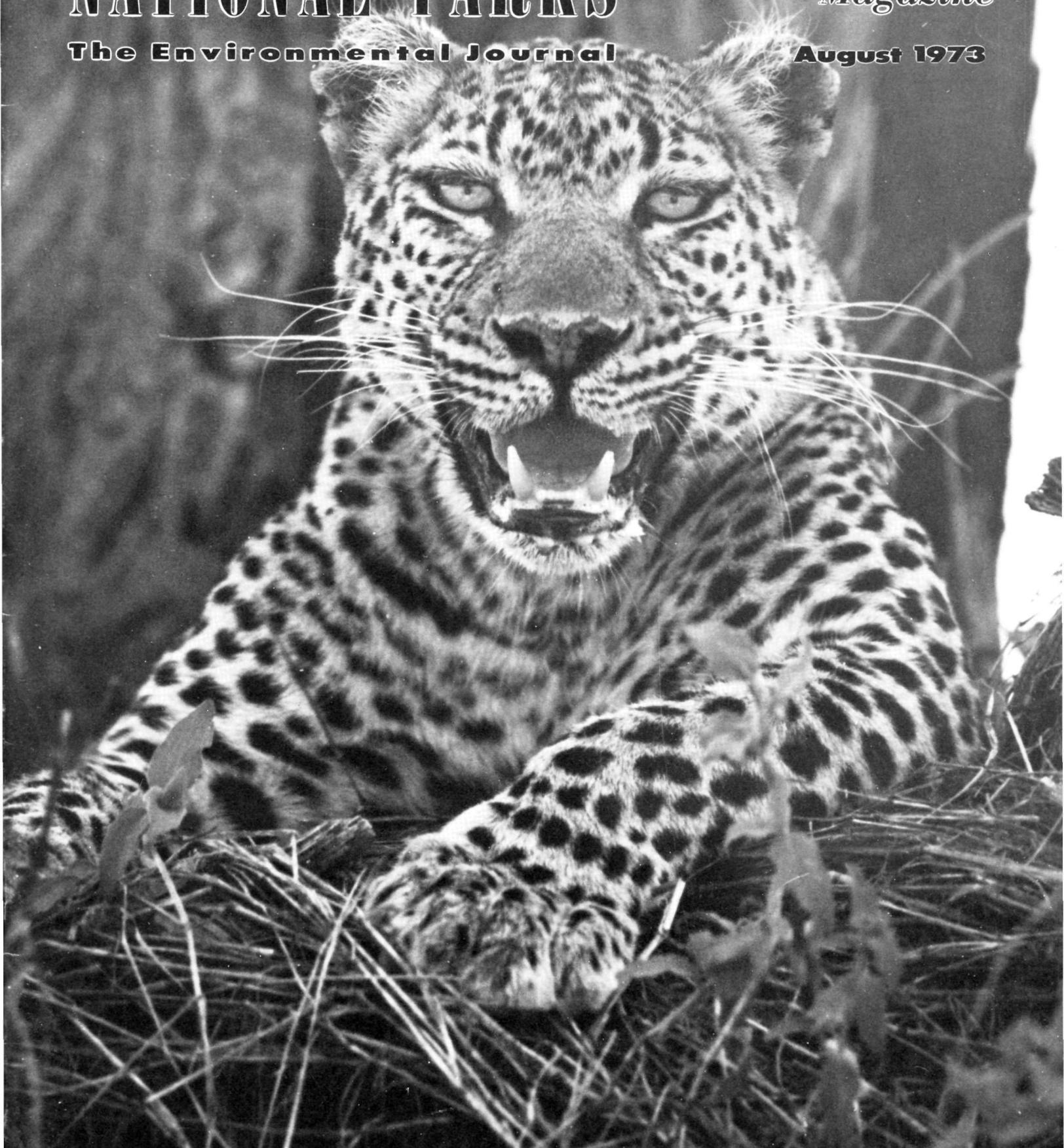


NATIONAL PARKS & *Conservation Magazine*

The Environmental Journal

August 1973



UNEP

We reprint herewith excerpts from a statement to the Governing Council of the United Nations Environment Programme by the President of the National Parks and Conservation Association and Chairman of the Environmental Coalition for North America, at Geneva, Switzerland, in June of this year. The comments were addressed to specific points in the Action Plan presented to the Governing Council by the Executive Director, Mr. Maurice F. Strong.

