deer research and management program is to examine his deer for ear tags and report any tagged deer to the Division. These tags are to be found at the base of ears. The larger tags are obvious. However, many deer have been captured and tagged as fawns and have much smaller ear tags which can only be found by feeling the edges of the ears. If a tagged deer is taken, please report it to the Division of Fish, Game and Shellfisheries, P.O. Box 1809, Trenton 08625, together with the tag numbers, sex, age, location, date and name and address of the hunter. Where possible, also send one side of the lower jaw for aging purposes.



On opening day of the 1975 firearm deer season, Dean Belucci of Atlantic Highlands bagged this nice 91 pound, seven pointer near Waretown in Ocean County. The deer had been box-trapped on January 19, 1971. At that time it was an unknown aged adult weighing 81 pounds which had shed its antlers. Although it was not tagged as a fawn, the minimum known age of this "piney woods" buck was 6 1/2 years. When bagged almost five years later, the age was estimated at over 10 1/2 years and this was determined by the teeth, of which two were completely worn away. Another interesting aspect of the tag recovery was that it was made within one mile of the tagging site—nearly five years later. Thanks to Dean's cooperation in reporting his tagged deer and saving the lower jaw, valuable information was gained. Since the project was initiated in 1969, 1590 deer have been tagged with returns received for 392 (24.7 percent). Hunters, through legal means, accounted for 61.5 percent. Other non-hunting causes of death such as auto deer collisions accounted for 38.5 percent of the returns.



Is Daniel Boone Hunting Up Here This Year?

By Don Reinhart

*Author and
Muzzle Loader*

I'm not really Daniel Boone—but let me describe briefly just how a muzzle loader works. Before loading any muzzle loader it's imperative to fire a few caps to burn away any oil which might still be in the barrel from the last cleaning. This eliminates the possibility of a misfire from the powder getting wet with oil. The next step is to pour an exact amount of black powder into a measurer, the amount depending on the caliber of the rifle being used.

After the powder is poured down the muzzle, a greased cloth patch is placed on top of the muzzle. The patch fills the grooves of the rifling and forms a gastight seal between the ball and barrel. The ball must have a snug fit to insure no slippage so the effect of the rifling gives it the proper spin.

A soft lead ball is placed on top of the patch and the whole works is then rammed down the barrel until the ball is resting firmly on top of the powder. The hammer is then pulled to halfcock and a cap is placed on the nipple, which is nothing more than a tube extending from the barrel with a hole through the center. When the hammer strikes the cap and causes it to go off, an intense flame is sent through an orifice into the barrel, igniting the main charge and sending the ball on its way.

Another type of muzzle loader uses the flintlock ignition system. The flintlock and the percussion are loaded the same way—the difference is in how the main charge is ignited.

With the flintlock a sharp-edged flintstone is clamped in the jaws of the hammer. When the trigger is pulled, the hammer falls and the flint strikes a case-hardened piece of steel called a *frizzen*; as the flint slides down the frizzen it creates a shower of sparks. While this is occurring the frizzen is being thrown open by the force of the falling hammer. The priming powder in the pan is thus exposed to the sparks and it ignites.

The depression of the pan which holds the priming powder extends to the side of the barrel, where there is a small hole which enters into the barrel. When the priming powder ignites, the flash enters through this hole and touches off the main charge.

When I hunt out of state I use a .45 caliber percussion Pennsylvania longrifle, commonly called a Kentucky rifle. It was originally a flintlock made in Reading, Pennsylvania, between 1775 and 1825. I load it with a .445 caliber round ball with 65 grain FFg black powder.



Author With Pennsylvania Buck Taken With Muzzle Loader

PHOTOS BY AUTHOR





Gear Carried by Kentucky Riflemen

A muzzle loader is quite different from a modern rifle, as you must experiment with it at the shooting range. By varying the amount of powder, thickness of the cloth patch, and size of the ball, you will discover a winning combination which will give the best group for that particular rifle.

My rifle originally was a .42 caliber smoothbore which I had bored out to .45 caliber and rifled. It shoots a group in a 6-inch circle at 100 yards, which isn't bad considering that open sights are used.

Well, let me get on with some of my hunts in 1975. My first two trips, to the Adirondacks in New York, were uneventful, as I didn't even see a deer. That didn't dampen my spirits in the least, because the country in upstate New York is so beautiful that I enjoyed every day of it.

My next hunt was in Elkland, Pennsylvania. I take a week's vacation to hunt with friends during their regular firearm season, and I'm the only one who uses a muzzle loader. The first year I showed up with my rifle there was quite a bit of kidding—How was I going to get it to shoot, let alone get a deer? Unfortunately they were right, as I did get a shot but the

cap misfired, so I ended up going zero for my first muzzle-loading hunt.

This season was a different story. Our first day out, I left everybody behind at the bottom of the mountain and climbed to my favorite spot on the top about two miles away. I like to get on the stand early to have plenty of time to load, get ready, and blend into the woods.

While waiting for it to get light I hung my powder horn on a limb and placed my hunting pouch on the ground. After loading the rifle I took an extra cap, ball, and cloth patch and placed them on top of the hunting pouch, just in case a second shot might be needed in a hurry. If I had a deer down, the last thing I wanted was to be fumbling around inside a pouch with cold, numb fingers.

Soon the sun was shining, and I just settled down to wait for some action. The fellows down below were starting to work their way to the top of the ridge and were pushing the deer ahead of them. Out of nowhere I noticed a herd of about twelve deer running straight toward me. I grabbed my rifle and got ready. When the herd came closer they parted and

went around me. They all turned out to be does, but they sure got my adrenalin pumping.

