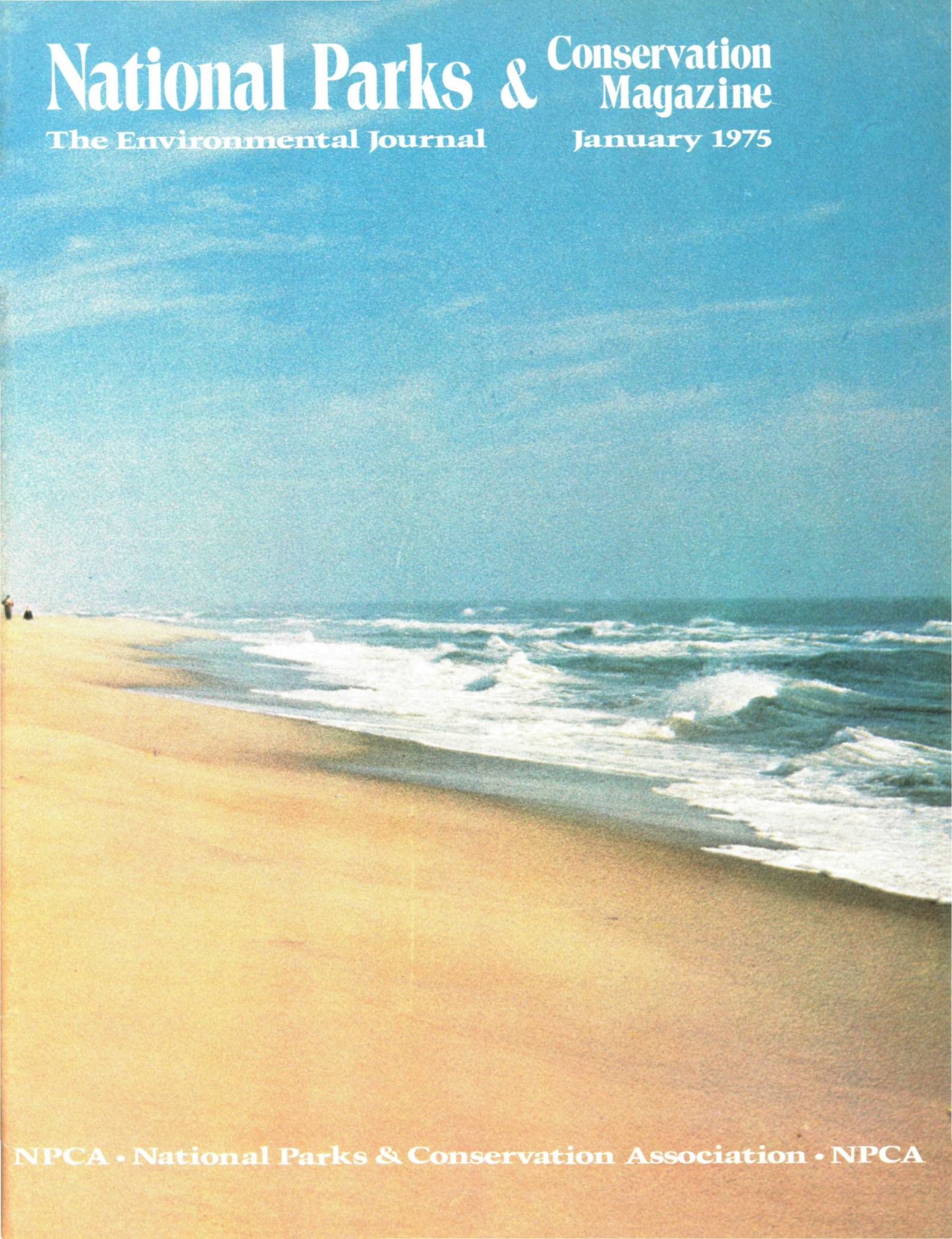
National Parks & Conservation Magazine

The Environmental Journal

January 1975



NPCA • National Parks & Conservation Association • NPCA

NPCA

YOUR NPCA enters the New Year with immense challenges ahead for the protection of the parks, forests, wildlife, and human environment of America.

The task will be made vastly more difficult because of the recession, which could mean lower income in dues and contributions from members, particularly people with fixed incomes. Expenses will be higher as inflation boosts the cost of printing the Magazine and maintaining our programs.

We also face the menace of an organized reaction against the life-protecting programs of the conservation and environmental movement. The propagandists for special interests will be saying in one costly advertisement after another that the nation cannot have a prosperous economy and a decent environment at the same time. The assertion is untrue, but it will be advanced with all the skills of highly paid experts. We must persevere in the dissemination of the truth, as the only way to combat such campaigns.

This is a call to all of our members and friends to join together in the financial support of the NPCA to make sure that we have the means to carry on with the fight.

THE NPCA has been foremost, all down the years, in the protection of the wondrous national parks of America. It has carried this banner for nearly fifty-five years. It has endorsed and supported the protective activities of the National Park Service but has not hesitated to criticize constructively where necessary.

If you doubt that the national parks are in mortal danger, please re-read our recent editorials—in November on "New Hope for the Parks," and in December on "The Public Business in the Parks." National Park Service practices with respect to concessioners and contractors must be reorganized drastically if the parks are to be saved. There will be heavy pressures to open the parks to oil wells, strip mining, logging, and power dams.

The NPCA maintains a specialized professional staff which concentrates on the parks, but we need additional financial assistance from our members and friends at this very moment if we are to maintain that staff. We are asking for your contributions now to keep our people on this job.

THE NPCA has provided strong leadership for many years on behalf of ecological forestry in America. This means forests (outside the parks and wilderness areas) which produce lumber and other products abundantly without impairment of soil, water courses, wildlife, scenery, recreational opportunities, and the woods themselves.

We shall be concentrating this year on getting selective cutting in the coast redwood forest around Redwood National Park in California, to protect the park and the forest itself. We shall be working for the restoration of the American chestnut; many of our members have sent us chestnuts for planting and long-range natural upbreeding. We maintain a professional staff for these purposes, and we need your financial help now to keep going in these grave days of recession and reaction.

CLOSELY RELATED to our park and forestry programs is our wildlife program. We maintain a professional staff for our wildlife work as a necessary part of our park protection work, and for the sake of the wildlife itself. The survival of the grizzly bear, for example, in the Yellowstone ecosystem may be dependent on what we in NPCA do about it and on what you, our friend, feel you can do in the way of financial support now.

We have been committed to the preservation of wilderness, all down the years. The protection of the National Park System, first of all, is inherently protection for wilderness. But we support wilderness protection in our national forests, wildlife refuges, public domain, and other forested country, east and west, which should be left untouched for human enjoyment. For work like this, professional specialists in parks, forestry, wildlife, and ecology must be available; and it is to you who read these pages that we must look to make the funds available.

THE NATIONAL PARKS, forests, and wildlife of America cannot be rescued without protecting the entire surrounding environment. The forests provide overflow space for the crowds and traffic; the wildlife in the parks and forests

Continued on page 35

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The Environmental Journal Vol. 49, No. 1, January 1975
NPCA · National Parks & Conservation Association · NPCA

2 NPCA

4 Assateague: Jewel of the East Coast
by Judith Colt Johnson

10 Of Moon Rockets and Mud Hens
by Gary Soucie

13 At Last—A Brighter Outlook for Endangered Plants
by Dale W. Jenkins

18 Young Thoreau's Tree
by Tom Browne

19 Fusion—Power to the People
by Joseph L. Cecchi

23 Closing the Door on the National Parks
Staff Report

25 NPCA at Work

31 News Notes

33 Reader Comment

34 Conservation Docket

COVER Assateague in the fall, by Judith Colt Johnson
The wild beach of Assateague Island in Virginia is undisturbed by the tracks and noise of vehicles. A twelve-mile area of the wildest section of the island has been proposed for inclusion in the Wilderness Preservation System. *(See page 4.)*

EDITORIAL STAFF

Eugenia Horstman Connally, *Editor*
Joan Moody, *Assistant Editor*

National Parks & Conservation Association, established in 1919 by Stephen Mather, the first Director of the National Park Service, is an independent, private, nonprofit, public service organization, educational and scientific in character. Its responsibilities relate primarily to protecting the national parks and monuments of America, in which it endeavors to cooperate with the National Park Service while functioning as a constructive critic, and to protecting and restoring the whole environment. Life memberships are $750. Annual membership dues, including subscription to National Parks & Conservation Magazine, are $150 sustaining, $75 supporting, $25 contributing, and $12 associate. Student memberships are $8. Single copies are $1.50. Contributions and bequests are needed to carry on our work. Dues in excess of $12 and contributions are deductible from federal taxable income, and gifts and bequests are deductible for federal gift and estate tax purposes. Mail membership dues, correspondence concerning subscriptions or changes of address, and postmaster notices or undeliverable copies to Association headquarters in Washington. When changing address, allow six weeks' advance notice and send address label from latest issue along with new address. Advertising rates are available on request from headquarters in Washington.

weathered american chestnut trunk
jack jeffers photograph

ASSATEAGUE
Jewel of the East Coast

Ever beset by crises, Assateague Island needs citizens' eternal vigilance to ensure its protection

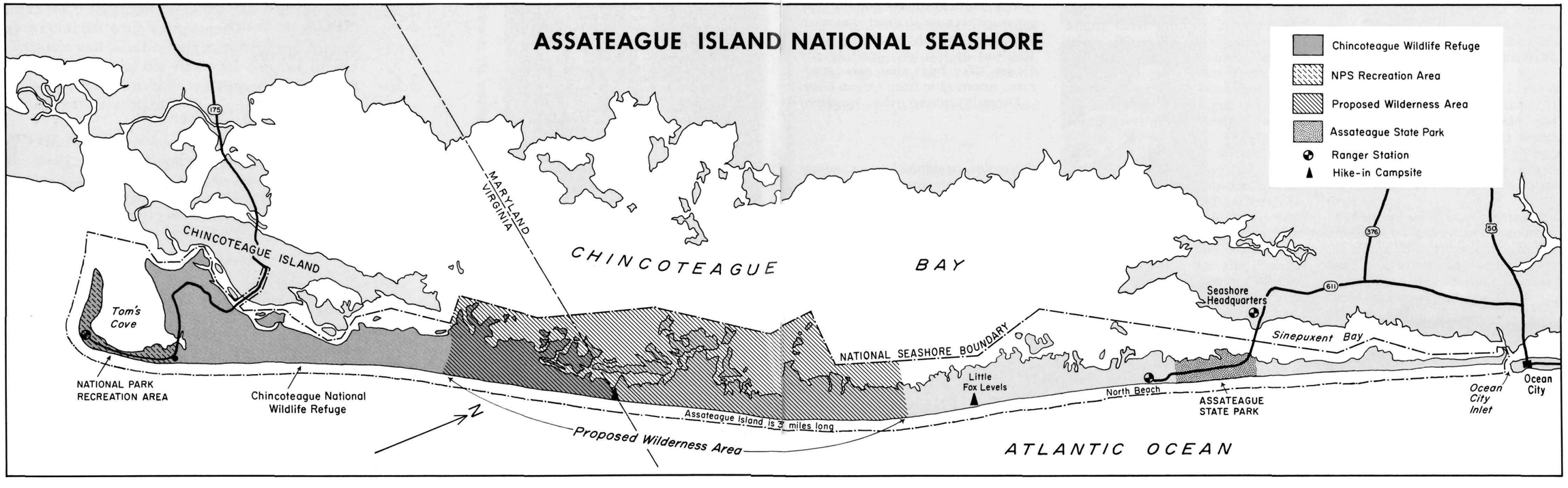
article & photographs by JUDITH COLT JOHNSON

ASSATEAGUE ISLAND is considered by an ever-increasing number of people to be the Crown Jewel of the East Coast. Lying astride the Maryland and Virginia coastlines, Assateague is a low, fragile barrier island thirty-seven miles long and varying from one-half to three and one-half miles wide. Although a few dunes rise as high as forty feet, the average altitude is a mere three to five feet above mean sea level. By act of Congress in 1965 Assateague became the sixth national seashore, and its popularity has been increasing ever since. In visitor usage, Assateague Island National Seashore is second only to Cape Cod National Seashore, with 1,704,788 visitors in 1974. Bridges at either end of the island join the mainland, but no road connects the ends of the island, which makes Assateague the only undeveloped barrier beach accessible within a few hours' drive to the 35 million people living within a 250-mile radius—about one-fifth of the nation's population.

The national seashore boundary includes not only Assateague Island but the waters within several hundred yards of the island and more than fifty other islands of varying sizes in the bordering bay—19,096 acres of land and 20,534 acres of water, totaling 39,630 acres. The area is operated under combined management because the boundary encompasses three separate administrative units. The central and northern sections of the island in Maryland are managed as a national seashore by the National Park Service, except for 688-acre Assateague State Park, which the state of Maryland administers. The Fish and Wildlife Service, U.S. Department of the Interior, manages the Chincoteague National Wildlife Refuge in Virginia except for a five-mile stretch at the southern tip of the island called Tom's Cove Hook, which the National Park Service maintains as a recreation area in conjunction with the national seashore.

ONE MUST SEE Assateague Island from the air to fully appreciate its topography. There one gains the full perspective of wide beaches and intermittent dunes behind which is a low trough zone that is frequently patterned with washover fans and sometimes with pools of water. American beach grass is the predominant growth on the dunes. There are occasional secondary dunes or small dunal mounds. Where higher ground occurs, bayberry and beach plum thrive, the latter a mass of fragrant blooms in May. Wildflowers bloom throughout the growing months, and beach goldenrod may still be in full bloom as late as the first of December.

A primitive, unspoiled charm characterizes the entire island, whether it be the relative calm of the landward marsh and bay, the



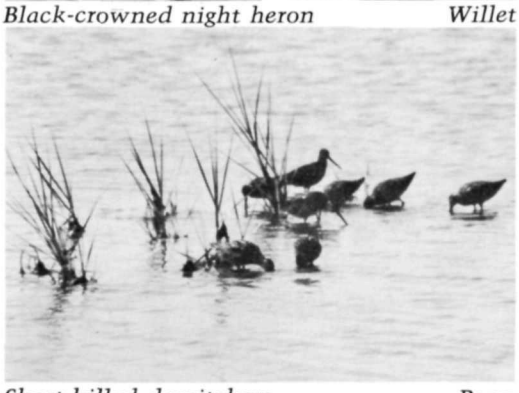
Snow geese

Great blue heron

Black-crowned night heron

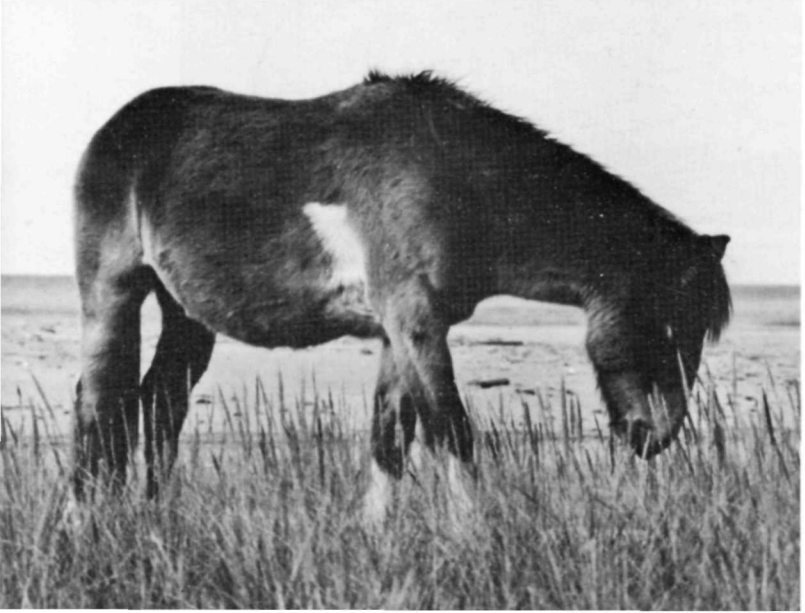
Willet

Raccoon



Short-billed dowitchers

Snowy egret



Pony

brackish ponds one discovers with surprise, the sand flats, the woods, or the restless ocean. The forces of nature are constantly changing the contour and atmosphere of the beach and dunes. Winter storms can be bleak and cold, the seas wild and grey, the wind penetrating the warmest clothing. At other times, from the dead of winter to mid-summer, the weather can be mild, with soft breezes, dabbling waves, the sea quiet and peaceful.