IT IS A RARE PRIVILEGE to make this statement to the Governing Council of the United Nations Environment Programme.

You are to be congratulated on having before you at these sessions the excellent Action Plan developed by the very able Executive Director of the UNEP, Mr. Maurice F. Strong. We hope that it will meet with your approval.

This is indeed a significant occasion, marking the launching of what may well turn out to be one of the world's most vital international agencies.

MEN ARE CONFRONTED on the planet earth with a crisis of survival. This is not merely a question of the survival of one or many species of plants or animals, but the survival of mankind itself, indeed of all life on earth.

We are challenged by the need for the development and modernization of industrial and agricultural technologies in the less affluent countries in the effort to overcome widespread poverty, disease, hunger, illiteracy, inequity, and oppression among human beings. We are confronted at the same time with the serious depletion of renewable and nonrenewable resources, including fossil fuels, on a worldwide basis. We are faced by rapidly exploding populations whose growth threatens to prevent the accumulation of the capital needed for economic development. And we know that growth of all kinds has its limits on a finite planet; and that a better distribution of wealth must be a fundamental part of the answer.

THE GENERAL and particular objectives set forth in the Action Plan give room enough for the most part to elaborate the necessary specific programs.

With respect to the specific action plans, we are gratified, first of all, that the Earthwatch will be broad enough to cover a number of important monitoring services.

We do indeed need monitoring systems for pollutants, for the atmosphere, for the oceans, for radioactive wastes, for the weather, for the renewable and nonrenewable resources, and for endangered species.

We need to be organizing the information we already have more effectively. We should be carrying on a worldwide information exchange and educational program. The Action Plan reflects a clear understanding of that truth also.

With respect to pollution of air, water, and land, we need to develop internationally acceptable criteria for the determination of desirable quality and to establish standards and guidelines whereby the nations may measure the effectiveness of their controls over these perils.

ONE REAL CHALLENGE for UNEP will come at the point of contact with the national and international development agencies, which can foster polluting or nonpolluting industrial and agricultural technologies, as the case may be.

We can visualize the functions of UNEP as essentially catalytic and integrative. The Secretariat will be working with the Food and Agriculture Organization, the World Health Organization, the United Nations Development Program, and the United Nations Fund for Population Activities, and other agencies, all of which have operating responsibilities, which presumably will not be duplicated, but whose work needs to be seen within the perspective of planetary resources and environment.

With respect to the atmosphere, we have a serious problem of pollution carried by the winds, which must ultimately be tackled by the various nations by domestic legislation, but there is no reason why UNEP cannot develop recommended standards, and even model legislation.

With respect to the oceans, the United Nations Conference on the Law of the Sea, which is in preparation in the UN Seabeds Committee, will begin in the fall and continue next year. Out of this conference, hopefully, will come prescriptive, regulatory, adjudicative, and fiscal institutions to provide the foundation for an equitable system of

Continued on page 35

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weathered american chestnut trunk
jack jeffers photograph

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NPCA • National Parks & Conservation Association • NPCA

- 2 UNEP
- 4 Cumberland Island: Sandy Treasure of the Golden Isles Maxine A. Rock
- 8 Ecological Forestry for the Douglas Fir Region Peter A. Twilight
- 10 Needed: A New North American Wildlife Policy Durward L. Allen
- 14 Indiana Bat: A Cave-Dweller in Trouble Arthur M. Greenhall
- 18 Impending Crisis for Tanzanian Wildlife Norman Myers
- 24 Puffball Play Eileen Lambert
- 26 NPCA at Work
- 31 News Notes
- 33 Conservation Docket

COVERS African wildlife, by Norman Myers

The continued existence in a natural state of Tanzania's wealth of wildlife is tied inextricably to the social welfare of her human citizens. Preserving wildlife habitat at the same time as providing the needs of Tanzania's local citizens will be a challenge to nature lovers everywhere. (See page 18.)

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CUMBERLAND ISLAND

SANDY TREASURE OF THE GOLDEN ISLES

MAXINE A. ROCK



CECIL STOUGHTON, NATIONAL PARK SERVICE



NATIONAL PARK SERVICE

Cumberland Island has many faces. At left, the morning fog lends a spectral air to the surrounding forest. Above, thick palmettos grow on hillocks where sand, water, and marsh converge.