After another hour the deer were moving back and forth over the ridges, pushed by other hunters. Soon I heard a shot directly behind me over the ridge. When nothing came my way, I turned back to watching down the run on my side. After a few minutes my sixth sense told me to look behind me. Coming straight toward me was a five-point buck. He caught me completely off guard, my rifle leaning on the tree. When he was about ninety yards away he stopped and peered back over his shoulder, giving me time to grab my rifle and get into position. As I went to aim he turned back and started to run on an angle past me. The muzzle loader I use sports a 47-inch barrel, and I now found out how difficult it is to hold the sights on a bounding deer. As he was running I held until I was positive the sights were dead on his shoulder before pulling the trigger, especially knowing that I would have only one shot. Just as I squeezed the trigger the buck stepped into a slight dip in the ground and I feared the shot might be a miss.

As the huge cloud of blue-white smoke left the muzzle I caught a glimpse of the buck going down. When the smoke thinned out there he was in a heap where the muzzle loader dropped him in his tracks. The ball had entered high in the shoulder and completely shattered the backbone for an instant kill.

After dressing him out I started the long but easy drag along a pipeline clearing down the mountain. On the trip down I paused to rest and talked with quite a few hunters. They all were amused and curious to see someone hunting with a muzzle loader. I imagine it was quite a sight seeing me decked out with a coonskin hat, buckskin hunting pouch, powder horn, and muzzle loading rifle. It was particularly enjoyable talking to an old native gent whom I meet every year on top of the same mountain. Now when he bumps into one of the fellows from camp he always asks, "Is Daniel Boone hunting up here this year?"

The last leg of my '75 deer hunts was back home in New Jersey. I hunt the Far Hills section in Somerset County. In Jersey I use an 11-gauge English double barrel percussion shotgun. I load it with 12 pellets of 000 buck in the left barrel and 16 pellets of 0 buck in the right, using 125 grain FFG black powder.

After hunting the first two days of the season without firing a shot, I was back on my stand on Saturday well before daylight. My hopes weren't too high on seeing a buck the last day of the season. About 9:00 I spotted a deer feeding in a nearby field. It was working its way along the edge but was too far away to tell if it was a buck. Just as it got out of sight I heard a shot and saw someone come out from behind the tree

and run toward where I last saw the deer. I knew the fellow who always stood there so I went over to see what he shot at. The deer I had been watching was indeed a buck, a splendid three-pointer with long tines.

After lending a hand to help dress out the deer, I was walking back to my stand thinking more than ever that I wouldn't get a deer this year. After all, how many bucks could there be in this woods on the last day of the season?

When I got to my stand I watched the hunter drag his deer away through the woods. Suddenly I saw nothing but the top of a set of antlers running toward me along the bottom of the hill. What luck! Here I thought he was taking the last buck out of the woods and he kicks up a big six-pointer right to me.

By now the buck was in full sight and running at an angle across from me. I cocked both hammers and waited for the closest shot. At about 40 yards I fired the first shot; after the smoke cleared he was still running. He slowed down to a trot and I was sure he was hit. I let the second shot go at about 60 yards but it seemed like a miss. One hundred yards from me he walked over a hill and stopped—I could just barely make out the tips of his antlers. He stood there for a long moment and then the antlers disappeared. I didn't know if he fell, ran down the hill, or what. My ears were still ringing a little from the shots but I thought I heard rustling in the leaves like a deer down. After a few minutes the thrashing stopped and by this time I had reloaded both barrels. A muzzle loader is not the easiest gun to reload when you have a case of the shakes!

As I pussyfooted over the hill I cocked both hammers to get ready for anything. There he was, a nice six-pointer lying on the ground stone dead. I believe it was the first shot which put three buckshot into his lungs and almost passed completely through his body.

So ended a year that was by far the best since I've been hunting—it certainly put a lot of venison in the freezer. I enjoy a pleasant side effect when I sit down to a venison dinner, in that I start to daydream and end up back in the woods reliving that hunt over and over.

Unless you have an acquaintance who already is into black powder shooting and who can help you learn the basics, I would recommend that you visit a sporting-goods store that deals largely in black-powder supplies. The salespeople in such stores are very knowledgeable in the safe and proper loading techniques for black powder. Another way is go to a rifle range; chances are there will be a muzzle loader shooter there who will be more than happy to answer your questions. □



HORSE CHESTNUT 13'8" circumference

To me, the "Liberty Hall" horse chestnut is probably the most historic tree growing in New Jersey. It is located at the home of the Kean family in Union, New Jersey, a National Historic Landmark. "Liberty Hall" was built in 1772 by William Livingston, first Governor of the State of New Jersey (1776-1790). His daughter, Sarah, planted the horse chestnut tree about 1775 opposite the front door. (The horse chestnut, originally a native of Greece, is now widely planted throughout the world as a street and shade tree. It has become naturalized in the Eastern U.S.). Governor Livingston took great pride in his home and grounds. He imported many fruit trees from England, and laid out the formal English Gardens, which are still maintained today with devotion and impeccable care. In addition to the horse chestnut tree, several other "New Jersey Big Trees" are found on the grounds of "Liberty Hall" and are worthy of inspection.

The largest bartlett pear and seckel pear trees growing in New Jersey are located in the formal English Gardens, and three varieties of buckeye are growing near the horse chestnut. These are the Ohio buckeye, red buckeye, and bottlebrush buckeye, all of which come into beautiful flowers at different periods in the late spring.

Since colonial times, the Kean family has ably served the state and the nation in political, military and civic service. Due to the family interest in "Liberty Hall," this historic home and grounds has been preserved for the benefit of the future generations. Today it stands as a constant reminder of the birth of a nation and the role that one family has played in New Jersey history.