THE NORTH END of the island is particularly fascinating, for it is wild, with ever-changing sand dunes and washover areas, marsh grasses, pools, nesting terns and skimmers, as well as shore birds. A family of foxes even had a den in the dunes in 1973.

At one time Assateague was joined to the land mass extending from Ocean City, Maryland, to Fenwick Island, Delaware. In 1933 a storm with high winds and heavy seas came from the south, causing the water in the bays between the barrier island and the mainland to rise higher and higher. Finally, the pressure became so great that with a mighty thrust the water forced its way out of the bay, creating the Ocean City Inlet that now separates Assateague from Ocean City.

Directly across the northern

Originally established as a winter haven for snow geese, Chincoteague wildlife refuge now provides habitat for a great diversity and number of birds and other wild creatures.

bridge to the island is Assateague State Park. This park extends for two miles south and consists of protected beach, bathhouses, water, food services, a parking area, 350 campsites, and a group campground.

North Beach, the only area on the island in Maryland that has been developed by the National Park Service, adjoins the state park to the south. Here lifeguard protection for swimmers is provided as well as sanitary facilities and a campground. Two hike-in campsites are located three and fourteen miles south, but no water is available there. South of the swimming area, mobile surf fishing and four-wheel drive over-sand vehicles are permitted as far south as the Virginia line. Recognizing the damage caused by over-sand vehicles, the Park Service has imposed more stringent restrictions on use, but damage is still likely to occur.

SOUTH OF North Beach the land in Maryland is desolate and bleak, but it has a haunting beauty that is broken only by car tracks and electric poles that must remain so long as twelve previous owners maintain occupancy rights. These rights will be in effect until 1998.

Marshes, little islands, and channels of water mark the bayside except where the ground is higher and woody shrubs and loblolly pines provide contrast to salt meadows and marsh grasses. In the pine woods you may see or hear one of many varieties of warblers or an owl. If you look down instead of up in spring, you may even find a carpet of pink lady's slippers.

Pounding surf and the plaintive cry of a bird may be the only sounds you hear on the beach on the central part of the island. Terns and skimmers nest at the northern and southern tips but are seen all over the island. As they dart past, it is a challenge to determine which species has swept by—least, Forster's, common, roseate, black, gull-billed, royal, Caspian; all can be seen on Assateague at one time or another. As you walk along the marshes on the bayside, a sudden glimpse of wings that disappear almost as quickly as they come to view may be that unexpected rarity—a parasitic jaeger.

Merlin are listed as rare, but many people have seen them in the fall, and, if you are lucky, you might even glimpse a peregrine falcon. This threatened species is not often seen in the spring, but on its autumn migration from the Arctic en route to South and Central America, Assateague is an important resting and feeding stop.

TO FULLY ENJOY shore birds, one must tramp the wild beach from the parking area at the island's southern end in Virginia north through Chincoteague National Wildlife Refuge. Here is true wilderness beach undisturbed by vehicles; absent are tire tracks scarring the pale sand. Whimbrels—with their long curved beaks—colorful ruddy turnstones, knots, dunlin, sanderlings, and various sandpipers abound. The wild beach in Virginia contrasts sharply to that in Maryland, where the number of vehicles and deep ruts from tires discourage both birds and hikers.

Management of land for the Chincoteague National Wildlife Refuge and the building of freshwater impoundments for waterfowl have altered much of the natural terrain at the Virginia end of Assateague, but in such a way as to soften it and give it great appeal because of the fascinating variety of waterfowl that flock to the various pools. Here lies the highest ground on Assateague, and probably the oldest portion of the island. Here are extensive pine and oak forests as well as salt meadows. Freshwater ponds and salt marshes provide abundant food for waterfowl. During migration periods in autumn and early spring the Chincoteague refuge is a paradise both for waterfowl and for those who love birdlife. The refuge was first developed in 1943 to provide a wintering ground for the then dwindling numbers of greater snow geese, which have made a remarkable comeback, with some 16,000 or more now wintering there each year.

The refuge's bird list records approximately 260 species, but the list for the entire island would include more than 300 species. As many as eighteen rare or threatened breeding birds of Maryland depend on Assateague and the little islands in the bay for their nesting habitat.

Several of the island's many varieties of plants find their northern limits at the Virginia end, whereas others reach their southern range in the Maryland portion of the island. Sundews and mosses are among the island's unusual flora.

Thirteen species of reptiles and amphibians have been recorded, including the threatened loggerhead and other sea turtles. Some years ago, Boy Scouts released some Japanese Sika deer (miniature elk) on the island, and now the herd contains four hundred head. Whitetailed deer also live on the island, as well as fox, raccoon, rabbit, muskrat, otter, the endangered Delmarva fox squirrel—which has been introduced—and the famed Chincoteague ponies. About 40 ponies are in the Maryland herd, and 150 roam the wildlife refuge in Virginia.

Professional watermen as well as visitors enjoy clamming in Tom's Cove (below left), and the Atlantic Ocean off Assateague Island provides good surf fishing for bluefish (below).

The National Park Service operates a five-mile-long day-use recreation area at the southern tip of Assateague Island. This area offers a snack bar, bathhouse, beaches protected by lifeguards, surf fishing, and a campground for youth groups. During the summer both the Park Service and the wildlife refuge offer interpretive nature walks and lectures, and the wildlife refuge offers also an open bus ride into the refuge and a boat ride into the bay.

Clamming in the shallow bay waters is enjoyed by visitors and by commercial watermen, who also harvest oysters, crabs, and scallops. Black drum, whiting, bluefish, rockfish, and channel bass are among the favorites caught by surf fishermen; white flounder, perch, rockfish, and weakfish are caught in the bay.

AS PEACEFUL as Assateague seems, it has often been beset by crises. Storms and high tides destroyed the plans of developers in Maryland, but local politicians seem never to cease dreaming of gathering rich tax revenues from development. Due to their pressure, when the original Assateague Island National Seashore Act was passed by Congress in 1965, two clauses were included calling for development of overnight accommodations at North Beach and at the recreation area in the wildlife refuge, and a public road down the length of the island connecting the bridge at the Maryland end with the Chincoteague-Assateague Bridge in Virginia. The Master Plan called for two 100-room motels, parking for 14,000 cars, fishing piers, innumerable bathhouses, carryout food stores, campgrounds, and other development on the island. Citizen groups and conservation organizations have been working for years to have this law amended, and finally park management specialists have realized the folly of intensive development on barrier islands.

Nowadays we know more about the nature of barrier islands than we did in 1965. After thirty years of attempting to stabilize the Outer Banks at Cape Hatteras National Seashore, the National Park Service has adopted a philosophy of adapting to nature that precludes construction of facilities and roadways that parallel the shoreline. Studies by Paul Godfrey and Robert Dolan have shown that barrier islands are transient, constantly shifting and changing, that man cannot ultimately resist the relentless forces of nature, that natural changes are essential to the geologic and ecologic health of our coastal systems, and that construction of roads and facilities on such islands accelerates certain changes that imperil these structures themselves. (See Robert Dolan and Bruce Hayden, *National Parks & Conservation Magazine,* June 1974.) Like Cape Hatteras, Assateague is constantly shifting its shape; the sea cuts away the land in one place and builds it up elsewhere. The northern end of the island has migrated westward, consuming marshland and bay islands in its course. The hook at the southernmost tip of the island has formed only within the past 125 years. Various inlets across the island have filled in, and others have been cut through from time to time. The impracticality of building a road down the length of such an island is now widely recognized.

An outcry by conservationists in 1972 convinced the U.S. Army Corps of Engineers that it would ruin Assateague's pristine quality if its proposed coastal engineering research pier and laboratory were built on the island. The Corps abandoned this location and chose another site in North Carolina that already had intrusions of development.

Now the Army Corps of Engineers wants to build a new and bigger intracoastal waterway between the barrier islands and the mainland to shorten the north-south route for pleasure boats by circumventing Chesapeake Bay and the Chesapeake and Delaware Canal. This intracoastal waterway would run from Cape Charles, Virginia, to Delaware Bay and could have devastating effects on aquatic vegetation, shell and fin fish, and waterfowl habitat. In addition to this threat, the possibility of drilling for oil on the mid-Atlantic outer continental shelf brings the potential threat of pipelines, oil refineries, and barge traffic on the intracoastal waterway between the mainland and the barrier islands. In fact, Chincoteague Bay has even been mentioned in a report by the Council on Environmental Quality as a possible site for a refinery.

CONSERVATIONISTS have long urged that plans for the road down the length of Assateague and for overnight accommodations and other facilities on the island be abandoned. Maryland and Virginia congressional leaders have introduced bills that would delete the clauses in the original act that called for such development.

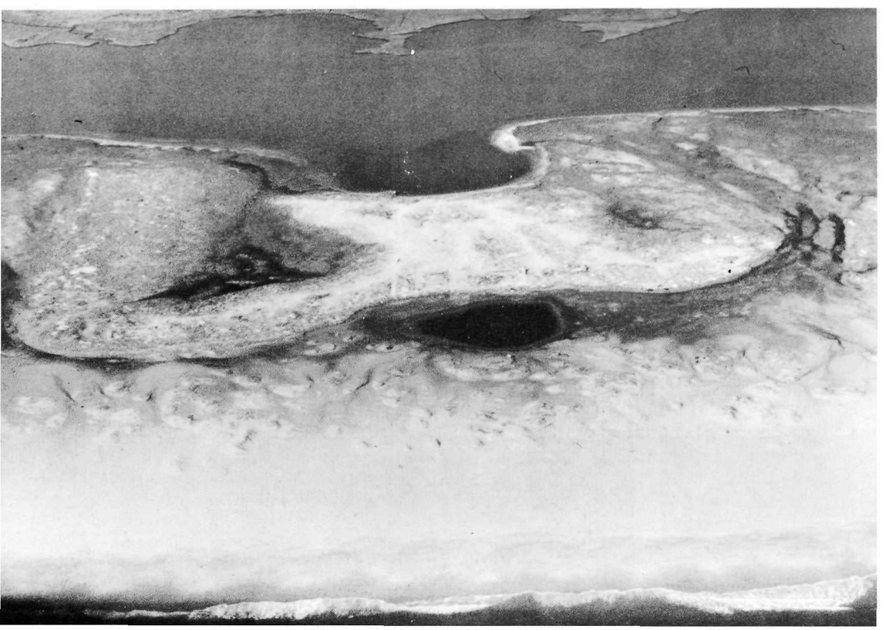
In addition, a twelve-mile area in the center of the island has been proposed for inclusion in the Wilderness Preservation System. Scientists value Assateague as a laboratory for research into the barrier island system; the various types of life in the marsh and bay; migratory birds; and the geology, plants, and animals of the island and their interaction. This area is being considered for wilderness designation because it encompasses different types of land, from overwash areas and marsh to shrub thickets and pine forest. This area would include the lower seven miles in Maryland and the northern five miles in Virginia, excluding the Old Fields Impoundment. To be meaningful, the wilderness area should cover the island from ocean to bay in order to preserve the entire ecosystem.

Inasmuch as Chincoteague and Sinepuxent bays together are one of the most productive nursery grounds for fish along the east coast, there are moves to have the ocean and bays off Assateague Island declared a marine sanctuary under the Marine Research Protection and Sanctuaries Act of 1972, and an estuarine sanctuary under the Coastal Zone Management Act of 1972. These measures would provide added protection against the proposals that threaten the area.

The mobile fishermen have organized to thwart the wilderness proposal. They want no more protective regulations, and they even oppose marine sanctuary designation for the waters surrounding Assateague. They feel they should be given preference above all other users; that nothing should deprive them from driving the beach for the southern fifteen miles in Maryland; and that they should have a right of way behind the dunes. This would leave no place for people in the North Beach area to enjoy a peaceful walk along the ocean where they can escape from cars and car tracks. Fishing is one of the great sports to be enjoyed on Assateague, but ORV vehicles should not be given preferential treatment over other users.

IN AN AGE when more and more people in urban areas feel an urgent need to get away from crowds, cars, noise, and bad air, Assateague Island National Seashore offers asylum. At the same time it provides refuge to myriad forms of wildlife and productive breeding grounds for the world's oceans. Yet the rich heritage of Assateague cannot be taken for granted. It is clear that constant vigilance must be the watchword to ensure that Assateague in all its natural glory will be here for our children's children and future generations. ■

Judy Johnson, Chairman of the Committee to Preserve Assateague, is one of Maryland's leading conservationists and winner of several conservation awards, including one of the 1974 American Motors Conservation Awards for her crusade to protect Assateague Island.



The northern end of Assateague Island is being eroded away on the ocean side and silted in on the bay side, so that it is "migrating" westward. In the course of this migration tiny islands that once stood in mid-bay have become enveloped (far left), and evidences of bayside marshland and remnants of old bayside docks can be found along the ocean at low tide. Washover fans (center and below) occur all along the island, and several times a year at very high tides the entire width of the island is awash at a couple of places. Studies have shown that ecological health of barrier islands depends on these natural changes and that building permanent structures on them is foolish.

Of Moon Rockets and Mud Hens

A major wildlife area in Florida coexists with NASA's space program

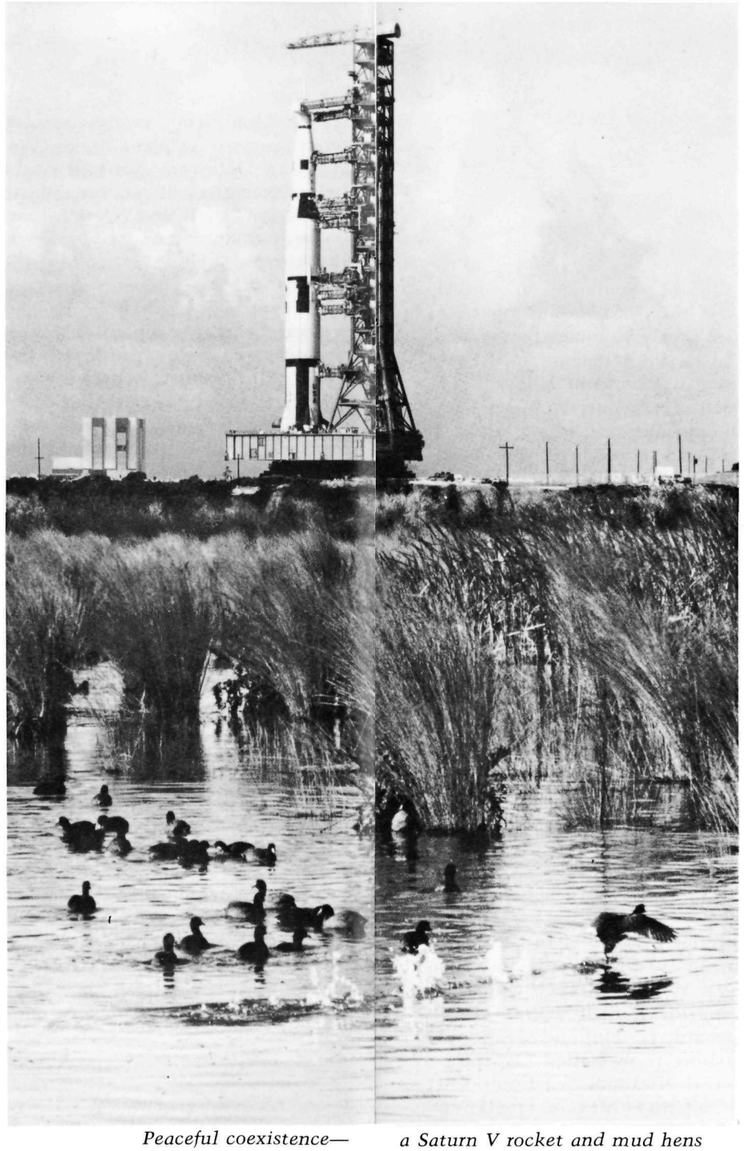
by GARY SOUCIE

EVEN IN A LAND as noted for its natural, social, and political improbabilities as Florida, Merritt Island National Wildlife Refuge stands out. Imagine a refuge where the wildlife shares its habitat with rocket launch pads, a four-mile-long runway for the space shuttle orbiter, and the world's largest building—the Vehicle Assembly Building, where Saturn V moon rockets are assembled. The refuge shares common boundaries and 140,393 acres on the north end of Merritt Island with the National Aeronautics and Space Administration's Kennedy Space Center.