*Wind and waves of the restless Atlantic gave birth to
the brooding shores of our newest national seashore*

IN THE EARLY morning fog, it is cold on Georgia's Cumberland Island. The wind, unobstructed in its flight from the ocean, swirls madly across the beach, nipping away at the dunes in one section and rebuilding them in another. Seagulls pace the waterline, and a screech owl pierces the mist with its eerie call. Farther in, toward the island marshes, the wind rustles the edges of thick palmettos growing unevenly on sand hillocks. The forests are silent.

Then, a few songbirds greet the dawn. When a sliver of sunlight hits the top of an old oak tree, it glistens like a silvery ghost; the tree is dead, long since smothered by advancing sands. Slowly the sky reddens, and the black surf turns deep blue. The gray ripples of Atlantic waves lighten to foamy white. Another day has come to Cumberland.

The island has seen many days like this. Anthropologists say Cumberland is at least old enough to have been continuously inhabited for ten thousand years. It is one of the many sea islands that lace the Georgia and South Carolina coasts. Several of these islands are large enough—and filled with enough history and natural beauty—to be famous. Their names reveal the

cultures that first settled each island: Sapelo, Ossabaw, Wassau, and Edista (Indian); St. Simons, St. Catharines, and St. Helena (Spanish); Port Royal (French); and Jekyll, Johns, and Cumberland (English).

These vast, sandy treasures, each one boasting its own unique ecology and natural beauty, are known to southerners as the "Golden Isles." Cumberland is the largest and southernmost of the chain and the first to be formally saved as part of the nation's natural heritage. On October 23, 1972, this brooding, unbelievably beautiful island became Cumberland Island National Seashore.

What makes Cumberland so special? Perhaps it is the island's fragile ecology, a miraculous mixture of rippled ivory beaches, sweet-smelling fresh water and tidal marshes, and moss-hung oak forests. On the beach, which is a little more than eighteen miles long, the sand flows through one's fingers like strands of silk. Gray and brown wild horses venture out on spring days to gambol in the soft waves. The dunes crown the beach with soft, undulating curves; beyond them, in the marshes, alligators peer through the quiet waters. Mullet, flounder, and baby shrimp thrive in these rich

marshes, and clams and oysters are easy to gather in the winding creeks. In the island estuaries an important portion of the nation's shellfish and ocean fish spawn, hatch, and feed. The island chains, of which Cumberland is a part, produce more than \$200 million worth of shrimp and oysters alone each year. The salt-marsh grass found on Cumberland grows ten tons to the acre; as it dies and decays, it pours its nutrients into the estuaries to feed the tiny fish.

Beyond Cumberland's marshes come the forests—silent, dark, and brooding. Here, humans are dwarfed by giant, moss-hung oak trees. The Spanish moss, which lends a spectral air to the forests, is not a tree parasite. It uses the trees only for support and takes its own nourishment from the air. The moss holds the nutrients that come down in the thick, almost tropical rainstorms on the island. Then, as the warm air dries the land, the moss slowly releases the nutrients, drop by drop, into the tree's thirsty roots. In past years, the moss had virtually died out on Cumberland; now, ecologists report, it is making a comeback.

Except for one or two old shell-topped roads, Cumberland's forests belong to its wildlife. Wild turkey, raccoon, and deer abound. There are also wild pigs on the island—grunting descendants of farm animals brought to Cumberland by early settlers. Songbirds, owls, and even eagles make their home on Cumberland, and one of the island's few human inhabitants claims that bear still prowl the dark woods. In the nearby yellow salt marshes the great blue heron and

the common egret strut in glistening splendor, feeding on plankton, oysters, shrimp, clams, crabs, and small fish. Alligators, turtles, and snakes populate the marshes, too, unafraid of man.

However untouched the island may presently appear, Cumberland has had a fiery human history. Along with the rest of the large sea islands of this region, Cumberland was discovered in 1521 by Spaniards, who established their first settlement several years later near North Island in South Carolina. It was not long before the French challenged Spanish rule of the islands but failed. Then the English came in 1663, led by Captain William Hilton, and this time a foothold was gained. English colonists took control of Hilton Head, settled Charleston, and founded Savannah in 1733 under the leadership of General Oglethorpe. The angry Spaniards tried to regain control in 1742, but their only reward was a massacre; hundreds of them died at the hands of a small but determined band of English soldiers at the Battle of Bloody Marsh on St. Simons Island. That event kept the islands under the British flag and paved the way for their eventual ownership by American heirs.