*(Research by Louis E. Hand of New Lisbon, and the late Alden T. Cottrell of Lawrenceville).

Trees Are Historic Too!

***By Santiago Porcella III**

PHOTOS BY AUTHOR



WHITE OAK 21'6" circumference

New Jersey's largest white oak, 21'6" in circumference, located on the west side of Route 539 between Hornerstown and Cream Ridge, (near Rutgers fruit tree test plots) was known for more than two centuries as the Waln Oak.

Nicholas Waln, a noted lawyer and friend of William Penn, arrived in the Colonies with Penn in 1682. Penn presented him with a land grant of about 1000 acres. The land passed from generation to generation until 1971, when the last of the family, Mrs. Florence Waln Tilton, sold the remaining holdings to Baier Lustgarten Farms and Nurseries of Long Island. The family home near the magnificent tree was built in 1880 by Mrs. Tilton's father, Nicholas Waln. Around the homestead, he planted a copper beech, several Norway spruce, white pine and sawara cypress trees which still shade the old farm house. The fields adjoining the Waln Oak are now providing nursery stock for the new owners.



SHOEMAKER HOLLY TREE 7'0" circumference

Located on the Garden State Parkway at the picnic area and rest stop between north and south lanes, 23 miles north of Cape May City, or 3 miles south of Ocean City exit of the parkway. This 300 year old holly tree, which is over 60 feet high and measures 7'0" in circumference at breast height is, according to Daniel G. Fenton of the Holly Society of America, Inc., the oldest holly tree in New Jersey and among the oldest holly trees in the Nation.

The tree was discovered when engineering and surveying for the parkway construction began. After many public pleas to do something to save and expose the tree, the Parkway Authority named a five man commission to study the problem. The result was the Jersey Cape Parkway Planning Commission, which after several meetings came up with the plan to make the area around the tree into a park with the old Shoemaker holly tree the center of attraction. The parkway route was changed for 120 yards in order to preserve the tree. It takes its name "Shoemaker" holly tree from a former owner of the property it stands on. The tree and its picnic and rest area is open all year round and is accessible from both north and south bound lanes. It is now illuminated nightly by flood lights and colorful decorative lights during the Christmas Season.

WASHINGTON WALNUT 14'3" circumference

Location: 425 Ridgewood Road, Maplewood.

Standing within a few feet of the Old Timothy Ball house built in 1743, this fine old tree is linked with Revolutionary days as well as more peaceable times. This walnut is probably as old as the Ball house and it is said that Washington, who was related to the Balls, visited his cousins before and after the Battle of Springfield. According to tradition, he hitched his horse to an iron ring which was attached to the trunk. The tree has

since grown over the ring which is no longer visible. Some, among the older residents in the vicinity, remember when it could be plainly seen.

Within the Timothy Ball house there is a huge fireplace. The tale is frequently told that Washington, when staying there overnight, stabled his horse in this fireplace.

Another story is that this tree once served as the dividing line between the Presbyterian congregations of Orange and Springfield; both towns lying approximately three miles from it. Those living north of the walnut tree were expected to worship in Orange and those south of the tree in Springfield.



SALEM OAK 20'6" circumference

Location: East Broadway, Salem

This venerable patriarch is one of the most distinguished of New Jersey's ancient white oaks and is one of unusual grace and beauty. The crown, exceptionally dense and heavy, arches gracefully in perfect symmetry. The tree is carefully preserved by the frequent attention of the tree surgeon. About 40 years ago, one of the larger limbs, torn off in a storm, showed 275 rings of annual growth; this gives some clue to the age of this giant tree. (Recent storms have also damaged some of the dense crown).

John Fenwick who had purchased one-half of New Jersey for \$5000 in trust for Edward Byllings and others in 1675, "set sail to visit the new purchase in a ship from London called the 'Griffith'; arriving after a good passage he landed at a pleasant rich spot, situated near Delaware by him called Salem probably from the peaceable aspect it then bore." The Griffith was the first English ship that came to West Jersey and none followed for several years. It is a tradition that John Fenwick made a peace treaty with Indians near this old oak. The treaty was held inviolate, for no white man was ever killed by an Indian in Salem County.

In 1681 the Salem Monthly Meeting of Friends purchased of Samuel Nicholson and his wife, Ann, 16 acres of land and house of hewn logs for a meeting house and burial ground. The original log meeting house was used until 1699, then a larger brick house was built east of the oak and occupied until 1772, when the present meeting house on East Broadway was finished.

Continued on page 30



At Ken Lockwood Gorge—Dawn Winski, 12, of Trenton displays her 20-inch trout on Opening Day.

New Jersey's Public Open Spaces: **a land of many uses**

BY LOUIS S. CHEREPY

Superintendent, Stokes State Forest

There are about 357,733 acres of publicly owned lands under the jurisdiction of the Department of Environmental Protection. The administration of most of these lands is entrusted to the Bureau of Parks and the Bureau of Wildlife Management, both of which are people-oriented resource management agencies. With few exceptions, their land-use programs are based on the multiple-use concept of land management.

The multiple-use concept simply means that an area serves or is used for more than one purpose. Historically, the major uses in New Jersey have been (1) timber

production, (2) watershed protection, (3) fish and wildlife habitat protection and development, and (4) public recreation. There are, however, many other important uses such as historic site preservation, natural area preservation, scientific research laboratories, outdoor education classrooms, and nature museums. It is the job of the manager to successfully integrate these often conflicting uses on each specific area of land. This management plan must be based on projected future needs as well as on present needs for the varying uses and on an integrated choice of decisions which fill those needs. Some decisions will result in specific restrictions for an area, while other policy decisions will allow considerable flexibility for another area. In a state such as New Jersey, where the population density is extremely high and on the increase and where open space is in limited supply and ever on the decrease, successful employment of the multiple-use concept becomes extremely critical for the survival of man and his environment alike.