Lest you think the national wildlife refuge is just a token public relations ploy by NASA, be advised that Merritt Island is the major waterfowl wintering area in Florida, that the Audubon Christmas Bird Count consistently ranks the island at or near the top for national wildlife refuges, and that the refuge is the nesting or breeding habitat for a number of rare and endangered species, among them the southern bald eagle, dusky seaside sparrow, brown pelican, Florida round-tailed muskrat, American alligator, green turtle, and the Florida manatee.

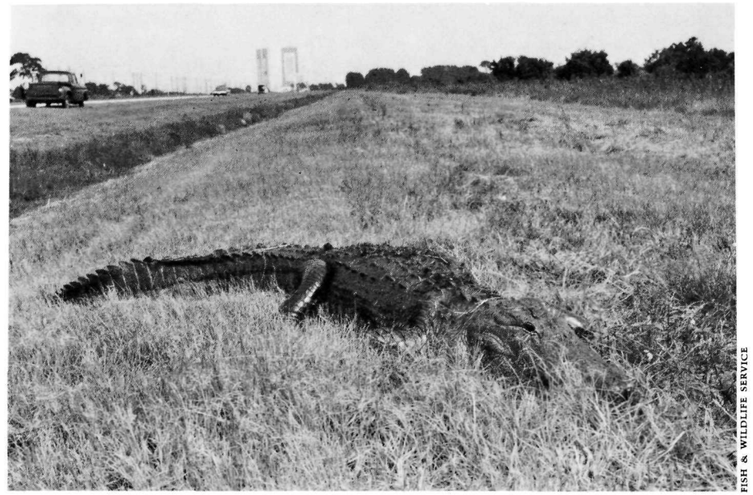
At the behest of the Bureau of Sport Fisheries and Wildlife (recently renamed Fish and Wildlife Service), the Merritt Island refuge was originally established in 1963 on 25,300 acres of the space center. Nine years later NASA initiated action to include the entire space facility within the refuge. Apparently troubles in other Florida wildlife habitat—namely alligator poaching and planned jetport development in the Everglades—convinced Dr. Kurt H. Debus, the space center's director and a dedicated preservationist, to turn over the remaining space center land to the refuge.

MERRITT ISLAND's wildlife apparently gets along just fine with the space program. In the ponds around launch pads 39A and 39B, where the Apollo moonshots and Skylab launches took place, tens of thousands of ducks and wading birds and pelicans congregate, apparently quite used to the bustle of work crews and heavy machinery. During an actual launch, of course, the birds are alarmed into flight, but as soon as the rocket has cleared the area, they quickly settle down again.



FISH & WILDLIFE SERVICE

Peaceful coexistence—a Saturn V rocket and mud hens



FISH & WILDLIFE SERVICE

American alligators, an endangered native reptile, make Merritt Island home.

Under NASA grants, researchers from Florida Technological University (FTU) and the Florida Institute of Technology are studying the Merritt Island ecosystem and are preparing a study entitled "Ecological Effects and Environmental Fate of Solid Fuel Rocket Exhaust" for the space shuttle program.

FTU biologists, in their first year of study, cataloged 537 species of plants in 313 genera; thirty plant communities in six major classes of plant associations ranging from mangrove marshes to scrub flatwoods; thirty-one species of fish; nine species of frogs; three species of toads; twenty species of snakes, including the eastern diamondback rattler, cottonmouth water moccasin, and the black racer; six species of lizards; eleven species of turtles; and two thousand individual alligators. Merritt Island is one of only four major rookeries of the declining loggerhead turtle in North America, the others being Cape Romain, South Carolina; Jekyll Island, Georgia; and Hutchinson's Island, Florida.

A mammal catalog will take longer but will include at least white-tailed deer, feral hogs, armadillos, bobcats, otters, raccoons, spotted skunks, the rare round-tailed muskrat, and many small rodents.

Prior to these studies, the Fish and Wildlife Service and the Indian River Audubon Society had identified 251 species of birds that regularly use the refuge (a third of which nest there, including twenty pairs of eagles and two thousand royal terns), and another thirty-one species that are classed as accidental visitors.

During the winter of 1973 Merritt Island refuge was visited by some 100,000 ducks of two dozen species and about 125,000 coots (also called mudhens). Especially notable among the winter residents are large numbers of warblers and other passerines, including a small but stable nesting population of dusky seaside sparrows, and an extraordinary population of Louisiana herons.

THE RELATIONSHIP between NASA and the wildlife agency is unique in American conservation; the strange partners seem to get along as well as the wildlife and the rockets. Refuge manager Robert G. Yoder says, "Working relations between the refuge and NASA are excellent, considering the two parties: one of them with the primary purpose of launching rockets and the other with a major objective of wildlife conservation. It is a unique relationship and one which we feel is mutually beneficial." Space center director Dr. Debus says, "The harmonious relations we enjoy with the Bureau of Sport Fisheries and Wildlife have worked to our mutual advantage. The Bureau's effective administration of areas not required for launch operations assures us that the great natural assets of the center will be preserved for the benefit of the public."

Administration of Merritt Island is not quite an equal partnership, however. NASA maintains primary jurisdiction, although land management outside the areas specifically devoted to rocket assembly and launching and other space program operations has been dele-

gated to the Fish and Wildlife Service. The NASA–Interior agreement under which the refuge exists is essentially a special-use permit by NASA "on a basis of noninterference with the space program." The agreement reserves to NASA "the right to site any future space program facility at any location on the permitted area . . . , to make any use of said land which may be necessary in connection with the space program of the United States . . . ," and the right to terminate the permit "in the event NASA determines that termination of the permit is necessary in the interest of the national space program, the national defense, or the public welfare." The major space program incursion into the refuge since the signing of the agreement on June 2, 1972, has been the siting of the space shuttle runway, construction of which was begun last March and the northern end of which is just behind refuge headquarters. This situation is hardly ideal for a wildlife refuge; but until the space center came along, Merritt Island was privately owned and partially under development, and it is doubtful the refuge could have been established without NASA. The space agency's property investment on Merritt Island is around $72 million, a bit steep for the refuge program budget.

About a third of the refuge/space center is fenced off as a security area and closed to general public use. The reason, according to Gordon L. Harris, the space center's chief of public affairs, is "to protect the public from the rockets and the rockets from the public." During launch operations and any other time a rocket is on the pad, somewhat more of the refuge is closed to the public, so that no one can get within three miles of a rocket; at liftoff the explosive potential of a staged Saturn V rocket is equivalent to that of one million pounds of TNT, or about fifty times that of the Hiroshima A-bomb.

Still, despite these drawbacks, Merritt Island National Wildlife Refuge provides good habitat for many diverse creatures. NASA and the space program seem to be among the least of the refuge's problems. The major ecosystem changes on the island occurred before NASA's arrival—road-building, mosquito control, some residential development, and the dredging of the Intercoastal Waterway. Brevard County wanted to site a waste incineration plant just outside the refuge/space center boundary on the extreme southwestern end of the complex and dump the ash on federal land. NASA said no—not because of any interference with the space program but because of the proposed incinerator's proximity to bald eagle and peregrine falcon nests. As a legacy of the pre-refuge days when the Corps of Engineers was NASA's land-managing agency, the wildlife agency has inherited lease-back permits on three thousand acres of commercial orange groves and twenty-six commercial bee-keeping special-use permits.

PUBLICITY RELEASES from NASA and the aerospace industry, in defending the space program against public attack and congressional budget-cutting, are fond of citing such space program spin-offs as teflon-coated frying pans; but Merritt Island National Wildlife Refuge may turn out, over the long run, to be one of the most impressive accomplishments of man's ventures into outer space. Unless, of course, an expanded space program gobbles up the whole refuge. However, that does not seem very likely with Dr. Debus in charge of the Kennedy Space Center and with conservation on the rise in a Congress grown somewhat disenchanted with the space program. ■

Gary Soucie, formerly a professional conservationist with the Sierra Club and Friends of the Earth, is now a free-lance writer and field editor for *Audubon Magazine* as well as a director of the Environmental Policy Center and vice-chairman of the League of Conservation Voters. Mr. Soucie was intrigued by the coexistence of rockets and wildlife while on a trip to Florida.

More on Merritt Island Refuge. During 1974 Merritt Island National Wildlife Refuge was proposed for inclusion in a new Spessard L. Holland National Seashore (now called Cape Canaveral National Seashore). On invitation, NPCA testified against the proposal because the plans called for parking areas and a road down the barrier island—developments proved to be unwise on other barrier islands (see page 9). NPCA urged that the refuge be preserved primarily as wildlife habitat, not developed for human recreation. (See NPCA Magazine, September 1974.) It now seems likely that the proposal for this new seashore will be modified and made more compatible with preservation of the fragile wildlife habitats.

ROBERT THORNE

Because of exploitation by collectors, cacti are one of the most seriously endangered groups of plants, with 30 percent of our native species of cacti endangered or threatened. The beautiful Little Beavertail Cactus (Opuntia basalaris brachyclada) *illustrated here bears bright magenta blossoms in spring and is found only in California. A pricklypear cactus, it is listed as threatened.*

At Last—

A BRIGHTER OUTLOOK FOR ENDANGERED PLANTS

Ten percent of our native higher plants have become endangered, threatened, or recently "extinct." Proposed lists of these plants are being presented to Congress with major recommendations for habitat preservation.

by DALE W. JENKINS

IF YOU WERE SHOWN three beautiful flowering plants of a rare species and told that they are the last existing specimens in the world, what would you do?

Would you say, "That's too bad!"; transplant them to your garden to save them; fence the plants to protect them; or help to have the habitat preserved and, if necessary, studied by specialists to determine the best ways to increase their population?

In fact, the last choice is the only effective way to save endangered plants. Merely fencing plants, of course, would not adequately protect them; the entire ecosystem must be preserved. And transplanting rare plants to a garden to "save" them almost certainly dooms them because of the high frequency of unsuccessful transplants. Breaking any roots of some species causes fungal or other infection and ultimately death. Many rare plants are highly specialized in their requirements, which are often unknown. Even when such transplanting is initially successful, the future of the plants is still uncertain in terms of their reproduction. Gardens are not permanent, and plant collections are often lost with the death of the owner. Even in the best botanic

gardens rare species are exposed to related species, with which they often hybridize. Among other problems of botanic gardens is the loss of records over long periods. Therefore, artificial cultivation, like captive breeding of endangered animals, is a last resort, to be considered only when an unavoidable threat endangers the species. Even then the ultimate goal should be to reestablish the species in its original or a similar habitat.

CAUSES OF RARITY. I am often asked, Why are some species of plants rare and others abundant? The answer to this question is that many factors determine rarity or abundance.

Species of plants have developed, spread, retreated, or changed in distribution in response to long and slow geological and climatic changes during millions of years. Upthrust of mountains, submergence and flooding of land, formation of islands, glaciation, severe droughts, and fire are some of the natural factors affecting plants. During periods of climatic change some species were isolated in small areas, and the remaining small populations inbred and lost genetic variability. They developed narrow specializations that resulted in their rarity and sometimes their extinction.

However, natural factors affecting plants have now been overwhelmed by the effects of human activities. Man has drastically changed the surface of the earth as a result of his enormously increased population and industrialization untempered by an adequate conservation ethic. He has destroyed plant habitats as well as plants and plant parts themselves. Plant habitats are continuously eliminated by strip mining; timber harvesting; flooding; irrigation; overgrazing; stream channelization; drainage of bogs, swamps, and marshes; destructive fires; and prevention of natural fires. Plans for more dams, power plants, and strip mining; shale oil recovery; increased irrigation and agriculture; development of more cities, roads, factories, and dumps; as well as the pollution that will result when these activities are carried out—all these developments threaten to destroy or modify even more natural plant habitats.

Commercial and private collectors have been chiefly responsible for threatening or eliminating certain groups of plants. Commercial collectors take cacti by the truckload, preying especially on the most rare and beautiful species. Some species are so rare that they are known from only a few specimens at the place they were first discovered. A collector could make such a species extinct in a few minutes! One commercial dealer proudly advertises one threatened species as collected from the wild, "a new offering that is very *rare,* for $6 per plant!" One can buy large mature collected plants of other threatened species for as much as $300 each. Similarly, collecting is seriously depleting some tropical orchids in the Everglades and other areas and some insectivorous species of plants such as pitcher plants.

Man indirectly destroys or changes populations of plants as a result of the use of fertilizers, herbicides, and other biocides that pollute air, water, and soil; destruction of such pollinators as insects, birds, and bats; and introduction of plant diseases and insects and other animal pests.

Man has accidentally or purposefully introduced more than 1,800 species of foreign vascular plants into the continental United States and more than 3,000 species in Hawaii, some of which have become naturalized or cultivated. Many of these species are the aggressive weed pests such as thistle, dandelion, and water hyacinth that choke our agricultural crop fields, damage our lawns and pastures, or overgrow our lakes and waterways. Foreign species, when freed of the

DERRAL HERBST

As a result of habitat destruction by cattle and goats, a spectacular scarlet hibiscus (Hibiscus kahilii forbes) *is one of nearly nine hundred Hawaiian species listed in Smithsonian's report to Congress as endangered or extinct. Hawaii has the unfortunate distinction of having more endangered species of plants than any other region of the United States, with 50 percent of her native higher plant life appearing on the proposed national lists. In fact, F. Raymond Fosberg and Derral Herbst, authorities on Hawaiian flora, consider as much as 80 percent of Hawaii's 2,200 kinds of higher plants to be rare and threatened. More than 3,000 species of exotic plants have been introduced into Hawaii; lush lowlands have been extensively converted to agricultural land, industry, military bases, housing, and other developed use; and much of her highlands have been converted to pastureland for domestic animals.*

native diseases and pests that held them in balance in their native country, often win out in competition with our native species and contribute to the increased rarity of native plants.

THE ENDANGERED PLANT PROJECT. How many of the native flowering plants in the United States actually are endangered or threatened? How many have become extinct recently? Where are they located? How many are protected in our parks and other areas? How can we help save them?

Answering most of these questions would have been impossible a mere six months ago. But now, as a result of the first coordinated national effort to study endangered plants, the answers are becoming known.

The Endangered Species Act of 1973, enacted on December 28, 1973, authorized and directed the Smithsonian Institution to review species of plants that are now or may become endangered or threatened and methods of conserving them, and to report to Congress within a year the results of such a review, including recommendations for new legislation or the amendment of existing legislation. The Smithsonian has completed a year-long study, and the report is being sent to Congress. This report represents the first phase of the study; the proposed lists cover endangered and threatened native vascular plants (that is, flowering plants, pines and their relatives, and ferns). The second phase of the study will be to identify endangered nonvascular plants such as algae, fungi, lichens, mosses, and liverworts and to locate habitats of both vascular and nonvascular plants that should be preserved.