Cumberland, which to many people is the most beautiful southern island of all, became a vacation paradise for wealthy American businessmen. In the 1880s Thomas Carnegie bought most of the island. The Candler family of Atlanta acquired much of the rest. The Carnegies built lavish mansions on the island, most of which long since have been claimed by wind

and eroding sands. Only three still stand: Greyfield, now run by a Carnegie descendant as a posh "by invitation only" guest home; Plum Orchard, built in 1898 by George Carnegie and now serving as seashore headquarters for the National Park Service; and Stafford, once a great plantation.

The island's most famous mansion was Dungeness. This majestic home, built in 1796, boasted fifty-nine rooms and a huge, enclosed swimming pool. Dungeness had many famous visitors, including "Light-Horse Harry" Lee, George Washington's comrade-in-arms. The mansion was destroyed by fire in 1956, but the magnificent ruins still stand, black and twisted in the brooding Cumberland fog.

Slaves were brought to Cumberland in the eighteenth and early nineteenth centuries to plant indigo and cotton, and the island still is dotted in parts by the burned-out chimneys of old slave cabins. During the Civil War many islanders moved away, and the forest reclaimed the plantation land. Then, during the great depression when the wealthy families could no longer hold on to their vacation estates, large holdings were sold or conveyed by inheritance to younger generations. Before long, the threat of commercial development on Cumberland Island became apparent. In 1968 a building contractor from Georgia paid \$600,000 for an 800-foot-wide strip of the island and promptly sold several vacation home lots. The next year resort developer Charles Fraser, who masterminded the posh playground at Hilton Head, South Carolina, bought two chunks of Cumberland. A reporter for an Atlanta newspaper, writing a story about the purchase, lamented that "Cumberland will never be the same again."

But too many people cherished the island's fragile beauty, and conservationists were determined that Cumberland would remain the same. A special Georgia Coastal Islands Study Committee, appointed by the Georgia legislature, discovered that 85 percent of the people interested in Cumberland wanted the island made into some sort of national preserve. In October 1970 a private foundation paid \$5 million for 8,300 of the island's 24,000 acres to safeguard Cumberland for eventual preservation as a national seashore. Finally, much of the island was bought by the National Park Foundation with funds donated by the Andrew W. Mellon Foundation and conveyed to the Park Service.

Moss-hung oak trees surround the lake at Plum Orchard, seashore headquarters of the National Park Service.



What will happen to Cumberland now? Some conservationists fear that the fragile island might be "overdeveloped" by the National Park Service—that the 10,000 visitors a day the Service expects to accommodate will severely damage Cumberland's delicate ecosystems. Others say that government plans for the island are sound. And a few diehards, like the scattered families still building private vacation homes on the island, apparently think that whatever happens will take a long, long time.

There is already a National Park Service manager, Eugene Phillips, living in lonely splendor on the island at Plum Orchard. For the next two or three years Phillips will stay lonely; he claims it will take at least that long to get Cumberland ready for visitors, and the national seashore will remain closed during this time.

The Service obviously is sensitive to public sentiment concerning protection for Cumberland. Phillips has declared that "We expect to make the island available to the public without damaging it." Sam Weems, a Park Service representative based in Atlanta, formally stated in reference to the same question that "The National Park Service is well aware of its responsibility to preserve the natural resources of the island to the fullest extent possible while at the same time making the area available for the enjoyment of visitors." And when Assistant Secretary of the Interior Nathaniel Reed testified in favor of establishing a Cumberland Island National Seashore in April 1972, he made it clear that "Development . . . for visitor use . . . will be undertaken with a determined sensitivity toward preserving the fragile natural values of the inland portions of the island."

One way the Service intends to protect Cumberland is by banning the private automobile on the island. Visitors will have to drive to Cabin Bluff, on the mainland, and take a ferry to Cumberland. Phillips, the manager on the island now, says that the plan is to run ten ferries, each capable of handling 100 passengers at a time. The ferries will dock at three supervised beach areas: High Point, on the island's northern tip; on some central part of the island; and at Dungeness. At each place visitors will receive an orientation by Park Service employees. Then they may hike, bike or ride horseback to other island sites. There also will be a minibus or "jitney" system to shuttle visitors from one island point to another.