Conservation, the wise use of our natural resources, is an integral part of any successful land management program. The employment of conservation practices is supposed to supply the greatest good from a given resource to the greatest number of people and is used to justify policies ranging from historic site and natural area preservation on one extreme to intensive use of large recreation areas on the other.

People often ask questions such as "Why do you have all this open space with nothing but trees on it?" "Wouldn't it be more valuable if the land was used for homes and factories so we could get more tax money?" These questions can best be answered by briefly discussing the major uses that our open spaces serve.

Watershed Protection

The high demand for potable and industrial water in our urban centers is supplied from the forested areas of New Jersey. Generally speaking, the reservoirs in the southern half of the state are below ground in the form of aquifers, while in the northern half they are above ground in the form of lakes. The forest cover impedes runoff of rainfall and gives the water time to seep into the soil, thus replenishing wells and slowly releasing the stored water to lakes and streams through springs during the dry seasons of the year. When frozen, many forest soils become honeycombed and allow for rapid

Photo by Harry Grosch

A State Wildlife Management Area



penetration of surface water, thus helping to reduce the risk of flooding when winter snows melt. The vegetation also protects the soil on the slopes from sheet and gully erosion, and not only maintains the fertility of the soil but guards against the silting-in of lakes and streams as well. It has long been known that adequate ground cover is the key to a good watershed, the value of which is beyond the scope of measurement.

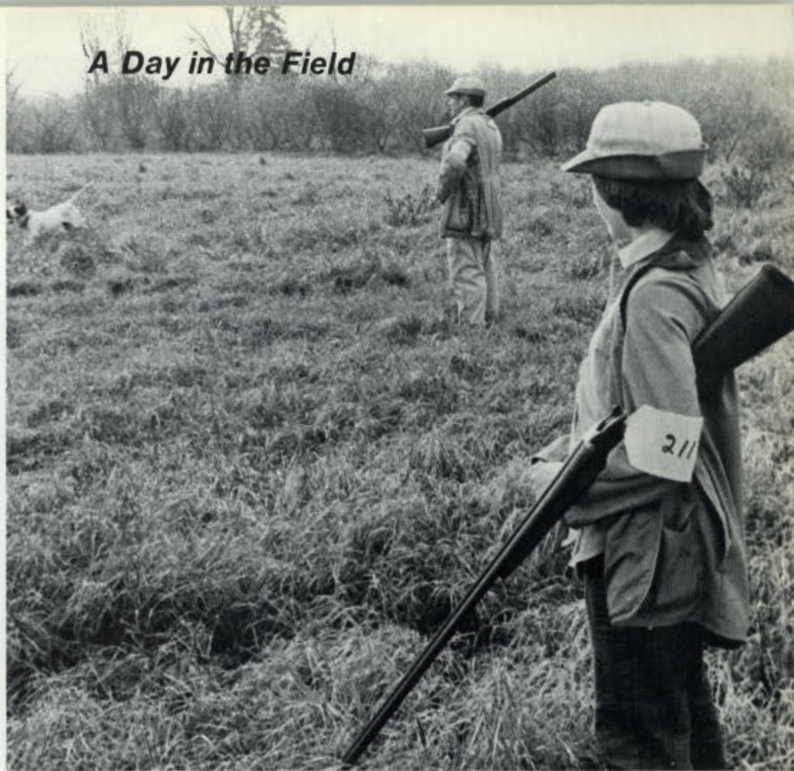
Timber Production

Virtually all of New Jersey was originally covered with forests that were as different as the land upon which they grew. Responding to changes in geology, soils, climate, and time, they were everchanging. With the arrival of man, new influences were superimposed upon the natural controls, mainly land-use patterns and fire. The initial human influence began with the Indian, who frequently set fire to the forest to facilitate the harvesting of its game for food, clothing, and shelter. With the coming of white men, suitable areas were cleared for farming. It was the former forest soils, rich in stored nutrients, that enabled the pioneer farmer to subsist upon the land. With the growth of industry came an intensive harvest of wood from the remaining forests for charcoal, railroad ties, mine timber, lumber, pulp, shingles, and domestic fuel. Without its forests, New Jersey could not have played its major role in the industrial revolution. Although New Jersey's dependence on wood has somewhat decreased, our forests continue to be a major supply of baskets, furnace poles, pallets, tool handles, boat keels, and firewood. These products support hundreds of jobs and generate millions of dollars in revenue.

Wildlife Habitat Protection

Vast tracts of forested mountains, abandoned farms overgrown with shrubs, cedar swamps, tidal marshes, sandy dunes, and pine barrens—each is an ecosystem with its own characteristic assemblage of plant and animal populations. Depending upon one's values, the worth of these areas in terms of wildlife can be viewed from various angles. Economists say that sportsmen harvest hundreds of thousands of dollars worth of meat and fish annually from our open lands, thus reducing the price of our market baskets. Scientists claim that without the fertilization of estuaries by salt-marsh wildlife species, the commercial fish industry would sharply decline, with a subsequent loss of jobs and revenue.

A Day in the Field



The sale of fur harvested by trappers exceeds the annual revenue of several segments of our other primary industries. The many hours of recreation derived from birdwatching, the feeling one gets each time a bear, deer, or beaver is seen, or the expression of a child as he watches a rabbit wash his face are priceless, indeed, and would not be possible without our open spaces.