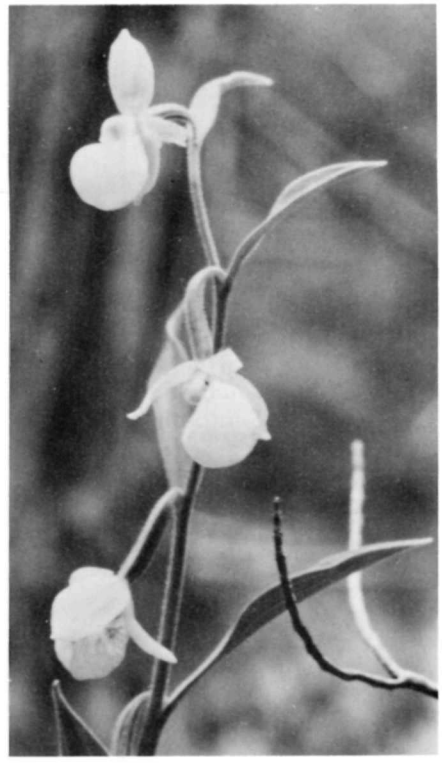
To prepare this report, the Smithsonian's Department of Botany organized the Endangered Plant Project. All the available publications on plant life of regions, states, and localities of the United States were reviewed, and data on species with very limited distribution or rare status were compiled. The latest available scientific monographs and revisions on classifications of plants were reviewed, herbarium collections were checked, and specialists were consulted to determine synonomy and changes in taxonomic status (scientific classification). The resulting national lists were compared with local state lists of rare and endangered plants that about thirty states had prepared separately. The data thus compiled were put into a computer and printed out in lists by endangerment status and by state. These preliminary lists were then presented for comment and recommendations to selected biologists from the scientific community at a workshop convened in August 1974. [National Parks & Conserva-


ROBERT THORNE

The Sweet Pitcher Plant (Sarracenia rubra) *grows in bogs in Alabama, Mississippi, Florida, Georgia, South Carolina, and North Carolina. Favored by collectors, it is now threatened.*


ROBERT THORNE

The endangered California Rose Mallow (Hibiscus californicus) *has snow white petals and a wine-red center. It grows only in California on moist banks and in freshwater marshes.*

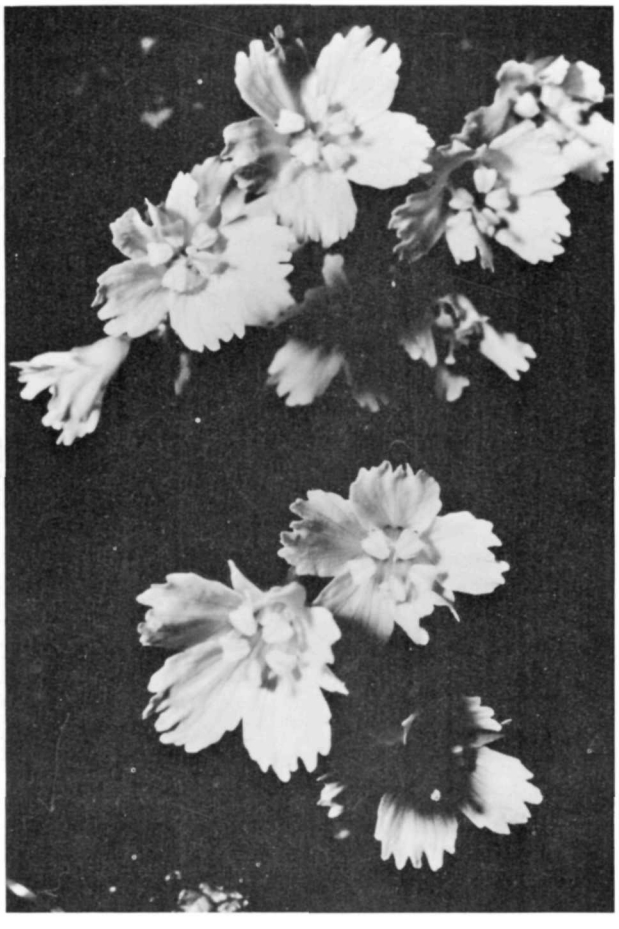

ROBERT THORNE

The delicate California Lady's Slipper (Cypripedium californicum), *an orchid, has a white lip and dull yellow sepals. It is found in California and Oregon, where it is threatened.*

PETER MAZZEO

Franklinia alatamaha *(above) is extinct in its natural habitat. First discovered in 1790 on the Alatamaha River in Georgia, it was last observed growing in the wild there in 1803. Fortunately, however, this lovely shrub is being grown in cultivation from specimens brought back by the naturalist who discovered it. Franklinia is the only extinct species of plant that the U.S. Post Office has commemorated on a postage stamp. Because Franklinia is the first species known to have become extinct in this country in man's recently recorded history, it is being proposed as the symbol of endangered plants.*

The story of Shortia or Oconee-Bells (Shortia galacifolia) *(right) has a slightly happier outcome than the story of the lost Franklinia. Once thought to be extinct, small populations of Shortia were later discovered. It is now known to grow in rich woods in Georgia, South Carolina, North Carolina, and Virginia; but it is listed as endangered and rare on Smithsonian's proposed list of endangered species of plants. The white to pink flowers are bell-shaped, to one inch long. Oconee-Bells needs intensive protection of its natural habitat if it is not to follow Franklinia to extinction.*



U.S. FOREST SERVICE

tion Association was represented at this meeting.] After further consultations with specialists, the revised lists comprise the proposed lists being presented to Congress.

THE SMITHSONIAN REPORT. Plants listed in this report are categorized in several ways:

Endangered: A species of plant in danger of extinction throughout all or a significant portion of its range is considered "endangered."

Threatened: A species of plant that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range is considered "threatened." This category includes species categorized as rare, very rare, or depleted.

Recently Extinct or Possibly Extinct: This category includes species no longer known to exist after repeated search of localities where they once existed or could be expected to exist. Some species are "extinct" in the wild but preserved in cultivation, such as the beautiful lost Franklinia, a shrub last observed in the wild in 1803.

When we were considering plants for inclusion on the proposed list in one of these categories, we had to ask ourselves some critical questions. One question is whether the species or subspecies is valid taxonomically; that is, could it have been incorrectly classified, or could it be a hybrid or simply a variation of a common plant? Another question is whether the plant is truly "extinct"; for example, does it really occur somewhere in small numbers or could it not have been observed or collected in a long time because it is inconspicuous, blooms only rarely or at unusual times, germinates infrequently, or has long periods of dormancy? Or does it occur in such an inaccessible habitat that it would remain unobserved? Some of these questions are difficult or impossible to answer for some of the species considered for these lists; therefore changes in status are expected for some of the entries as new information becomes available.

WHAT IS LISTED. The proposed lists of endangered, threatened, and recently extinct plants include only higher plants native to the United States, including Alaska and Hawaii.

Species and well-recognized subspecies and varieties are included; but forms, races, and hybrids are not. In some genera such as hawthorns and blackberries hybridization between species has produced many forms that have been classified in various ways and frequently named as species by some botanists; but because of taxonomic disagreement in such genera, these doubtful species were not included.

Some species on local state lists of endangered plants were not included on the national lists because they are abundant elsewhere in the country. For example, the Pink Lady's Slipper, *Cypripedium acaulis,* is on the New York state list of endangered plants but was not included on the national list because it occurs in large numbers in other states, particularly in the Appalachian Mountain area.

If a species rare in this country occurs outside the United States, it was not included on the proposed lists unless it is also rare elsewhere. For example, many species of orchids that are very rare in the United States occur commonly in the West Indies or other tropical areas, so they are not listed as endangered. Inasmuch as most species of orchids are rather widely distributed, only six kinds are on the proposed U.S. endangered list and fourteen on the threatened list, with none listed as "extinct." However, orchids are subjected to severe pressure by collectors and by habitat destruction, so unless they receive better protection, we can expect to see more species of orchids appearing on the endangered list.

The proposed lists exclude most species with ranges outside this country because data on their entire ranges and status elsewhere were not generally available.

The report lists about 10 percent of the flora in the continental United States, including Alaska, or about 2,000 species, subspecies, and varieties. Of this number nearly 100 kinds are recently "extinct" or possibly "extinct," about 750 are endangered, and more than 1,200 are threatened.

The cacti are one of the most endangered groups of plants. Seventy-two species, subspecies, and varieties of native species of cacti out of a total of almost 228 kinds—or about 30 percent—are listed as endangered or threatened, and four are probably "extinct."

The plant life of the Hawaiian Islands is one of the most vulnerable in the world. Of the 2,200 kinds of vascular plants in Hawaii, about 80 percent are considered rare and threatened in a paper being published by F. Raymond Fosberg and Derral Herbst, respected authorities on Hawaiian flora. The Smithsonian report includes about 50 percent of the Hawaiian flora as endangered or recently "extinct."

THE SMITHSONIAN'S MAJOR recommendation is that the only way to protect endangered plants is to preserve their habitats.

In the future the exact ranges of each endangered and threatened species will be mapped. Sites of aggregations of endangered species and centers of endemic plants (restricted to small localities) will be located. This information will help in developing recommendations for specific reserves that should be established for habitat protection. Many of these endangered species no doubt already occur in national and state parks, monuments, forests, wildlife and game refuges, and other public lands.

Measures in addition to those that will be covered by the Endangered Species Act could also be provided:

Ecological research should establish the causes for rarity of critical species, trends, reproduction success, and methods of assisting in increasing their populations. Proper ecological research would help to increase the chances of success in collecting and planting seeds and cuttings and careful transplanting to similar habitats if such measures should become necessary for any reason.

Commercial suppliers of cacti and other rare wild species perhaps could be encouraged to grow plants from seed. This practice could supply the market for such plants but remove pressure from wild populations. Such a program would be analogous to supplying zoos with endangered species of animals from captive bred stock rather than from the wild.

A COORDINATED national program to preserve endangered species of plants is long overdue. The beauty or interest of many species of plants is recognized and appreciated, as evidenced by the preservation of spectacular species in places such as Sequoia National Park, Saguaro National Monument, and Organ Pipe Cactus National Monument. The usefulness of plants, moreover, is considerable, and extinction of any species of plant or animal is an irretrievable loss of unique genetic material that can never be duplicated—which narrows our future options. Finally, plants should be protected because of their importance in maintaining healthy and diverse natural ecosystems—and because of the intrinsic value of all life. ■

Formerly the Director of the Ecology Program, Smithsonian Institution, Dr. Dale W. Jenkins has worked on national lists of rare, endangered, and extinct plants for three years and during 1974, as consultant, directed the Endangered Plant Project at the Smithsonian Department of Botany. In addition, Dr. Jenkins is Chairman, North American Regional Group, Threatened Plants Committee of the International Union for the Conservation of Nature and Natural Resources (IUCN).

Smithsonian's detailed recommendations, protective provisions of the Endangered Species Act pertaining to plants, and what you can do to help save endangered species of plants will be discussed in a forthcoming issue.—Editor.

Young Thoreau's Tree

by TOM BROWNE

EARLY of a Saturday, when the morning was fresh and sweet, the neighbor boy I call Young Thoreau trudged up the road to my place and inquired, "Have you any wire?"

Now, I knew if Thoreau needed wire, it was for a good reason. I leaned on my hoe, for I had been busy gardening. "Yes, I have."

Frugal of words, he always got to the pith. "I would like to have some."

"There's a roll of it in the shed; help yourself."

He shot me a grateful glance from his dark Indian eyes. He uncoiled many feet from the roll, fastened it neatly with a bit of string, slung it across his shoulder, and headed toward Still Creek, a slow stream that meanders through the bottomlands.

Of course, I was curious about the wire and, as I continued my gardening chores, wondered to what use he would put it. I had to content myself, however, in the knowledge that he would tell me in due time, if he chose to.

For several days I had been hearing the harsh whining of power saws from the bottomlands. I was beginning to doubt, with more than usual annoyance, that there was a single spot in the world left inviolate to man. As it turned out, there was a connection between this disturbing noise and the wire.

Young Thoreau loved a simple tree—but a splendid, thickly foliaged tree that grew on the lush brink of Still Creek. In its shady branches he whiled away many hours conversing with the birds that momentarily shared it with him. Beneath, the creek flowed deep and smooth, rippled only by the jumping of fish; dragonflies droned on the quiet air; and animals—all Young Thoreau's friends—passed under his lookout: foxes with their reddish blushes of coat and immense brushes of tail, muskrats breasting the placid water, and long, dark mink sliding silently through the tangles.

Several days later I took a day off from my gardening to wander the bottomlands, where I came across Young Thoreau perched in his tree. Its trunk, I perceived, was girdled with tightly-woven wire—an effective sheath against the ravaging teeth of any saw.

With the agility of a squirrel, Young Thoreau scrambled down to greet me, face beaming. As we seated ourselves beside the creek in soft wild redolent grass, neither spoke, fearing to break the magic spell of the woods or to still the happy twittering of birds among thickly leafed branches.

But the silence was not for long, for men had come to depredate again, and the whine of their saws smote our ears. Young Thoreau looked at me in anguish. "See!" he cried. "They are coming soon to cut down my tree."

"Who are coming?"

"The tree-cutters. The wood is to make furniture."

"How do you know that?"

"I asked, and that is what they said."

"How are they getting the logs out?"

"By big, long trucks. They snake them out by 'cat, breaking all the brush."

"You know about 'cats?"

He nodded lugubriously. "Those kind I don't like."

His chin jutted, and hardness showed in his eyes. "I will fight them," he said defiantly.

"All by yourself?"

"I can do it! I will find a way."

"Perhaps it will be better if I were to assist?"

He grasped my hand joyously. And as we solemnly shook on it, I was acutely aware of the softness of his boyish clasp, the frailness of his physique, yet he had bravely set himself a task of monumental proportions.

We tarried long beside the gently flowing stream, each with his own thoughts, savoring the fresh fragrance of the woods but growing more apprehensive of the whining saws, the crashing of trees, and the dissection of their limbs. Finally we departed, but not before I examined Young Thoreau's handiwork in girding his precious tree. It had been executed masterfully, the wire woven tight and strong with meticulous care, then stapled fast. He was studying me the while with dark, impassive gaze.

"Excellent! Superb!" I said. "That will stave them off—for the time being, at least." He smiled broadly, happy at my opinion of his work.

I had already formulated a plan of action. So next day I set out for the county seat and consummated an excellent deal of purchasing one good, sound, wire-girt tree standing beside Still Creek, its branches reaching out over the limpid water.

It was worth many times the amount I had paid just to observe Young Thoreau watching stealthily from his hideout in the thick branches as the cutters approached his beloved tree, examined it, felt the strength of its wire with their rough hands, shrugged, and, picking up their saws, marched away.

The wounded undergrowth of the bottomlands is fast healing. But the beautiful, choicest trees are gone. Not forever, happily, for nature has her own mysterious way of regeneration. But the finest of all the trees—Young Thoreau's—is still standing in all its magnificence. Only yesterday he asked me if I thought it safe to remove the wire from its trunk, as it might be "hurting" the tree.

I assured him it was perfectly safe to do so, and I think, to me, it was the most satisfying advice I ever gave anyone in all my life. And the most acceptable. ■

FUSION—
POWER TO THE PEOPLE

With international cooperation,
a clean and inexpensive source of power
may be available before the end of this century

by JOSEPH L. CECCHI

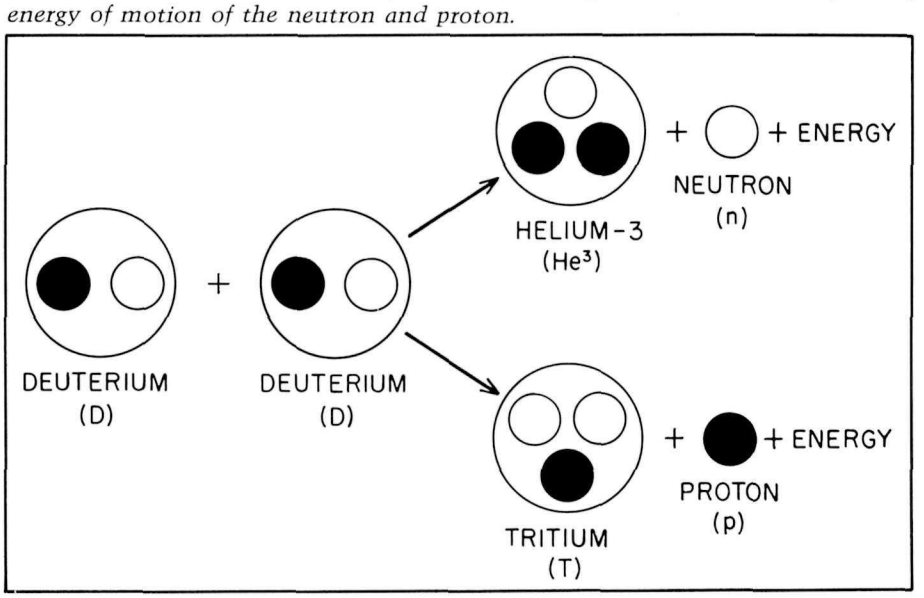
DESPITE OCCASIONAL cries of alarm from various quarters, the energy crisis of early 1974 has conveniently faded into the background of more popular crises. It is difficult to imagine that much has changed (aside from the prices of gasoline and heating oil) to bring about the apparent easing of the crisis, and many of us have concluded that the shortages were imagined or at best contrived. These recent events have produced a certain amount of complacency with regard to the availability of fossil fuels. This is unfortunate, because there is a real crisis, and it is going to get much worse in the next twenty or thirty years. The inescapable fact is that we are rapidly exhausting nature's supply of the fossil fuels from which we obtain most of our energy.