According to Phillips in a January 1973 report in an Atlanta newspaper, there will be no hotels, motels, cabins, villas, or trailer parks on the island. In short, there will be no overnight accommodations except for tent campers. The Service is planning six or seven campsites: four group sites and two or three family sites. All of these sites will be "primitive," said Phillips, but they will have toilet facilities, fireplaces, tables, and running water. The campsites will be reachable only by backpacking—a sure way to reserve them as a reward for only the most determined outdoor enthusiasts.

The act establishing Cumberland as a national seashore protects one major part of the preserve—Little Cumberland Island—as a monument to private concern over the island's preservation. It states that ". . . no lands or interests in lands shall be acquired on Little



Dungeness, Cumberland's most famous mansion, was destroyed by fire in 1956, but the magnificent ruins still stand.

Cumberland Island without the consent of the owner. . . .”

Little Cumberland lies at the northern end of its parent island across Christmas Creek. Its 2,297 acres have been so well preserved by present owners that it will continue to be managed privately, although it is officially part of the seashore. And Little Cumberland will be transferred to the government if it is ever abused.

Little Cumberland's history includes a heroic attempt at wildlife conservation. Here, private efforts have been carried out to help protect the giant loggerhead turtles that lumber ashore in summer to lay their leathery eggs in the warm sand. Once, the turtles were so numerous that they nested along much of the Atlantic coast, from North Carolina to Florida. But loggerheads are uncaring mothers; once they deposit their golfball-sized eggs on the beach, their only thought is to return to the ocean as soon as possible. The unprotected eggs, buried in shallow nurseries of sand, are easy prey for wild pigs, raccoons, stray dogs, and humans. So many of the eggs were taken over the years that the loggerhead is now in danger of extinction.

In 1967 the Audubon Society and the Little Cumberland Island Association sponsored a special turtle project aimed at saving the baby loggerheads from excess predation. The project consisted of taking the eggs from vulnerable nests as soon as possible, then reburying them in a special hatchery protected by an electrified fence to ward off egg-nappers. When the baby loggerheads hatched, they were swiftly carried to the ocean's edge and released. About 12,000 baby turtles have been saved in this manner on Little Cumberland—a substantial contribution to the survival of the species.

Another important part of the act establishing Cumberland as a national seashore is a provision directing the Secretary of the Interior to report to the President, within three years, his recommendations for designating any parts of the island as wilderness. With its pure tidal rivers meandering like silvery snakes through 4,000 acres of marshland; its dark splashes of oak and pine that rarely, if ever, have felt man's presence; and its windswept beaches, virgin in places, most conservationists would probably argue that Cumberland Island deserves maximum wilderness designation. But the island must be categorized by the Park Service as a “recreational” area, and there may be yet another battle over what parts of Cumberland, if any, are to be designated as wilderness. So, although the island is now in the public trust and commercial development is forestalled, Cumberland's fate is still as unpredictable as its changing sands.

For now, however, the island is peaceful. Even after it is opened to the public, only campers will be allowed to remain on Cumberland after dark. So, as always, the nights will be hushed in mist and history, and the cold early mornings will belong to the gulls, the waves, and the free, swirling Cumberland winds. ■

Maxine A. Rock, an active conservationist, writer, and one-time member of the editorial staff of this magazine, presently lives in Atlanta, Georgia, where she is vice-president of the consulting firm *Editors and Planners*. She was the first editor of the *Georgia Conservancy Magazine*, and was one of the founders of the Atlanta Zoological Society, of which she is still a trustee.

ECOLOGICAL FORESTRY for the DOUGLAS FIR REGION

Peter A. Twight

DOUGLAS FIR, COURTESY OF U.S. FOREST SERVICE

Abridgment of a comprehensive report under the same title by Peter A. Twight, published by the National Parks and Conservation Association. The report is the fourth in a series of forestry studies by NPCA supported by the Culpeper Foundation of New York. Copies of the printed report are available from the Association for \$1.00.

IN THE DOUGLAS FIR REGION of Washington, Oregon, and northern California both the U.S. Forest Service and the forest industries presently claim to be saving the Douglas fir forest by clearcutting and even-aged management.

The National Parks and Conservation Association deplors destruction of forest values by clearcutting and has proposed to reverse the current industrial priority of forest use and to establish ecological forestry—"timber harvesting and management methods which protect and conserve the soil, water, wildlife, vegetation ecosystems, recreational opportunities, scenery, and the timber itself"—as the norm for broadening and humanizing the values and uses of the nation's forests.