Public Recreation

As man becomes more numerous and concentrated, he develops a psychological need for solitude, serenity, peace, and purity. More often than not, it is the forests and other open spaces of our state that are serving this need. Camping, hiking, boating, bathing, and picnicking are for many the only escape affordable from the plastic world of urbanization and automation. Without the occasional journey to the country, many would find the pressures of everyday life too much to bear. Fortunately, we have enough land set aside so that an outdoor experience in New Jersey need not be merely a superficial glimpse of a waterfall, a view from a mountain top set among urbanized surroundings, a trip to the amusement center, or a dip in the motel pool. □

New Jersey Farmlands



wearing this shield ... means doing the work

BY JIM FITZSIMMONS

PHOTOS BY THE AUTHOR



It's 5 a.m. and cold and dark outside—there's a hint of snow or rain in the air. A few sportsmen are getting ready for a day's adventure in the woods. Their equipment is already packed in knapsacks: maps, compasses, nails and hammers, not to mention the grit to face a harsh environment when one could be sleeping late on a Saturday morning.

This scene is familiar to members of the Passaic County Fish and Game Protective Association, a group of hard-working sportsmen who are making that extra personal effort to further the conservation ideals of their club and of the Division of Fish, Game and Shellfisheries, of which they are an official arm. The goals of the group are simply stated: "To protect, feed, propagate,

A group of Association members gathered at their latest annual "Fishing Derby" sponsored for local kids and grown-ups. Arthur Wendelken, Assistant District Conservation Officer, is standing at the left edge of the club's sign.





A work group preparing to set out wood duck houses.



Bob Simon leads the way to the swamps.



Finding the right place. Charles Hintzen nails, while Andy Bortolot [right] and "Buddy" Clark hold.

and conserve fish and wildlife in all its phases; to aid in the enforcement of fish and game regulations; and to educate the general public in the nature of wildlife and its management."

The group has a long tradition to follow. The Association dates back to 1885, when the necessity for conservation efforts was just being felt in New Jersey. Since then, the function of the club has not changed. The members do what few other groups do—the hard, dirty work that others have made little time for. Each year work projects are carried out. During the hunting and fishing seasons, the members assist Division Conservation Officers and their deputies in general law enforcement by checking licenses, inspecting creels and game bags, and patrolling and posting fishing and hunting areas.

In a cooperative effort with its Orange County, New York, counterpart, the Association is involved with Greenwood Lake trout research. Both clubs are responsible for taking fish scale samples and water samples and work with fisheries biologists from the two states to help improve the lake as a habitat for trout.

It's between hunting and fishing seasons that the hardest work begins. Trudging over mountains and pushing through swamps, the members post signs that designate the New Jersey-New York border. Hikers, fishermen and hunters are among those who appreciate this service. Knee-deep in marshes and bogs, the men set up wood duck boxes in the back areas of Passaic County. The wood duck, after falling to alarmingly low population levels, has been saved by such efforts as this. You'll even find the men wading in stream beds to remove boulders, debris, or garbage. Stream pollution deteriorates the local ecosystem—and the club's efforts benefit all animals, fish, and humans who are a part of this ecosystem.

Educating the public about wildlife is a high priority item for the Association. Participating with the New Jersey Federation of Sportsmen's Clubs, the Passaic County group has made ecology teaching kits and National Wildlife Federation materials available to teachers and students. An annual event—National Hunting and Fishing Day—sees the membership joined together to meet and speak with the general public about man, nature, and wildlife. A group of club members have been authorized by the New Jersey Division of Fish, Game and Shellfisheries to provide hunter education programs to prospective hunters. Hunter-safety classes have been responsible for making this recreational activity one of the safest sports in New Jersey.

Weekends, evenings, and after the regular day's work is done—that's when the Passaic County Fish and Game Protective Association comes alive. The projects often tire the men and at times even exhaust them. But tired muscles don't seem to wear out enthusiasm. The members seem to feel the excitement of doing something of value for wildlife, the natural environment, and those who use it. In this club, you wear your shield with pride—and you work hard for the honor of belonging. □

RETURN OF THE RUFFED WONDER

BY
ARTHUR WEILER, JR.

PHOTOS BY
LEONARD LEE RUE III

"Brrrrr" was all I heard as a brown flash exploded out of the hemlocks to my left. Instinctively, the Model 24 jumped to my shoulder and fired. Mind and eye synchronized in time to see the leaves jump five yards behind the target. The follow-up shot was blocked by branches, so I dropped to one knee; the echo of the second shot rang out "bang!" Forty yards away the feathered shadow dive-bombed toward the forest floor. Pitching down the hill as fast as possible, I ran recklessly, snapping branches and dislodging stones. One hundred yards below, a steep drop-off appeared from which the grouse might glide to safety far below. Should I load another shell and try to stop the escaping bird or simply try to outrace it? Knowing that a spill on this terrain would be dangerous, I stopped to load the shell, but to no avail the grouse had disappeared. As I came to the edge of the drop-off there was not a movement in the still morning air. That bird was mine and hard earned.



RUFFED GROUSE AND CHICK

Panic struck and was soon followed by disappointment. My senses strained and my heart beat wildly as my eyes searched the land below. Suddenly, the leaves a few feet away rustled! Under a fallen log nearby the well-camouflaged shape of the ruffed grouse appeared and I retrieved the fallen bird. Sitting down on that log, I enjoyed the beauty of this native gamebird and the equal beauty of the Delaware

silently flowing through the sunlit valley below.

Since 1963 I've journeyed to these mountaintops and hemlock-speckled hills in vain. After a few years of fruitless searching for ol' ruff I sought the gaudy pheasants and cottontails of the lowland fields. The memories of this noble highland bird became distant.