Many alternatives to fossil fuel have been proposed. Each seems blessed with its particular advantages but beset with its particular problems. Because the impending crisis is serious, it would be most desirable to have at least a few viable alternative methods for providing the world's energy; and there are, fortunately, a number of promising possibilities. Geothermal power, for instance, is limited in location and total power output but could serve certain localities very well. Solar power, which is attractive because it is pollution free and in large supply, will be an extremely attractive source of energy if it can be utilized economically and stored in some appropriate way. Nuclear fission, which is already providing more power than other alternatives to fossil fuels, has proven an economically viable energy source. If the problems of reactor safety and disposal of radioactive wastes can be solved, this method, especially the "fast-breeder" design, is capable of providing a large output of electric power for many hundreds of years. Another nuclear process, quite different from nuclear fission, is nuclear fusion. Although it is still perhaps twenty years in the development stage, it is capable of supplying energy for more than a million years. It is not plagued with the problem of radioactive waste disposal that nuclear fission is, and it seems economically feasible.

THE PROCESS of nuclear fusion involves the combining or "fusing" of the nuclei of certain light elements, usually the isotopes of hydrogen. One typical reaction is shown in Figure 1. Two nuclei of deuterium (D), the isotope of hydrogen that contains one proton and one neutron, can fuse in two ways. The first possibility results in the formation of a neutron and helium-3 (He^3), an isotope of the more common helium-4 (He^4). The second possibility of such a D-D fusion reaction is the formation of a proton and tritium (T), another isotope of hydrogen (containing one proton and two neutrons).

The tritium and He^3 formed in these reactions will also fuse with deuterium in the reactions:

Figure 1. *Fusion reactions for deuterium-deuterium fusion. The open circles represent neutrons, and the dark circles represent protons. There are two possible results for deuterium-deuterium fusion: The energy comes out in the form of energy of motion of the neutron and proton.*



$D + T \rightarrow He^4 + n + ENERGY$

$D + He^3 \rightarrow He^4 + p + ENERGY$

In all these cases large amounts of energy are released in the form of kinetic energy (the energy of motion) of the products of the reactions. The neutrons, which possess much of the energy released, would be absorbed in a blanket of lithium, fluorine, and berylium. They would react with the lithium, releasing heat that would be used to make steam to drive a conventional steam turbine generator to produce electricity. In addition, the neutron–lithium reactions produce tritium, which can be used in the deuterium–tritium fusion reaction. The amount produced can be made to exceed the amount consumed in the fusion reactions. This feature is especially important because it means that the reactor is capable of "breeding" one of its own fuels.

The question naturally arises as to the hazards and environmental impact associated with a fusion power plant. Under normal operation there would be no public hazard; that is, no danger to persons outside the reactor site. Though substantial quantities of energetic neutrons are emitted by the reactor, 99 percent of them are absorbed in the lithium and converted to heat, and the remaining 1 percent are absorbed in iron-filled concrete shielding surrounding the reactor. The neutrons will cause some of the components of the reactor structure itself to become radioactive. These pieces, which would include the stainless steel used to fabricate the main chamber of the reactor, would have to be disposed of carefully. However, it is estimated that after a thirty-year period of operation all such material could be buried on the reactor site in a concrete vault ten meters by ten meters by two meters. Thus it is not necessary to transport the material off the site, and the total amount involved is extremely small.

Because the only radioactive element involved in the fusion reactions is tritium and it is itself a fuel, there is no problem associated with radioactive wastes produced from the fusion reactions themselves. This situation is in sharp distinction to the case of a fission reactor, and the two approaches should not be confused on this point.

The only serious environmental problem posed by the normal operation of a fusion power plant is the thermal pollution from the excess reactor heat that will be released into the atmosphere (rather than into a lake or ocean). It represents an important consideration in determining the location of a fusion power station. Because the radioactive hazards are substantially less than those of fission reactors, however, it may be possible to locate the fusion plant so that much of the excess heat could be used for industrial purposes instead of being released to the atmosphere. This very important question of thermal pollution will continue to receive close attention.

In the event of an accident it is possible that tritium would be released to the air in gaseous form. For the most severe case, the maximum radioactive dosage at the edge of the reactor site (two hundred meters from the the reactor) is only one-tenth of the maximum allowable dosage prescribed by the current reactor safety regulations. Of course, it should be remembered that the probability of such an accident is extremely low due to the redundant safety features that will be incorporated in the power plant.

The deuterium for a fusion reactor can be economically extracted from sea water. For every 6,500 atoms of hydrogen in sea water there is one deuterium atom. Although this may sound like a modest amount, the deuterium in one gallon of sea water can provide the energy of 300 gallons of gasoline. Furthermore, there is enough deuterium in sea water to supply the world's energy needs for well over a million years. Because deuterium is an isotope of hydrogen and therefore has an identical chemical behavior to hydrogen, and because only an infinitesimal fraction of the total amount of deuterium would be used in any conceivable length of time (say 1,000 years), extraction of deuterium is not a serious environmental consideration. Tritium, which is also used as a fuel, is bred in the lithium blanket as described, so only a small initial amount is necessary.

After considering some of the advantages of fusion power, the question arises as to how do we convince two deuterium nuclei (or deuterium and tritium nuclei, etc.) to fuse. Well, if two such nuclei are brought within a million millionth (0.000000000001) of a centimeter of each other, strong attractive nuclear forces would be felt by the particles and they would subsequently fuse. The problem is that both nuclei are positively charged and therefore repel each other electrically, making it difficult to bring them into the necessary proximity. In order to overcome this electrical repulsion, the nuclei must be moving very fast, which means that they must be heated to a high temperature. The required fusion temperature for the deuterium–tritium reaction (the lowest temperature for any of the reactions mentioned) is about 100,000,000°C. At this temperature, the electrons, which at normal temperatures are attached to the various nuclei, will be torn from their nuclei, leaving a hot mixture of electrons, deuterium nuclei, and tritium nuclei. Such a combination of charged particles is called a plasma.

In addition to the deuterium and tritium being heated to such high temperatures, the plasma must be contained at a high enough density for a sufficiently long time that useful energy may be obtained. The necessary density and confining time are related—one can maintain high densities for short times or lower densities for longer times. But what kind of material can one use to contain a 100,000,000°C plasma, inasmuch as all matter melts at a fraction of this temperature? We have one example of fusion reactions occurring in nature not too far from home: The sun obtains its energy from fusion reactions in its core. The sun is able to contain its plasma with its gravitational field. Unfortunately,

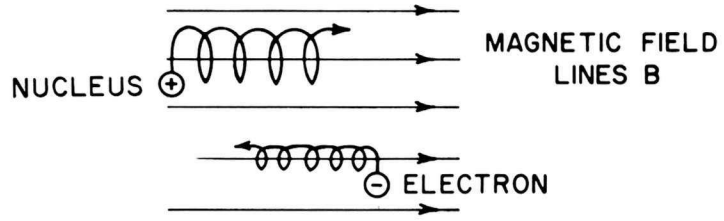


FIGURE 2

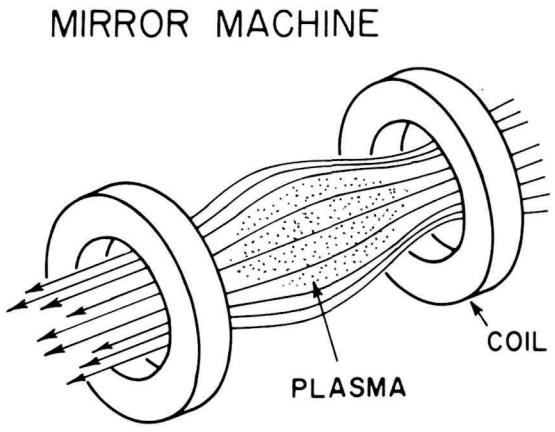


FIGURE 3

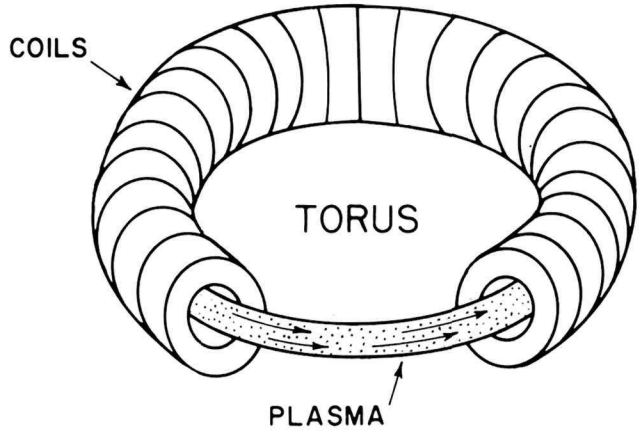


FIGURE 4

Figure 2 *illustrates the motion of electrically charged particles of a plasma in the presence of a magnetic field. Both the nuclei and electrons spiral around the magnetic field lines. There are several possibilities for containing the particles along the field to achieve confinement. The mirror machine* (Figure 3) *is a magnetic "bottle" that tends to reflect particles going toward its ends by using more magnetic fields. The Torus* (Figure 4) *is a magnetic bottle that eliminates the ends of field lines by bending the lines into circles. The most common device of this kind is the Tokamak.*

gravitational force is weak and works only for a very large body like the sun. We must look elsewhere for the solution.

One possibility is to use magnetic fields to form a "magnetic bottle." In the presence of a magnetic field, the charged particles in a plasma can spiral along field lines but are inhibited from moving across them. This is shown schematically in Figure 2. It would seem that the problem is two-thirds solved—we need contain the particles only along the field to achieve confinement. One approach, shown in Figure 3, is to put stronger magnetic fields near the ends of field lines that would reflect the particles like a mirror. Such a "magnetic mirror" still has a tendency to let particles "leak" out the ends, however.

A more promising approach is to eliminate the ends by making the field lines into circles as shown in Figure 4. The resulting doughnut-shaped structure is called a torus and can take on a variety of forms, the most successful of which is the Tokamak, pioneered by the late Soviet academician L. A. Artsimovich. This type of device is currently being investigated in many laboratories in Europe, the Soviet Union, and the United States. The Tokamak is aimed at containing modest density plasmas (100,000,000,000,000 particles in each cubic centimeter) for approximately one second at 100,000,000°C.

Present-day devices such as the ST Tokamak at Princeton University, although achieving close to the required density, have reached only 10 percent of the necessary temperatures and 5 percent of the required confinement time. The major difficulties lie in small leaks of the particles through the magnetic container. These leaks are of such a nature that improvement can be realized by building a larger device. One such larger device is presently being constructed at Princeton with another to follow at the Kurchatov Institute in the Soviet Union. These new devices are expected to make substantial advances in temperature and confining times.

Another quite different approach to heating and containing a fusion plasma uses a powerful laser to heat up a small solid pellet of deuterium. Because the deuterium starts out as a solid and is therefore about one billion times more dense than the plasmas in a Tokamak, the mixture need be confined for only a billionth of a second. In such a short time, the particles could not move an appreciable distance due to their inertia. Therefore, confinement is no problem. Get-

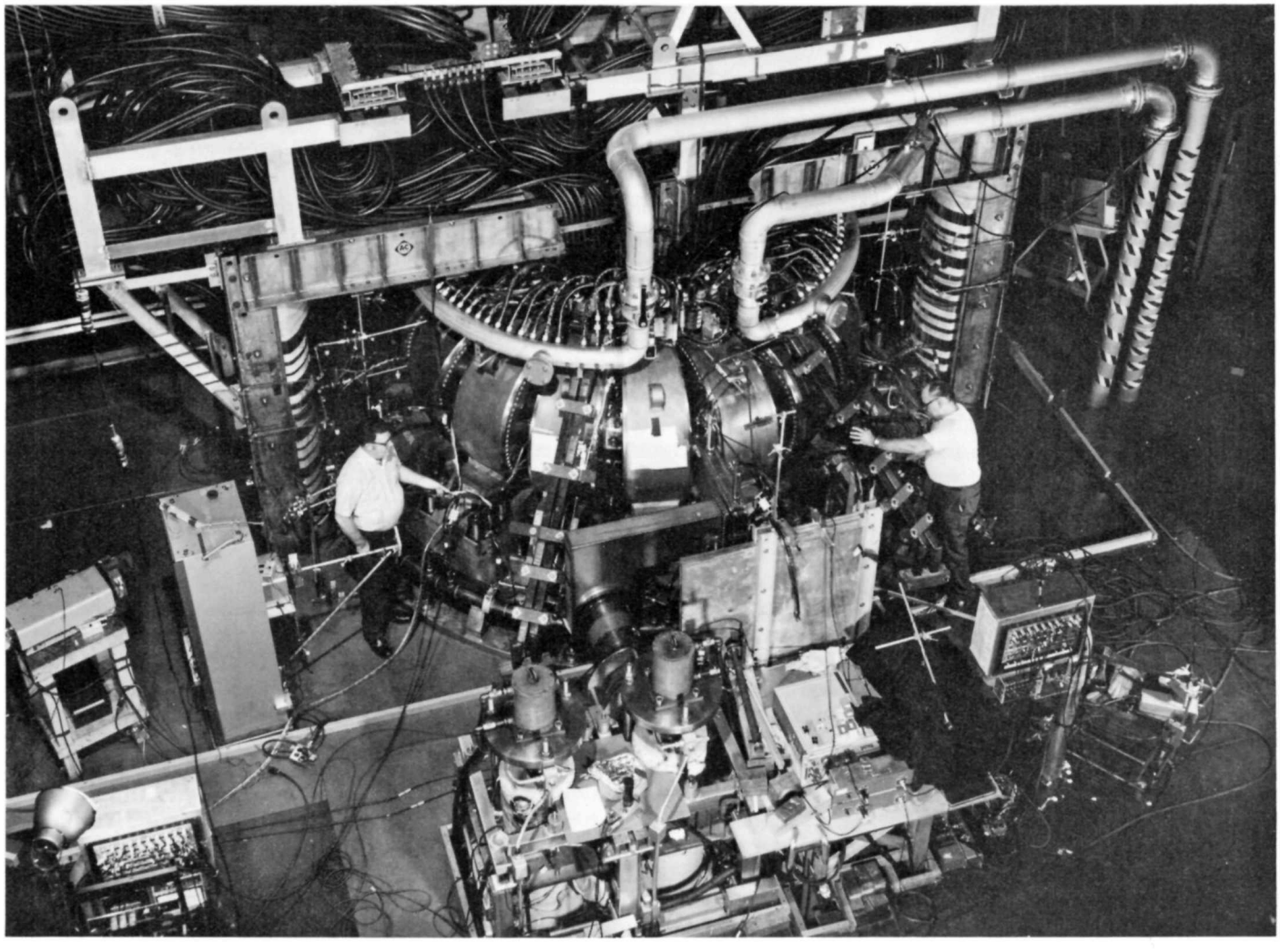
ting a sufficiently powerful laser is a problem, however, but one that is also being pursued by various laboratories in the United States, Russia, and Europe.

The fusion research in the United States is funded almost totally by the Atomic Energy Commission. The major centers investigating the Tokamak approach are Princeton University and Oak Ridge National Laboratory. In addition, smaller scale efforts are being made at Massachusetts Institute of Technology, the University of Texas, the University of Wisconsin, and Gulf Atomic Laboratories. Laser fusion is being studied at Los Alamos Scientific Laboratory, Lawrence Livermore Laboratory, and KMS Fusion, Inc. The extent of the Soviet effort is roughly the same as that of the United States effort, whereas somewhat smaller programs exist in Britain, France, Germany, Italy, Australia, and elsewhere. Cooperation among the various countries is extremely good. Scientific exchanges—including both personnel and ideas—are very frequent and most beneficial.

ALTHOUGH MUCH WORK lies ahead for both approaches to fusion, there is good reason for optimism. With the knowledge gained from the new generation of Tokamaks now under construction, it should be possible to build a device that reaches the necessary parameters and actually produces more energy than it consumes by 1980. Of course, several more years would then be necessary to build actual power-producing reactors, but it is not unreasonable to estimate that electricity generated by fusion reactions could be a reality by 1990. The time scale for laser fusion is somewhat more inscrutable, but is probably similar to that of the Tokamak approach. In any case, the remaining problems will be vigorously attacked in an atmosphere of unprecedented international cooperation. The result should be an economically and environmentally viable source of energy to replace the quickly diminishing fossil fuel for the conceivable future. ■

Dr. Joseph L. Cecchi works as a physicist conducting research on Tokamaks at the Plasma Physics Laboratory at Princeton University, New Jersey.

The ST Tokamak (below) at Princeton University was the first Tokamak in the United States.