Historically, in the early 1800s, the time and effort required to skid huge logs with oxen or horses was such that loggers took only the choicest trees, leaving a forest with small and cull or defective trees standing. Such leftover trees provided seed for some of the best second-growth Douglas fir forests existing today.

Horse and ox teams gave way to steam-powered skidding machines. The cumbersome machines and their complex cable skidding systems were expensive to move and set up, and thus encouraged the stripping of every tree from entire mountain slopes. Little thought was given to the future forest and sustained yield. The clearcutting of vast areas, far from being the "time-honored path" of cutting, simply was the most expedient way to maximize return on the huge investments required to log with steam-powered cable systems and transport by railroad to the mill.

In the late 1920s, the bulldozer greatly reduced the cost of building truck roads and also could be used to skid logs. Now it was feasible and possibly even more profitable to convert old-growth forest to managed forest by partial cutting that took only trees of the highest values and left smaller and lower value trees to grow.

Clearcutting was first challenged as a system of forest management in the west by professors Burt Kirkland and Axel Branstrom in an attempt to interest forest owners in sustained forest yield. The Kirkland-Branstrom report showed convincingly that careful tractor logging using a permanent road system would open a forest to intensive management and higher profits. A first cutting would rapidly remove the oldest, high-value trees; develop and pay for the road system; and leave younger, smaller trees for later cutting. The forest remaining would maintain continuity of the ecosystem and supply seed for regeneration, while the road system would make fire protection possible.

A major complication in regenerating Douglas fir is the great age and vulnerability of many components of the forest. The oldest of the high-rainfall Douglas fir-hemlock-sword fern community may suffer accelerated blowdown if only a few trees are cut, and almost certainly will suffer significant losses if as much as 20 percent of its volume is cut. Under natural conditions, individual trees would begin to die or blow down in winter storms. Young trees—probably hemlock or red cedar—would fill such vacancies. Once a forest canopy began to lose continuity, blowdown would accelerate to create large gaps in the forest, which promptly would fill with young hemlock and red cedar. Eventually, barring catastrophic fire or clearcutting, an uneven aged hemlock-red cedar forest with few if any Douglas fir would be created.

The major part of the Douglas fir region does not require catastrophe to maintain Douglas fir as a significant member of the forest. A high percentage of Douglas fir in the medium-dry forest community in the region of this study—the Douglas fir-western hemlock-Oregon grape community—will result from openings of one-fourth acre and perhaps up to one acre in moist to wet portions of these forest communities.

In the driest of the three Douglas fir communities,

Douglas fir-ocean spray, the forest is completely dominated by Douglas fir, commonly uneven-aged, and there is no question that uneven-aged management with single-tree or small-group selection cutting is possible. Douglas fir forestry in all communities must provide a moderate, well-distributed amount of bare soil for seedling establishment; sufficient shade to prevent high soil surface temperature; and a sufficient seed source. It must at times reduce competition from other vegetation and large volumes of slash. Care must be taken to prevent losses from wind and to salvage mortality. Beyond practices that favor and utilize the Douglas fir forest, good forestry prevents accelerated soil erosion and the deterioration of streams and water quality. Ecological forestry, long advocated by NPCA as a socially desirable goal, secures other values also—wildlife, beauty, and outdoor recreation—and emphasizes a healthy continuity of the total forest ecosystem.

A selection system of cutting creates a more stable environment. Its relatively continuous canopy prevents wind from entering the body of the stand. Uneven crown levels protect the youngest trees while constant exposure to wind produces in taller trees greater resistance to uprooting or breakage. The more continuous forest cover stabilizes microclimate, animal populations, soils, and runoff. Variation in ages and species of trees makes uneven-aged forests in the Douglas fir region less susceptible to insect epidemics. One of the greatest disadvantages of the selection system is that the complexity of the forest and continuing management activity over a large area requires more skill, experience, and supervision from foresters.

The simplicity of the clearcutting system is not to be denied; cutting units are easier to plan, designate, and harvest; slash disposal problems are concentrated and can be handled by machinery and fire. Seeding is readily accomplished. In dense stands, high-quality wood will be produced. Furthermore, even-aged management and clearcutting require little knowledge of ecology on the part of forest personnel.