This season, like many recent other ones, I was again hoping to



RUFFED GROUSE'S NATURAL CAMOUFLAGE

put up some cockbirds or tumble a cottontail or two on opening day. At my favorite spot, I worked my way up toward the mountaintop farm where last season my dog Clancey had flushed two cock pheasants from one brushpile. The season was only 20 minutes new on this crisp November morn when Clancey, roaming a little too far out, put up what I thought was a grouse. I couldn't believe it! "Come on in, boy," I commanded, "so we won't spook these birds." Now I had a slight touch of grouse fever. Pacing off 100 steps in the direction of the bird's flight, we worked into a small swamp surrounded by low brush and near an old stone foundation. This territory sure was "grousy," but for the previous two seasons not one grouse had been flushed by my dog. Moving up the middle of this spring-fed swamp I kept a close

eye on Clancey, who was weaving in and out of the low brush and high weeds at its edge. Sniffing tight to the ground he began to wave his tail like a flag in the wind. A grouse took to the air behind me and I fired a snap shot. To my amazement and Clancey's, the bird fell dead about 20 paces away. Extracting the spent 10-brass number eight from the chamber, I worked my way through the thick red stems of the swamp dogwood toward the fallen grouse. The smell of gunpowder was heavy in the morning air and Clancey was having a tough time locating the downed bird; guess he was still a little green and a bit of a pup. Reloading the fired chamber from habit, I was close to where the grouse should have been when suddenly a grouse roared from under my feet. In shock I fired two parting shots.

Clancey ran quickly to fetch the crippled bird. Everything was so hectic it took me a few minutes to realize that all this time the first bird was still lying dead near my feet. Clancey brought back this surprise second bird and after that episode all I could manage to do was to sit down and light up my pipe. With reverence for the quiet beauty of these birds I field-dressed them and tucked them in my vest.

"A most unusual opening day!" I thought as I steamed on my pipe. Later that morning Clancey put up six more grouse but one by one they escaped into the colorful fall foliage. Lunchtime had come and gone and my legs grew weary from stepping among and over the rocks and logs. I turned down the mountain toward my car and as a parting thought decided to work a small ravine with twin hemlocks on my way out. Clancey pushed his nose through some green-and-gold ferns which stood a foot high on the forest floor. Something scurried under the ferns and my eyes searched the edge of the fern patch for a cottontail. To my surprise again this day, down was entirely the wrong direction to be looking, for in a instant another winged bomber exploded through the oaks and beeches for the safety far below. This time the second barrel, loaded with number sixes, did the trick and I went to pick up my limit bird. I thought back to the seasons long ago when as a boy I had promised myself to mount such a prime bird as this if ever I shot one. I kept this promise, for the beauty of a grouse should be more than a few fleeting moments in the woods.

Later that season I returned to these woods many times to try out my new 20 gauge pump. The ruffed wonder got smarter, and when the snow came he was rarely more than the whirl of wings in the distance. But this is the challenge of the grouse. Pleasant days afield are none the less for lack of game in the pocket. I was truly happy to have ol' ruff back home again. □

Trees Are Historic Too!

PIGNOT HICKORY 12'6 3/4" circumference

Cumberland County can boast it has the largest pignut hickory in New Jersey, located in Mauricetown. (From junction of Route 47 and Mauricetown Road, east 0.4 mile to first cross-road (gravel) northeast on this for 0.05 mile to sand road on left, north on this for 0.15 mile to tree). This venerable hickory has been known to the people of Mauricetown for generations and stands today high above the woods around it. The tree was a focal point for meetings, visits and picnics at the old Welch place. John W. Welch purchased the land from the West Jersey Society. This was part of a large tract purchased by Whitehead Brothers Company for sand and gravel. The historic tree and plot of ground was saved and given by the Whiteheads to the Township of Maurice River and appropriate dedication ceremonies were held on June 18, 1966.

BASKING RIDGE OAK 18'9" circumference

One of the most famous of New Jersey's ancient trees, this white oak stands in the Presbyterian Churchyard at Basking Ridge. The most pronounced feature of this tree is its enormous branch spread of approximately 150 feet, unequalled by any other in New Jersey. The oak has been carefully preserved and its limbs and branches are supported by a host of wire cables, iron rods and braces. Barring accident, it should survive for many years. This is the most beautiful white oak I have found in New Jersey.

Basking Ridge was settled about 1720 and before 1731 a log meeting house near the oak tree was the first structure erected for public worship. This oak was undoubtedly a veteran of nearly 150 years at that time. A frame church replaced the log house in 1749, and the present church was constructed in 1839.

The tree is associated with stirring events of the Revolution, for near it, General Charles Lee was captured by the British in 1776. It is also a tradition that the horses of a raiding party were tied to this old oak during a Tory raid in 1781. In the cemetery, under this tree, 35 men are buried who fought in the Revolution.

TENNENT OAK 13'3" circumference

There are few trees that equal this old oak in rich historic background. This thrifty old tree grows at the very door of Tennent Church, one of New Jersey's famous landmarks, and is older than the church itself.

Tennent Church, erected in 1751, was formerly known as the Presbyterian Church of Freehold. The present name was selected following the long and distinguished pastorate of the Reverend William Tennent, who is best known in history for his remarkable trance. This old oak is associated with the Battle of Monmouth, one of the most famous engagements of the Revolutionary War. The battle was fought on a hot and oppressive Sunday in June, 1778.

General Charles Lee of the Continental Army had been ordered to attack the enemy with the advance guard which he commanded. The battle had scarcely begun, when General Lee made an inglorious retreat. General Washington, who was hastening to the scene with the main body of the army, approaching the battlefield found the Continentals retreating in the greatest disorder. His timely arrival turned defeat into victory. Washington, writing to John Augustine Washington, speaking of the battle said, "Which from an unfortunate and bad beginning turned out a glorious and happy day." Lafayette in his Memoir said, "During this affair which ended so well,

although begun so ill, General Washington appeared to arrest fortune by one glance, and his presence of mind, valour, and decision of character were never displayed to greater advantage than at that moment."