Closing the Door on the National Parks

a staff report

THE National Park System has mushroomed since the creation of Yellowstone in 1872. The System now encompasses 300 units totaling more than 30 million acres of our nation's most cherished wilderness, archaeological, and historical resources. A model for park planners around the world, our national parks demonstrate the outstanding public benefits of a land use classification system based purely on preservation and recreation. Yet, the leadership of the National Park Service (NPS) is becoming devoted to a policy against further growth of the Park System at a time when proposals for new areas are popular and necessary because development pressures on our remaining open spaces are increasing dramatically.

When bills establishing Big Cypress (Florida) and Big Thicket (Texas) as natural area units of the National Park System were recently signed into law, it was the new President's first major act on behalf of the public interest in national parks. If current policies in his administration prevail, however, these may be our last new preserves for many years.

Characteristic of Interior's new foot-dragging tendency is their treatment of the proposed Cuyahoga Valley National Historical Park and Recreation Area (*National Parks & Conservation Magazine* [NPCM], May 1974). Plans for this park were developed by Representative John Seiberling of Ohio and gained immediate popularity not only in Ohio but in neighboring Indiana, Michigan, and Pennsylvania. Balking at the proposal, the Interior Department sent James Watt, Director of the Bureau of Outdoor Recreation, to the congressional hearings to urge turning the Cuyahoga Valley over to state and local planners—a poor alternative to creating a needed federal recreation project in our crowded Midwest.

The administration's negative posture has been similar on other proposals: the Santa Monica Mountain and Seashore Park proposal in Southern California (NPCM, September 1972), additions to Indiana Dunes National Lakeshore in Indiana (NPCM, November 1973), and even the Big Thicket in Texas (NPCM, January 1974). Each time their arguments are the same—the need for decentralization of government; complex management and acquisition problems; emphasis on state, local, and private efforts; and the scarcity of federal dollars. Indeed, the entire thrust of policy seems to have emanated directly from the Office of Management and Budget (OMB), the executive arm that controls budget requests yet is completely incapable of evaluating various needs for public recreation and wilderness preservation.

We do not know exactly when the decision was made to enforce a no-growth policy for the National Park System. A May 3, 1973, memorandum was circulated to the Park Service from higher-ups requesting establishment of a deadline year for "rounding out the National Park System." A similar recommendation may have been issued in previous years as well.

In any case, by July 1974 the process of "rounding out" the System began to manifest itself in subtle ways. The NPS produced a draft revision of "Criteria for Parklands," the agency's own conceptual yardstick for measuring new-area proposals.

The proposed criteria were hopelessly inadequate and in need of language to revive the original NPS mandate for conservation. NPCA offered comments on the draft, pointing out that "preservation of natural resources is the fundamental role—the specific mandate of the Service—and this concept should be advanced with eloquence and pride at every opportunity." The criteria were revised again and strengthened, but although this new draft was much less a transparent conversion of OMB policy into NPS management terms, the basic weakness was still there—decentralization of the federal role, and reliance on state and local efforts to answer the national need for recreation.

Striking again at the issue of new-area proposals in general and urban park concepts in particular, the Service addressed the October 1974 meeting of the Secretary's Advisory Board on National Parks, Historic Sites, Buildings, and Monuments, an independent citizens' group advising Secretary of the Interior Rogers Morton. Presenting a negative and one-sided view of the Cuyahoga Valley proposal, Park Service officials precipitated a discussion among members of the board. Then, when the decision was reached to issue a memorandum to Secretary Morton, the board members were surprised to learn that a draft memo had already been prepared by Park Service staff fully endorsing the NPS position against Cuyahoga. Ultimately, the board approved the memo.

By serving as watchdog at the Advisory Board meetings, NPCA learned two important lessons. For one thing, Park Service leaders are not above manipulating the citizens' advisory board to amplify existing government policies. In addition, as Dr. Richard Curry, NPS Associate Director for Legislation, stated at the meeting, the Service intends to support its own programs more actively in the future

through "lobby efforts on Capitol Hill."

The distressing signs of a new policy trend are rapidly emerging: the alleged need for "rounding out" the National Park System, the weakened "Criteria for Parklands," and finally, the stated intention to lobby the Congress. Indeed, the Service has taken all too seriously the spirit of this recent comment attributed to a high-ranking Interior Department official: "It's time to close the door on the National Park System."

Clearly, certain directions offer far more promise for the future of the National Park System than the present administration goals.

First, the National Park Service, as protector of our natural heritage, needs to continually seek new areas in need of protection. The Service functions, in part, as an essential counterbalance to forces of development that would otherwise degrade our environment even more rapidly than now.

Current proposals for creating new national parks and monuments in Alaska were generated by the Department of the Interior in compliance with the Alaska Native Claims Settlement Act of 1971. These proposals represent substantial growth for the Park System. However, the fate of these proposals is far from certain at this time, and their existence does not abrogate NPS responsibilities for acquisitions in the rest of the nation.

Second, urban or metropolitan region proposals, such as the Cuyahoga and Santa Monica recreation areas represent exactly the kind of thinking that should be growing within the NPS. As former Interior Secretary Stewart Udall has pointed out, the park acquisitions of the 1960s "helped, but their gains were more than offset by simultaneous population increases and greater mobility of the population."

The next Secretary, Walter Hickel, declared in 1969 that "it is in the urban areas that almost 80 percent of the new recreation capacity needs are located." Hickel estimated it would require "in excess of $25 billion above existing expenditure levels to give urban dwellers the same amount of nearby recreation opportunity by 1975 that was available on the average nationwide in 1965."

Despite these statements, despite the outstanding successes of Gateway and Golden Gate national recreation areas near New York City and San Francisco respectively, and despite the Nixon administration's stated goal to "Bring Parks to the People," the NPS has backed off when faced with policy directives from OMB —directives constructed without the benefit of professional expertise and involvement with national parks. It is time that the facts were revealed and the Service placed back on its former track.

Third, recognizing automobile traffic as detrimental to park quality, the NPS needs to concern itself with the problem of access to all areas of the System. The great wilderness parks must be served by rail and bus transportation—the cheapest and most energy-efficient mode of transportation available—if national parks are going to continue to be enjoyed by people from distant metropolitan areas. The new urban regional parks will also need vastly improved mass transit access systems to prevent traffic congestion and allow urban residents equal access to recreation, regardless of automobile ownership.

Finally, the Park Service is certainly not violating the public trust by "lobbying" for their own programs. However, their choice of priorities is open to serious question. If they must lobby, why have they chosen to work *against* certain new-area proposals, complaining about the problems involved, instead of *for* greater appropriation levels to meet the nation's growing recreation needs? If appropriations for parks were clearly inflationary, the NPS would not have to waste time trying to discourage new proposals with arguments based on management problems. But because they cannot show that parks really are inflationary, they should proceed with a strong program.

Our National Park Service is badly in need of a rededication to its mandate. The history of the Service is steeped in battles over proposals for national parks, but the battles have taken an ironic new twist. The early leaders—Stephen Mather, Horace Albright, and many others—fought hard to bring a new concept, the national park idea, to a nation on the brink of the industrial age. Now, we have instead a recalcitrant agency, repressed by OMB and courted by corporations on one side, while on the other side citizen conservationists perform the advocate role formerly held by the bureaucrats.

It is time to restore the conservation ethic in the National Park Service. Otherwise, the good work of past generations will be wasted and the recreation needs of future generations will not be properly met on a national scale.

We need a new spirit of leadership in the Park Service, a commitment to preservation, and a sensitivity to the growing trends for low-energy travel and metropolitan recreational needs. Our parks are too precious to be entrusted to those who accept a political "closing door" as their new mandate. Instead, the National Park System deserves strong leaders dedicated to the principles under which the parks were established, and devoted to keeping that System in the best possible position to serve the public interest.

YOU CAN HELP restore the National Park Service to its former strength. Write the Service, urging them to support proposals for the Cuyahoga Valley National Historical Park and Recreation Area, Santa Monica Mountain and Seashore Park, and additions to Indiana Dunes National Lakeshore. Also, urge them to stay involved in new area proposals such as Tallgrass Prairie. Write to:

The Honorable
Rogers C. B. Morton
Secretary of the Interior
Department of the Interior
Washington, D.C. 20240

NPCA at work

Provisions to allow hunting contained in proposals for new units of the National Park System threaten to compromise the good conservation principles behind the establishment of some areas. (As proposals move forward for additions to the National Park System, NPCA is monitoring the management guidelines of each proposal as it comes before Congress.)

The proposed Aniakchak Caldera National Monument in Alaska has provisions written into its management guidelines to allow sport hunting on the Pacific coastal areas of the new unit. A September 1972 Memorandum of Understanding between the state of Alaska and the United States contains the proviso that: "The Secretary agrees that any recommendation to Congress concerning [portions of proposed Aniakchak Caldera National Monument] will include a recommendation that these lands remain open to hunting."

Such a provision represents a compromise designed to speed the process of establishing the new national monument. However, the provision establishes a dangerous precedent that could lead not only to further compromises involving hunting interests, but to compromises involving grazing, mining, and logging interests as well.

NPCA is opposed to special management provisions of this nature. Lands to be embraced by the National Park System must be managed in accordance with the Act of August 25, 1916, which states that the purpose of national park units is to preserve the scenic, wildlife, historical, and archaeological resources unimpaired for the enjoyment of future generations. Without careful adherence to these concepts, the public interest in the National Park System is not being properly served.

NPCA readers are urged to comment on this issue. Specific objections against allowing hunting provisions in new Alaskan park proposals should be sent to: Director, National Park Service, Washington, D.C. 20240.

Will the New River Gorge of West Virginia be designated a national park or a wild river? Will the gorge remain natural or be grossly commercialized?

These and other related questions have been of great concern to NPCA in recent meetings and discussions with officials from the Bureau of Outdoor Recreation (BOR).

As a result of recent Congressional action, BOR received $150,000 and the mandate to conduct an intensive six-month study of the New River Gorge area of West Virginia running from Bluestone Lake to Gauley Bridge—some fifty river miles. This stretch of the ancient New River flows through a narrow wedge-shaped gorge often called the "Grand Canyon of the East."

RONALD T. ANDREWS

The gorge is best known for its high-quality white-water rafting and kayaking and its excellent fishing.

Many West Virginians are truly interested in seeing the gorge's beauty and wilderness qualities maintained. However, there is also a substantial local force that seems to view the area of the proposed national park as representing a great commercial venture in which the land can be surrounded—indeed *filled*—with motels, conference facilities, aerial tramways, "scenic" roads, and recreation facilities such as swimming pools, bowling alleys, and golf courses.

NPCA has urged BOR to include in their study at least the land one-half mile back from the gorge rim on both sides of the New River. Ideally the study should encompass the entire watershed, including tributary streams such as the Bluestone, Greenbrier, and Gauley rivers. Such an expanded scope for the study would help to prevent the development of lodges, restaurants, or other park facilities on the rim. It would also help in avoiding the problems that have plagued other national parks such as Redwoods, Everglades, and Grand Canyon, where failure to include enough of the watershed has resulted in water pollution, erosion, and siltation, as well as incompatible land uses at the park periphery.

According to John Hauptman, BOR Assistant Regional Director in charge of the New River Gorge study, the report will be submitted to the Secretary of Interior by March 1975 and to the Congress by May 1975.

The Endangered Species Act of 1973 provides for scientific permits that are exemptions from the act's general prohibition on the possession, sale, purchase, export or import, collecting, transporting, and killing of endangered species, as well as on other activities affecting the species and their habitats. Under the act these permits are granted only "for scientific purposes or to enhance the propagation or survival of the affected species." Permit applications are published in the Federal Register for public review.

NPCA recently submitted comments to the U.S. Fish and Wildlife Service (FWS) on applications for permits relating to the Houston toad, tuatara, Arizona native trout, Utah prairie dog, and American alligator. These applications all provide inadequate information for evaluating their merits and weaknesses.

NPCA recommended that two of the applications be disapproved. One of the applicants involved proposes to estimate the population status of the Houston toad *(Bufo houstonensis)* but gives no information about what method he will employ. This information is especially important due to the size and skin porosity of the Houston toad, which makes it difficult to mark the species safely during an inventory. In addition, the applicant justifies his project by a statement that he will evaluate the "questionable" status of the species. NPCA considers this an inadequate justification because, in

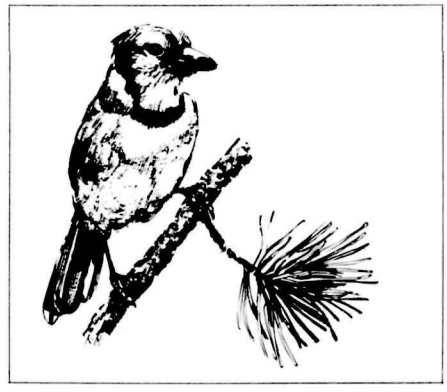
fact, the status of the species is not questionable—the Department of the Interior already has evaluated the status of the Houston toad and classified it as endangered. NPCA emphasizes that the Endangered Species Act requires that any imposition on an endangered species can be justified only by a demonstration that the project will be of value to the species. NPCA suggested that if this applicant still considers his proposal to be justifiable, he should resubmit it with additional information.

NPCA also recommended the disapproval of an application to import four tuataras, endangered reptiles of New Zealand. The applicant proposes to study the functional morphology of squamate (scaly) reptiles. However, there is no demonstration that the research will benefit the species and no evaluation of what impact the proposed taking would have on the species. In addition, NPCA submits that the act requires the evaluation of alternatives. For instance, couldn't a nonendangered species be used in this project? Were any procedures other than destruction of the four tuataras considered?

Two permit applications that NPCA considered seemed to hold promise of providing valuable data, but again in each case NPCA requested information on whether certain alternatives had been considered and on the project's impact on wild populations. One of these applications is a proposal to collect 100 Arizona native trout *(Salmo apache)* a year for three years for use in research to determine the effects of logging on the species. NPCA questioned whether the experiment could be accomplished with fewer fish or with a nonendangered species.

The National Zoological Park is proposing to collect live Utah prairie dogs in order to conduct a semicaptive breeding program for the purpose of assuring the survival of the species. NPCA recognizes the importance of this program, but due to the critical status of this species, all alternatives should be considered, including additional protection of the animals on public and private lands, and relocation of endangered populations to safer areas.

An application that points out a potential special problem area is a proposal to collect dead American alligators to obtain information on mortality factors of the species and to salvage and accumulate a "stockpile" of "accidentally killed" alligators for later scientific use. Although NPCA recognizes the potential for valuable information to be obtained from studies of dead animals, the wording of this application requires clarification before it is given further consideration. The applicant, a scientist with FWS in Gainesville, Florida, should clarify whether "accidentally killed" refers to alligators that died as a result of natural or unknown causes, because it is not clear



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how a protected species in the wild could be "accidentally killed." In its comments NPCA questioned the advisability of allowing an unlimited taking of "accidentally killed" animals for uncontrolled disposal, and also emphasized that this permit, if granted, should contain a condition that none of the specimens or parts could be sold either for profit or expenses. NPCA does not doubt the applicant's good intentions, but there should be a blanket prohibition on sales applying to all scientific permits to ensure that permits could not be used for an illicit hide or animal selling operation.

The proposal for a refund-deposit system for beverage containers in Washington, D.C., recently received NPCA support. This system would require a mandatory deposit on all beverage containers at the time of purchase; the deposit would be refunded when the bottles were returned to the store. NPCA's statement to the D.C. City Council pointed out that it would be appropriate for the nation's capital to set an example for the rest of the country in implementing this important legislation.

The bottling industry continues to promote wasteful, inflationary habits among consumers when there is a crying need for measures to conserve energy and natural resources and to reverse inflationary trends. The advent of the returnable beverage container to replace flip-top, snap-tab throwaways is an important step in this direction.

Not only does the refund-deposit system conserve our precious and dwindling natural resources; it helps to reduce roadside litter, thereby saving the city and taxpayers' money. Sixty percent of the volume of litter in D.C. is beverage containers. The system also reduces the volume of solid waste, thus lightening the city's disposal problems. Because the bottle is reused several times, the consumer pays only a fraction of the cost of producing the bottle rather than the whole cost. This measure is antiinflationary for another reason: by extending the life of each container, fewer containers have to be produced and disposed of, thus getting maximum benefit from the energy, materials, and labor involved.