It was at the Battle of Monmouth that Molly Pitcher took her husband's place at the cannon when he fell mortally wounded. She achieved everlasting fame and became the recipient of a pension for the remainder of her life.

Tennent Church lay in the midst of the battlefield and was subjected to severe cannonading. It was, doubtless, used as a field hospital during the battle.

KEELER OAK 19'8" circumference

This oak is located on Keeler farm along side road to Jacksonville, New Jersey, one mile due East of Columbus, New Jersey, on Route 543, Burlington County. Owned by the fifth generation of Keelers, this historic white oak was associated with Revolutionary history. Less than a mile from it at Petticoat Bridge on December 22, 1776, a skirmish occurred between Continental Troops and the Hessians, under the command of Count Van Donop, in which the Continentals were victorious. The following day the Hessians were successful in a counter attack. The Hessians passed under the shadow of this oak, the limbs of which now shade the old road leading to Petticoat Bridge.

The bridge reputedly received its name from the fact that women sympathizers tore it up to prevent the passage of Hessian Soldiers, when they marched between Trenton and Mount Holly.

A special plaque was made for the tree by the late James H. Birch, Sr., of Burlington, who in 1862 established a world famous carriage factory in Burlington. He spent part of his boyhood on the Keeler farm and throughout his life loved the tree and spent many hours beneath its generous shade. When he was laid to rest his grave was lined with leaves from the Keeler Oak.

APPLE

Location: Wemrock Road — Monmouth Battlefield State Park
Apple trees, apple jack and apple brandy have been entwined in the history of New Jersey since 1632 when seeds were first imported from England and planted in the Northern Colonies. Apples from the trees produced a crude cider which became a popular New England drink.

Even though the largest apple tree found in New Jersey is near the intersection of U.S. 46 and N.J. Route 3 in Passaic County, and is 9'0" in circumference, the Laird Family and the Colts Neck area of Monmouth County have been recognized as the apple growing part of Jersey since 1698. Actually, the Laird Family can proudly boast they are the oldest commercial enterprise in New Jersey handed down from one generation to another and still in business. Laird is the oldest operating distillery in the United States. In 1698, William Laird, a County Fyfe Scotchman settled in Monmouth County the production of Apple Jack for his own use, as well as his friends and neighbors. Historical records in Jersey indicate that George Washington wrote to the Laird Family sometime prior to 1760, asking for their recipe for the production of Apple Jack and that such information was supplied as requested.

The Laird Family account books indicate the commercial production and sale of Apple Jack Brandy beginning in 1780, and they have been at it ever since, except for the Prohibition years and the World War II period. Incidentally, an entry in the 1780 ledger sheets said, "one gallon cyder spirits (Apple Jack) 4 shillings, 6 pence." At today's rate of exchange that is 63¢ for a gallon of Apple Jack, or \$1.51 for a

case of fifths.

Nearby, Molly Pitcher State Park, west of Freehold, has over 900 acres of abandoned apple orchards long ago used in production for the Laird Distillery at Scobeyville.

For a toast to the Bicentennial, make it with Apple Jack or Apple Brandy this holiday season. Here's how Apple Jack Brandy is made:

Whole, tree ripened apples of selected varieties are washed, ground, and pressed into pure sweet cider. The pure sweet cider is allowed to naturally ferment in huge fermenting tanks to just exactly the right level of alcoholic content and acidity. At the end of the fermentation period, the hard cider then contains about 6% alcohol by volume or about 12% proof. The hard cider is

then double distilled in pot stills, the first distillation raising the proof to about 60 proof, and the second distillation to around 130 proof. The high proof brandy is then stored in charred Oak barrels for aging for from 4 to 8 years. After aging, the Apple Jack is then reduced in proof with pure water to whatever proof is being bottled, for example, either 80 proof or bottled in bond, 100 proof.

While steps in production sound rather simple on the surface, great care in the selection of the type and quality of apples used, the close control of the natural fermentation period, as well as the distillation process all have a great deal to do with the maintaining of quality and flavor of the end product.



GENERAL MERCER OAK 16'8" circumference

Location: Princeton Battlefield, on Mercer Street, one mile south of Princeton. Rich in historic background, this white oak commemorates a notable battle of the Revolution, for it stands in the very midst of the battlefield at Princeton. Following the victory at Trenton in 1776, General Washington conceived the plan of marching to New Brunswick to seize the large supply of British stores which he knew were held there. Leaving camp fires burning brightly to deceive the enemy, Washington started the march to Princeton in the dead of night. The army proceeded over the Sandtown Road and through what is now Clarksville to circumvent the British pickets at Lawrenceville (then Maidenhead).