NPCA has urged the Interior Department to speedily implement its proposed ban on lead shot for use in waterfowl hunting. Testifying at a recent public hearing, NPCA pointed to the urgency of the situation. Several million waterfowl die each year by poisoning after ingesting lead pellets. (See November 1974 Magazine.)

The Interior Department has released a draft environmental impact statement (DEIS) showing both the seriousness of the problem and the feasibility of the proposed switch to steel shot, an effective and inexpensive ammunition. However, NPCA testified that within the context of the DEIS, Interior's proposed rule—to implement the switch in the Atlantic Flyway in 1976, in the Mississippi Flyway in 1977, and on a hot-spot basis in the Central and Pacific Flyways in 1978—is not timely or comprehensive enough. NPCA urges a *complete* ban on lead shot for hunting all waterfowl, coots, little brown cranes, and rails beginning in the Atlantic Flyway in 1975 and in the rest of the flyways in 1976.

At the hearings NPCA Program Coordinator John Grandy represented the Sierra Club, the Defenders of Wildlife,

and the Humane Society of the United States in addition to this Association.

The National Park Service is allowing forest fires to burn themselves out in wilderness areas of the National Park System if the fires are caused by natural events such as lightning. This is part of a new policy development within the Park Service to allow wilderness units to be managed more completely in accord with natural ecological parameters.

NPCA is in support of this policy development and has carried this support to the Park Service in meetings and correspondence. The great forests of this nation have evolved in the presence of fire for thousands of centuries. Because of this, the survival and reproduction of many species of plants, trees, and even insects are closely linked to periodic burns. These burns prepare the way for new growth by opening up the forest floor to sunlight, burning away disease- and insect-ridden debris, releasing nutrients, and preparing the natural seed bed. The ecosystem is thus revived.

Years of intensive forest fire protection programs and "Smokey the Bear" campaigns have caused a buildup of organic matter and leaf litter on the forest floors of many wilderness areas. The accumulated deadwood and underbrush are responsible for the widespread danger of extreme, unnaturally large forest fires. Therefore, rather than perpetuate such conditions indefinitely, the Park Service has decided to allow naturally caused fires to run their courses, as long as areas of human habitation or intensive visitor use are not threatened.

The new fire policy has already aroused some adverse publicity for the Service. A late summer fire consumed many acres in Grand Teton National Park this year, and Jackson Valley residents were not pleased to see the Park Service permit this to happen. However, it must be recognized that the ecological benefits of a natural forest fire outweigh the ecological costs associated with a policy of maximum containment. Another important consideration is that many people have died trying to contain fires.

NPCA also supports the natural fire policy in the management of giant sequoia forests. The fire-resistant bark of the big trees keeps them alive during slow ground fires, although they may be killed by fast moving "crown fires" in which the flames leap across the tops of the trees. Fire is essential to eliminating fast-growing understory shrubs and other trees that block out the slower growing young sequoias. If sequoia forests are protected from fires too long, the understory growth reaches a height at which even a small fire can quickly turn into a crown fire, thus destroying the great stands of ancient trees. Thus, fire is an essential tool in the management of parks containing significant stands of sequoias.

Elimination of natural fires could be causing the buildup of carpenter ant populations in Sequoia/Kings Canyon National Parks in California.

The small carpenter ant *(Camponotus modoc)* may be triggering the destruction of the world's largest living organisms, the giant sequoias *(Sequoiadendron gigantea)*, which are

found for the most part in those two national parks in the High Sierra. The ants burrow through the bark and wood of the sequoias in the course of excavating their nests. It is hypothesized that this process weakens trees structurally until they eventually topple down. (Several of the big-tree sequoias have fallen inexplicably in the last several years, and it might well have been the work of these little insects.)

Conducting population studies on the carpenter ant are Dr. Charles David and Dr. David Wood of the Department of Parasitology and Entomology of the University of California, Berkeley. To date the researchers have shown that although the ants nest in the sequoias, the major source of their food is the white fir trees that proliferate in the understory vegetation. They are also investigating the relationship of the ants to aphids; aphid honey constitutes another large part of the ants' diet.

In the Redwood Mountain area of Kings Canyon National Park, scientists are carefully observing the effects of controlled fires on ant colonies. Because natural fires at one time controlled the growth and regeneration of the white firs that the ants depend on for food, some scientists hypothesize that the elimination of naturally occurring fires in this forest type has caused the buildup in carpenter ant populations. Prescribed burning might reduce the ant populations without damage to the giant sequoias. However, for reasons unknown to NPCA, the prescribed burning program, designed to protect our giant sequoias, has not been funded. NPCA has been working on this funding problem for more than a year, and members are urged to write the Western Regional Director, National Park Service, 450 Golden Gate Avenue, P.O. Box 36036, San Francisco, California 94102.

A system of marine and estuarine sanctuaries will someday be established along the coasts of the United States—if the states and the federal government carry out the intent of two 1972 laws. These are the Marine Research, Protection, and Sanctuaries Act, which provides for establishing marine sanctuaries, and the Coastal Zone Management Act, which provides for the estuarine sanctuaries.

In a recent meeting with top officials of the Office of Coastal Zone Management (OCZM) of the Commerce Department, which administers the sanctuary provisions of both acts, NPCA learned that the first sanctuaries will be established soon. An estuarine sanctuary will be created in Coos Bay, Oregon, and a marine sanctuary will be sited around the sunken U.S.S. Monitor (of Civil War fame) off the coast of North Carolina. Under consideration for possible designation are Old Woman's Creek on Lake Erie, Ohio, as an estuarine sanctuary; the

RONALD T. ANDREWS

Crystal River, Florida, as a marine sanctuary/manatee refuge; a killer whale sanctuary in Puget Sound; and marine sanctuaries around Aransas National Wildlife Refuge, Texas, and Assateague National Seashore, Maryland and Virginia.

NPCA has recommended to the Coastal Zone Management officials that instead of the maximum number of eighteen estuarine sanctuaries that OCZM has now set, a more acceptable approach would be to assure that at least one area representing each of the zoogeographic classifications for our coastal regions and the subregions be preserved as a sanctuary, while permitting additional areas of a particular coastal classification if they were found to meet program criteria. Such a predetermined maximum as OCZM proposes seems to NPCA to be highly restrictive to and therefore not conducive to a dynamic program for promoting wise management of coastal areas.

Perhaps the primary explanation for the OCZM's narrow viewpoint is the fact that the Office of Management and Budget (OMB) has continually opposed funding of the coastal zone management program and the land/water area

acquisition role of the programs under OCZM control. Currently, the OMB has ordered the OCZM to prepare a report justifying its operations and activities; no doubt OMB hopes to uncover additional information with which to halt or slow the establishment of a system of marine and estuarine sanctuaries.

In recollection of the tragedy at the Bay of Paracas, where whales have not been seen for the past ten years, NPCA and ten other conservation organizations are asking Peru to ban whaling at its Bay of Paita for at least two years.

A Japanese company is running a whaling operation in the Bay of Paita, Peru, despite various international efforts to save endangered whale species, several of which are nearing extinction. Japan, along with the Soviet Union, has refused to heed United Nations resolutions calling for a worldwide moratorium on whaling or even to follow the rules of the International Whaling Commission (IWC). The Japanese whaling operation off the Peruvian coast is run by the company Kinkai, and reportedly kills 1,850 whales annually.

Peruvians have repeatedly voiced concern about this situation. Denouncing the whaling as indiscriminate harvesting in defiance of the regulations of the Permanent Commission of the South Pacific, Felipe Benavides, President of the Zoological Association of Peru, has called for a halt to the operation until population assessments can be made. Because Peru is not a member of the IWC, this whaling operation represents additional killings over and above Japan's refusal to abide by IWC quotas. In addition, the government and the people of Peru are unaware of the number and kinds of whales taken and the impact of this uncontrolled exploitation on whale populations and associated ecosystems.

In our communication to the Peruvian Ambassador to the United States, the Honorable Fernando Berkemeyer, NPCA expressed concern for the preservation of the great whales and suggested that his country initiate now a ban on whaling in the Bay of Paita until a two-year study that has been authorized by the government of Peru is completed. NPCA also congratulated the Peruvian government on its foresight in declaring a large area of the Paracas Peninsula and nearby islands and sea a national marine preserve that will protect all forms of life and, hopefully, eventually restore the whale population.

The best wildlife habitat left in this country is mismanaged. This habitat is represented by our own public lands, which form one-third of our land area. The extent to which these lands are being mismanaged by government agencies and the urgent need for corrective action was the focus of a recent address to the members of the Animal Protection Institute (API) by Dr. John W. Grandy IV, NPCA's Program Coordinator and wildlife specialist.

Speaking at the annual API membership meeting in Chicago last fall, Dr. Grandy explained how actions of the Office of Management and Budget (OMB), the Bureau of Land Management (BLM), the U.S. Forest Service, (USFS), the National Park Service, the U.S. Fish and Wildlife Service, the Department of Defense, the Corps of Engineers, and the Bureau of Reclamation have serious impacts on wildlife.

As an example of the problems in the area of wildlife habitat, he pointed to the cutbacks in funding imposed by OMB on national wildlife refuges and on other areas designated for wildlife protection. (See May 1974 Magazine.) These cutbacks severely debilitate habitat preservation programs.

Another revealing situation is the fact that predatory animals are poisoned on public lands. This poisoning is carried out for the benefit of private livestock industries and individual ranchers who lease the public lands for

grazing purposes. The poisoning is paid for out of public funds, despite the fact that the public values and wants the wildlife species involved, and despite the fact that the private interests are already heavily subsidized by paying substantially lower grazing fees on the public lands than they would pay on similar private lands. In addition, a bureaucratic haze hangs over the whole poisoning program. The BLM has responsibility for the general administration of the public lands involved, while the Fish and Wildlife Service has the authority to poison predatory mammals and birds on these lands in "emergency" situations. However, under questioning about poisoning programs on public lands, each agency refers the questioner to the other. Dr. Grandy suggested that different standards should prevail for predator control on public lands as compared to private lands. He pointed out that, as it now stands, if livestock losses appear to be more than 8 percent for the year on private or public lands, the Fish and Wildlife Service will institute "emergency" poisoning measures with the M-44 cyanide ejector.

The Forest Service, which controls millions of acres of land, is destroying thousands of acres of wildlife habitat by massive clearcutting of timber. NPCA proposes as an alternative an "ecological forest—small patch cutting, clearcutting of an acre or half-acre, single tree selection." This would "get the timber and leave the forest." Another example of a situation mismanaged by the USFS is its refusal to close the hunting seasons on the grizzly bear in the Yellowstone ecosystem until the status of this species is determined. Available data suggest that the grizzly bear is endangered or threatened in the coterminous states, and NPCA has urged for some time that the species be listed.

In conclusion, Dr. Grandy stated that citizens can help by letting government officials know how they feel about how our land is being managed—by writing letters, round-robin mailers, and sending public-opinion telegrams. He stressed that "The public lands have been managed like private preserves for so long that some [administrators] don't even remember that they belong to the public." Remind them by contacting Secretary of Interior Rogers Morton, Interior Department, Washington, D.C. 20240.

Fourteen international environmental, wildlife, and humane organizations representing a total of more than 600,000 members met in St. Louis in October to discuss formation of a Wildlife and Habitat Coordinating Committee. NPCA was represented. According to N. Bruce Pitsinger, temporary committee chairman, "This would be a worldwide committee of organizations to coordinate the efforts for the betterment of wildlife and habitat."

NPCA has representation at the international level in various matters, but many other wildlife-oriented groups do not, and they expressed the hope that the committee could give assistance.

A broad range of groups was present, indicating the magnitude of concern about threats to wilderness and wildlife throughout the world.

The Oregon Dunes National Recreation Area (NRA) is a long, narrow strip of land containing 32,186 acres and 38 miles of ocean beaches located on the central Oregon coast in the Siuslaw National Forest. Created by Congress in 1972, this national recreation area is the first such area to be established in Oregon, deriving its name from the large, extensive sand dunes that are its most important and striking feature.

About one-third of the area is, in fact, active open sand dunes. These range from small undulating dunes with crests six to eight feet high to the large dunes that rise to 300 feet above sea level and stretch lengthwise for 5,000 feet. The large dunes, known as "oblique dunes," are unique to the Oregon Dunes National Recreation Area, and are said to have no counterparts in other dune areas of the world. NPCA has suggested that both the U.S. Forest Service (USFS) and the Federal Committee on Ecological Reserves study the possibility of designating this part of the NRA as a Research Natural Area to be used for educational and scientific purposes.

The Oregon Dunes are inhabited or used by ten species of wildlife that are considered by various authorities to have a rare, endangered, or peripheral status within Oregon, or, in some cases, nationwide. The bald eagle, osprey, snowy plover, common egret, and white-throated vole are in particular need of protection because of the detrimental effects man's activities or presence within the NRA could have on them.

NPCA's staff forester recently reviewed the proposed management plan and draft environmental impact statement for the Oregon Dunes NRA. NPCA's comments on the proposed

A CITIZEN'S VOICE IN GOVERNMENT

Organizations like the National Parks and Conservation Association, which enjoy special privileges of tax exemption, may not advocate or oppose legislation to any substantial extent.

Individual citizens of a democracy, however, enjoy the right and share the responsibility of participating in the legislative process. One of the ways citizens of a democracy can take part in their government at state and federal levels is by keeping in touch with their representatives in the legislature; by writing, telegraphing, or telephoning their views; by visiting and talking with their representatives in the national capital or in the home town between sessions. Every American has two senators and one congressman with whom he may keep in contact in this manner.

The best source of information for such purposes is the official CONGRESSIONAL DIRECTORY, which can be bought through the Government Printing Office, Washington, D.C. 20402. It tells you who your senators and congressmen are and lists the membership of the various Congressional committees. It also gives full information on the personnel of the various executive bureaus of the government whom one may contact about administrative programs and policies.

The CONGRESSIONAL DIRECTORY for the Second Session of the 93rd Congress is available in three editions, prices of which include postage: bound in hard cover, $7.50; paperback, $5.75; and thumb-indexed, $11.00.

management plan centered on several environmental matters that require further consideration or more explanation by the USFS planning team. Of

paramount concern to NPCA is that the proposed plan overemphasizes the use of off-road vehicles (ORVs) such as dune buggies, jeeps, and trail bikes. With the exception of the noise factor, the plan gives little or no attention to the adverse environmental effects that ORVs could have on the forty-three different ecosystems or subsystems that have been identified in this fragile ecotone separating ocean from forest. Furthermore, NPCA pointed out the need for a review of the adequacy or inadequacy of the Forest Service's enforcement mechanisms because ORV trespassing could easily and perhaps permanently impair public use and enjoyment of particularly fragile areas.

A second point of concern to NPCA is the USFS proposal for a new formal visitor information center. Information centers are fine, but the point is that such a facility already exists in this NRA. This is the Cape Perpetua Visitor Center, an outstanding facility for introducing visitors to the Oregon Coast. Therefore, it does not seem justifiable from the available information that a second visitor center is needed. However, the Forest Service might consider the alternative of expanding the present facility, and possibly supplementing its services by informal interpretive facilities located throughout the NRA.

The final point that NPCA covered is the proposed policy affecting the management and protection of the dunes themselves. The policy is not presented clearly in the plan; for example, on the one hand the plan states a need for artificially manipulating the foredune while on the other hand it calls for the "stabilization" of other dunes to minimize wind erosion. (Wind, of course, is the dunes' creative hand.) NPCA urged that the USFS employ a policy that would permit only those management procedures that would most closely allow for or ensure that natural conditions prevail. In addition, before any chemical or physical dune manipulation is allowed to take place, the Forest Service must incorporate these considerations into its final management plan for the NRA. Such a plan is to be updated every ten years and requires public review.

NPCA members might be interested in some additional facts about the Oregon Dunes National Recreation Area. The broad spectrum of activities available within the NRA includes both developed and dispersed camping, picnicking, boating, fishing, hiking, beachcombing, photography, and nature study. For further information write the District Ranger, U.S. Forest Service, Waldport Ranger Station, Waldport, Oregon 97394.

The Department of the Army intends to kill 14 million blackbirds this winter by spraying them with a chemical that will take away their feathers and eventually cause them to freeze to death. The Army says that huge flocks of birds pose hazards to human health, aviation, and farm crops in the vicinities of Fort Campbell, Kentucky, and Milan Army Ammunition Plant, Tennessee.

The Army has stated that it will not file an environmental impact statement on the project. NPCA has protested this determination because the public has a right under the National Environmental Policy Act of 1969 (NEPA) to scrutinize proposed "major federal actions significantly affecting the quality of the human environment." Not only is there a large number of birds involved, but this project could set a precedent, and it is crucial that the public be involved in analyzing the degree of any need for a program to curb "blackbirds," what species are involved, and alternatives to the proposed action. NPCA stated that presentation of alternatives should take into account both humane and environmental factors.

news notes

Lands in Big Cypress Swamp in Florida and the Big Thicket of Texas were recently designated as "national preserves" by Congress. A national preserve is a new type of National Park System unit that is designed to preserve areas with unique plant and animal life.

Private land acquisition in the new Big Cypress National Preserve, which supplies water to bordering Everglades National Park, will be an environmental priority of the Administration, according to Secretary of the Interior Rogers Morton. Congress empowered the Secretary to acquire within the next six years 522,000 acres of private lands that form the heart of the watershed. Another 48,000 acres of public lands could be added by donation.

Acquisition of the Big Cypress National Preserve helps guarantee the future integrity of the south Florida ecosystem. The extraordinary growth and development in this region has posed a threat to many of its natural assets. These areas of south Florida possess the only habitat in the continental United States for many subtropical flora and fauna. Many endangered species of wildlife make their home here, including the southern bald eagle, Florida Everglades kite, and Florida panther. In addition, Big Cypress is an important source of domestic fresh water for Florida's southwestern coastal cities.

The Big Thicket National Preserve in Texas is a unique "biological crossroads." The area is located in a

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TIGER HAVEN: We have been advised that, contrary to our statement in our issue for January 1974, the Prime Minister of India, Mrs. Indira Gandhi, is not a patron of the Tiger Haven Wildlife Trust in India. She has emphasized her sympathy with the ideals of the Trust, but in keeping with her normal practices, has expressed her inability to extend her official patronage. We fully understand the limitations of official usages in such matters and are happy with this confirmation of the Prime Minister's sympathy with the ideals of this commendable project.

Dan Dougherty, a volunteer with the Smithsonian–Peace Corps environmental program, is shown above explaining flamingo nesting habits and group nesting sites as part of his job as an education officer with the Kenya National Parks. Thousands of flamingos form a barely visible line across the sand dune in the background. At right biologist-volunteer Terry Johnson and his wife Sherry are shown gathering bird specimens in Santa Maria, Colombia.

transition zone between the moist eastern woodlands, the arid southwest, the tropical coastal marsh, and the central prairie. Plants of the East meet those of the West. Northern species live next to tropical ones. Many species of wildlife also inhabit the area; the endangered American alligator lives here, and there have even been sightings of the endangered ivory-billed woodpecker and red wolf. The law establishing the preserve calls for the federal government to acquire within the next six years twelve units totaling 84,550 acres in eastern Texas.

Specialists in conservation, parks, wildlife biology, and other fields are being sought by many of the developing nations as they become aware of the importance of striking a balance between development and environmental conservation.

To meet their needs, a Smithsonian Institution–Peace Corps environmental program is underway whereby the Smithsonian works with the Peace Corps and host country officials to plan appropriate utilization of Peace Corps volunteers within the framework of the host country's developing scientific and technical programs. The Smithsonian then helps locate qualified personnel and matches them to the Peace Corps assignments for which they would be best suited.

Openings now available in many of the fifty-five nations served by the Smithsonian–Peace Corps program include positions in wildlife biology, national park planning and management, conservation education, botany, forestry, fisheries, marine sciences, biological research, entomology, ecology, soil science, watershed management, range management, veterinary medicine, air and water pollution control, architecture, planning, and civil engineering. National park specialists are currently needed in Botswana, Colombia, Malawi, Seychelles, Nepal, and Iran.

For further information or program applications, contact Robert Poole, Office of Ecology, Smithsonian Institution, Washington, D.C. 20560.

Threatened with extinction, the last known colony of the Mississippi sandhill crane is on its way toward protection. The Nature Conservancy and the State of Mississippi recently announced the purchase of 1,708 acres of Sandhill Crane Sanctuary in Jackson County, Mississippi, just north of the state's rapidly developing Gulf Coast.

Plans call for the area to be transferred to the U.S. Fish and Wildlife Service at the Conservancy's costs within the next year. The land and its small breeding population of sandhill cranes will then be protected as a wildlife refuge.

The Mississippi sandhill crane, a large dark gray bird with a bright red bald forehead, does not migrate like most other branches of the crane family, but remains throughout the year in the state. The long-legged bird prefers the wet pine and grass savannas of the southern Mississippi coast for its habitat. Loss of habitat has been cited as the primary reason for the endangered status of this subspecies.

The questionable ownership status of lands along Florida's west coast has attracted attention in Congress with the help of conservationist George Matthews. (See September 1974 "News Notes.") Senator Henry Jackson (D-Wash.) of the Senate Committee on Interior and Insular Affairs and members of the House Subcommittee on Conservation and Natural Resources are requesting information from the Interior Department concerning the disputed lands and are pressuring for an investigation.

The Bureau of Land Management, the agency within the Interior Department that administers public lands, estimates that as much as 52,000 acres of land and 900 miles of coast actually could be public lands that have been omitted from federal surveys of Florida. However, due to lack of staff and funding and exertion of political pressure, officials say new surveys of the land will be postponed indefinitely. They explain that for 1975 $74,000 and a four-man staff are allotted to conduct surveys in the thirteen-state region including Florida. However, one Interior Department official stressed that Congressional pressure could change the situation.

Representative Henry S. Reuss (D-Wis.) and Representative Guy Vander Jagt (R-Mich.) complained in June to Secretary of Interior Morton that in several cases since 1973 Interior Department officials have overruled recommendations by the U.S. Fish and Wildlife Service and the Army Corps of Engineers to deny construction permits in order to protect fish and wildlife habitats. Also, negotiations between officials and permit negotiators have not been made public until they were completed and were transmitted to the Army Corps of Engineers. Secretary Morton has yet to respond concerning these irregular procedures.

George Matthews has made it his business for the past four years to fight to preserve these lands, which are

valuable environmental and recreational resources. If and when a new survey is conducted, it will probably be left to the federal courts to untangle the legal status and ownership claims in the area. George has already put in an application to purchase land in Lee County if it comes up for sale by the federal government. He would turn it over to the county, provided the land would always be kept in public trust.

More Notes. . . . The Commerce Department recently denied the application of the Fouke Fur Company of South Carolina to import 70,000 baby sealskins from South Africa. If approved, the action would have been a major waiver of the ban on importing sealskins under the Marine Mammal Protection Act. NPCA members wrote to urge denial of the application. . . . In November New Jerseyans approved a $200-million bond issue for state acquisition and preservation of the Pine Barrens forest. . . . The Attorney General of California filed suit on November 1 calling for an immediate moratorium on all logging in a buffer strip adjacent to Redwood National Park. The suit charges damages to the park resulting from excessive clearcutting of trees, midslope landings, and poor road construction. Named as defendants are Arcata Redwood Company, Simpson Timber, and Louisiana Pacific Corporation. . . . The New York State Department of Environmental Conservation announced in late September, just prior to the opening of hunting seasons, that hunting would be allowed in thirty-three of the state's parks. Department personnel asserted that the state's citizens were squarely behind the decision to open these parks to hunting. However, no public hearings had been held. Those who want more information should contact Mr. Alexander Aldrich, Commissioner, Office of Parks and Recreation, Empire State Plaza, Albany, New York 12223. . . . South Americans are hosting several upcoming international conservation events. The First World Conference on Natural Areas will take place from January 12–20, 1975, in Mexico City and Acapulco, Mexico. This November conservationists will meet in Argentina for the Fourth International Seminar on Natural Areas and Tourism.

reader comment

Help the Thai Otter

Here is a picture of a lovable, playful Thai otter. He is one of the few survivors of a species diminishing fast here. So many of the fish-filled streams of my country, Thailand, are now devoid of otters. Not long ago one could hear their merry joyful antics and friendly chattering, but now the streams are sad. . . . Recently, at an animal dealer's

shop in Bangkok, I saw fifty superb otters squeezed together in tiny cages awaiting their agonizing transport to an overseas fur coat factory. Our [wildlife conservation] movement is working to put an end to the export of otters, but in the meantime you can help—please boycott otter and other wild animal furs. It takes not less than forty otters to make one fur coat; don't hesitate to tell people wearing otter furs that they will acquire and demonstrate inner beauty by not wearing such coats. Encourage your legislators to ban the import of live otters or dead otters' fur by fur traders. Demand that fur trade associations tell their members not to use otter fur. . . .

I wish I could help the otters more because I dearly love them but I am only a Thai teacher with low income. Your help is needed urgently. I want my message to reach the world. . . .

Walai Jeeyaphant
Bangkok, Thailand

Don't Touch Cave Formations

On pages 21 through 24 of the June 1974 National Parks and Conservation Magazine appears . . . "New Cave: A New Look," by Edwards Hay. The article is acceptable; the photographs are showing practices considered by many to be very poor—that is, touching, stepping on, and rubbing against formations in these delicate cave environments. . . . The oil from the human hands can and does permanently change these formations. . . . these photos have done a minor injustice to the preservation of all caves open to public visitation. People generally destroy the natural beauty of the natural resources we hope to preserve by getting "too close."

Gordon D. Boyd
Supervisory Park Ranger
Sequoia National Park, California

Thanks for keeping us on our toes! Even a slight touch can harm crystalline surfaces of some formations, and many formations have been broken by people who have misjudged their strength. These broken formations might never grow back. Doug and Linda Rhodes of Albuquerque say everyone can help by asking stores that sell cave formations or products thereof to discontinue these sales.

Lead Shot Poisoning

In our November 1974 "NPCA at Work," we requested that readers send their own comments about the lead shot situation to the Interior Depart-

ment. This reader sent us a copy of his letter.

[To] Lynn A. Greenwalt, Director
U.S. Fish and Wildlife Service:

I would like to make a few comments on your proposed order DEIS 74-76: Proposed Use of Steel Shot for Hunting Waterfowl in the United States, said comments to be included in the final impact statement. It seems to me that many of the federal agencies that were originally established for the protection and preservation of a natural resource have, over the years, become just the opposite through the influence of people and organizations profiting from the use or exploitation of said resources.

I sincerely hope that the Fish and Wildlife Service has not put the economic health and wealth of the lead shot manufacturers ahead of the just interests of both the waterfowl and the sportsmen who hunt them. This also includes the economic waste resulting from the millions of birds poisoned by the continued use of lead shot.

Ban lead shot now on all the nation's flyways! *Now,* not by 1978; *all,* not just on the eastern [Atlantic and Mississippi Flyways] along with selected hot-spots on the central and western [flyways]. . . .

Donald Curey
Lake Grove, Oregon

conservation docket

A number of major environmental bills expected to be considered in the waning days of the "lame duck" session of the 93rd Congress were yet to be acted on at our press time, but a final report will appear next month. Measures affecting strip mining regulation, Grand Canyon National Park expansion, toxic substances control, safe drinking water, and deepwater ports were still being considered by joint House-Senate conferences. Several bills had passed the Senate and were pending in the House, including bills for eastern wilderness, energy conservation, Hells Canyon National Recreation Area, and Shenandoah National Park wilderness, and the BLM Organic Act.

One measure for which passage seemed likely was the Energy Conservation Act. One version of this bill, S 2176, passed the Senate in December 1973. S 2176 would establish a national policy of conserving fuels and energy resources through more efficient conversion, use, and allocation of resources.

A similar energy conservation bill, HR 11343, was reported recently from the House Environment Subcommittee to the full Interior Committee. This version states more specifically than its Senate counterpart that "it is the policy of the United States to establish a comprehensive program of energy conservation in order to achieve by 1978 a national growth rate of energy use of no more than 2% per year."

Another legislative measure that has been tied to the energy/economy dilemma is the so-called wildlife refuge rights-of-way act. This bill, HR 11541, would stipulate that the Interior Secretary could issue permits for the use of any area of the National Wildlife Refuge System for power lines, telephone lines, pipelines, canals, ditches, or roads *only if* he had reviewed all reasonable alternatives and found the right-of-way to be the "most feasible alternative" for such purpose.

HR 11541 was passed by both the House and Senate and sent to the White House in October 1974, shortly before the election recess. However, President Ford refused to sign the measure, declaring that its enactment would create a serious hindrance to energy production and transport. The President stated that withholding his signature while Congress is in recess constitutes a pocket veto that Congress cannot override. According to some congressional leaders, this action may be challenged.

Continued from page 2
moves out into the surrounding country and must be protected by sound management policies. Hence the NPCA, beginning with parks, has assumed the responsibilities of a broad-gauge environmental organization as the years have passed.

The NPCA has taken its stand time and time again against the poisoning of the water, air, and soils of the earth by pesticides and other pollution. This work requires a highly competent staff, and your financial help is the only thing that can maintain that staff.

The growth of big highways all across the land has threatened the National Park System and proved the need for a national transportation program. The befouling of the atmosphere by power plants, even over Grand Canyon National Park, has shown the necessity of a national energy program. More and more it becomes apparent that the preservation of urban open space will reduce pressures on the parks; and that statewide land-use planning will be essential to the preservation of natural and historical areas.

Most of this work has its worldwide aspects, not merely its national implications. The NPCA has been a leader in pushing for the protection of nature on an international scale, through the International Union for the Conservation of Nature, the United Nations Environment Programme, and the major United Nations Conferences, such as those on the Human Environment and the Law of the Sea.

WE HARDLY NEED to explain to our members and readers that *National Parks & Conservation Magazine, The Environmental Journal,* is the strong right arm of NPCA. Through it we portray the beauty of our national parks, forests, and wildlife to our members and the public and report on the dangers which threaten them in these times of reaction and recession. We have been forced to reduce the size of the February issue of the Journal, temporarily, by four pages, and may have to continue the cut for several months unless we get help from our members and readers.

For all our purposes, the Journal must be built up and strengthened, not reduced, and our professional staff must be supported and encouraged. To do these things will require the dedicated moral and financial assistance of our entire membership, and we are appealing to you now for that kind of help.

BEAR IN MIND that the NPCA is not an endowed institution. We do not have capital funds from which dependable income can be derived year after year. We have never turned to large foundations or wealthy individuals in the past for significant support for our programs, nor to corporations or government agencies. The NPCA is based financially almost entirely on the dues and additional contributions of its members. We are thus in a position to commend and also to criticize constructively the policies of government agencies responsible for the living resources of the nation. But it also means that we must turn to our membership and friends for the money to carry on.

The NPCA has streamlined its administrative and professional staff structure and goes into the year 1975 better fitted to grapple with the responsibilities ahead than ever before. But all these efforts cost a great deal of money, and we are constantly running a nip-and-tuck race between income and expenditures.

We are well aware that we have already appealed to our members by mail for contributions last year, and we are thankful that the response was generous. We are reluctant to come back to you again with another request and would not do so except for the emergency which confronts us.

WE HAVE BOUND a contribution envelope into this issue, and we urge every member and reader to be as generous as he can. Gifts in small amounts, in balance with ability to pay, will always be gratefully received, and together with many other similar contributions can make the difference between the success and failure of this drive. The envelope can be checked for amounts ranging from $10 to $25,000, or for smaller or larger amounts. For persons in the 70 percent income tax bracket, a $25,000 contribution means a net gift after deductions from taxable income of $7,500. All such gifts together will make it possible to maintain our staff, restore the full-size Magazine, and continue our vital work in contacts with government agencies, our legislative information activities, and our environmental litigation.

Reaffirm your dedication to the protection of life on Mother Earth! Help us once more in the all-important struggle in which you have already enlisted—the protection of the parks, forests, wildlife, and life environment of America and the world!

—Anthony Wayne Smith

HELP PROTECT YOUR PARKS

For many years, NPCA's main interest has been in protecting national parks from destruction of natural values by excessive roads, off-road vehicles, mining, airport construction, overt commercialism, and traffic abuse. Now we are advocating wilderness and other natural preservation in the national parks, methods of preventing destructive impacts of mass recreation, and additional funding for Park Service interpretive programs. The support of you and your friends through membership and contributions will go far in helping us accomplish these goals.

NATIONAL PARKS AND CONSERVATION ASSOCIATION
1701 Eighteenth Street, N.W., Washington, D.C. 20009

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