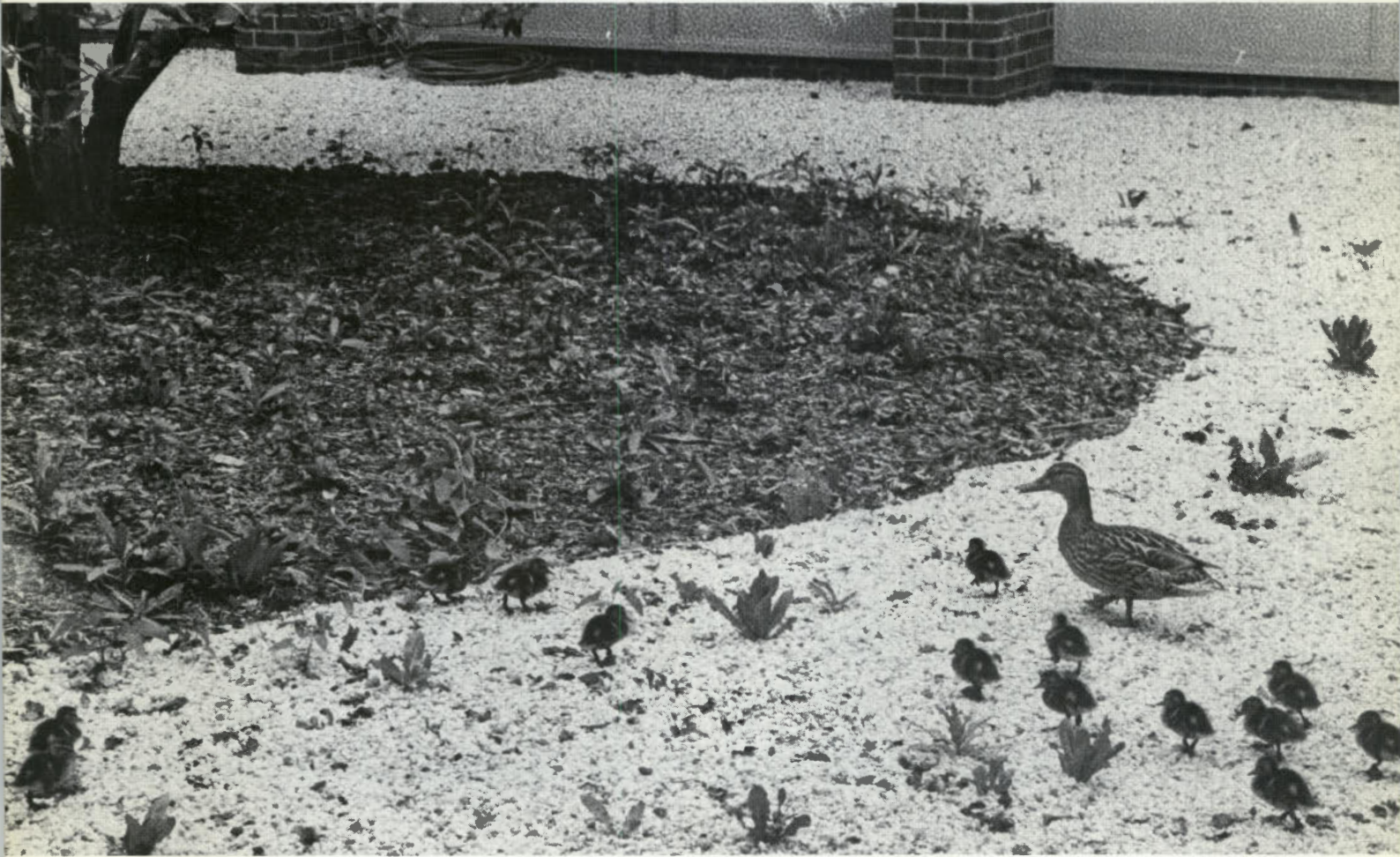
General Mercer was detailed to destroy the bridge over Stony Brook at Worth's Mill, to prevent British pursuit. While he was marching to the bridge, British Regiments, enroute from

Princeton to Trenton, discovered his presence and thinking General Mercer's detachment were soldiers fleeing from Trenton, turned to give battle. The hostile forces were about equal in number and each army had two pieces of artillery. The battle commenced and the troops were soon engaged in hand to hand fighting. Washington hastened to the scene with the main body of troops and the British, in fear of being surrounded, fled from the scene of battle. General Mercer was mortally wounded by British bayonets, and was left on the field supposedly dead. The story is related that he was carried to this old oak tree, where crude first aid was applied, and then to the house of Thomas Clarke, where he died a few days later. In this house, now owned by the State of New Jersey, the room in which General Mercer died is still carefully maintained in its original condition. □

A wild mallard duck flew into the protective grounds of Educational Testing Services at Princeton, New Jersey. The mallard made a nest and laid her eggs. On April 20, 1976 the eggs hatched and fourteen ducklings emerged.

Since it is quite unusual for such a large brood to be hatched at one time, we thought it would be of interest to our readers. Picture proof of this happening is shown below.

Courtesy of Leland McLaughlin, Jr.



FRONT COVER

Waterfowl over Brigantine National Wildlife Refuge — Photographed by Harry Grosch.

INSIDE BACK COVER

Young Great Horned Owls — Illustrated by Guy Coheleach

BACK COVER

In the Fullness of Time — Photographed by David Bast

Put Endangered Species On Your Christmas Shopping List

Are you looking for a special Christmas gift for the outdoorsman, birdwatcher, or wildlife enthusiast in your family? Consider the following a unique idea:

The limited edition wildlife print entitled "Young Great Horned Owls" by world famous artist Guy Coheleach has recently been released. Mr. Coheleach, whose lifelong interest and love of wildlife is reflected in his work, has made a special offer to help New Jersey's endangered wildlife. The profits from the sale of 100 of his "Young Great Horned Owl" prints featured on the inside back cover of this issue of *New Jersey Outdoors* will be donated to the New Jersey Division of Fish, Game and Shellfisheries' Endangered and Nongame Species Project to help finance restoration of the bald eagle, osprey and peregrine falcon in New Jersey.

The prints, certain to be collectors items, are available at \$50.00 each from Wild Things, Inc., Box 245, Mountain Lakes, New Jersey, 07046. A tax deductible donation of \$40.00 from the sale of each print will be made in the name of the buyer to the Endangered Species Project.

Purchase one or more of these prints today as special Christmas gifts for the wildlife enthusiast in your life and for the endangered wildlife of New Jersey.

J. G.



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SIZE: 20" x 26"