However, clearcutting and its necessary roads produce sedimentation of streams a hundred times that of uncut areas; clearcutting without roads (skyline logging) produces sedimentation only three times that of uncut areas. Besides being monotonously uniform, the even-aged forest is a poor wildlife habitat, and its even-height crown structure makes it more susceptible to insect epidemics. In addition, once its canopy is opened, the trees, never before exposed to strong winds, may suffer severe blowdown. For several years after all the trees in the clearcut area have been cut down, that area is susceptible to flooding, ecosystem disruption, limitations on use, and ugliness. In addition, stream damage and the impacts of pesticides and herbicides are additional costs that will be borne by society.

Reported failures of selection cutting in the Douglas fir-hemlock forest (the Isaac study) may well have been based on invalid data: samples were not random, nor were control plots used. Only single-tree selection (suitable for only the driest of the Douglas fir-hemlock communities) was investigated; no report was made on areas where larger (perhaps one acre) clearings were

created. Logging practices described in the report do not represent the best that can be expected from the forestry profession. Nor should brush invasion (which prevented regeneration of trees) have been assigned as a function of selection cutting; this causes severe problems even where areas have been cleared, burned, or planted with trees.

There is much evidence to indicate that group selection and single-tree selection can and should be practiced in the Douglas fir-hemlock zone.

(1) For many years, Boise-Cascade has been successfully doing selection cutting in the dry Douglas fir forests of southern Oregon; the Bureau of Land Management and the U.S. Forest Service had failed at clearcutting in this very area.

(2) Small cleared openings (one-fourth acre to one acre) were restocked with Douglas fir and hemlock through natural seeding in numbers and species composition comparable to standard larger clearcuts nearby, demonstrating that large-block clearcutting is not necessary to regenerate Douglas fir.

(3) Shelterwood cutting, now regularly practiced by the Forest Service on areas that require continuous forest cover, for the most part creates the same conditions for regeneration as a single-tree selection cut but retains the identifiable management unit and uniformity of even-aged management systems.

Rather than clearcut, one skilled and sensitive logger is thinning his dense stands, cutting selected species when they are in demand, planting open spaces with Douglas fir and grand fir, and maintaining age and species diversity. Because of the high cost of planting, this owner takes great care in felling and skidding so that skidding operations contribute to the preparation of seedbeds for commercial species.

Studies indicate that selection logging costs are less than those of clearcutting because selection systems yield larger average log sizes. A rough calculation made to simulate selection logging using a skyline system indicates that yarding and loading costs would not differ significantly if a selection system were used. Although slash disposal costs would be higher in many cases, regeneration costs should be less because natural seeding is low in cost and highly successful under normal conditions.

The environment and ecology of the Douglas fir forest in the area of this study are fully compatible with intensive selection cutting systems using modern technology. The forestry profession and the forest industry should immediately abandon specious arguments on the supposed biological necessity for clearcutting and even-aged management, and attempt to regain public trust by straightforward discussions of costs, benefits, and their distribution in the context of all forest management options. ■

Prior to his work with the National Parks and Conservation Association as administrative assistant, forestry, Peter A. Twight had five years of professional experience with the U.S. Forest Service in timber and recreation management. Mr. Twight holds a Master of Science degree in Forestry from the University of California.

NEEDED: A NEW NORTH AMERICAN WILDLIFE POLICY

The time has come for man to adopt a new attitude toward earth and its wild creatures

Durward L. Allen

Policy making, like budgeting for the future, frequently is done with little reference to the manner or means by which worthy ends are to be achieved. Probably we must accept this as a feature of the most disinterested kind of planning. Sometimes there is profit in setting standards and goals to which operations can aspire and against which accomplishments can be measured. It requires thinking things through.

Some such motives were in the minds of John B. Burnham and other leaders of the American Game Protective Association who discussed the need for policy making at the 15th National Game Conference in 1928. In his far-sighted paper Burnham spoke of issues that have a familiar ring today. He noted the increasing mobility of Americans, the flouting of laws by hunters not qualified to be called sportsmen, the paucity of funds—"We lag behind," he said, "in not putting into effect the things we know should be done."

The first resolution of the Association at that fifteenth conference asked that the chairman appoint a committee to draft a "national policy of wild life conservation and restoration, as a basis of cooperative work on the part of all interested organizations and individuals." The committee was appointed, with Aldo Leopold as chairman. He gave an interim report at the Sixteenth American Game Conference and the final report a year later, in 1930. This report has served Magna Carta purposes for forty years. However, the world of man is changing more rapidly now than at any time in the past. I believe we might profitably reappraise our principles and guidelines in terms of issues immediately ahead. Here I discuss some problems, needs, and philosophies. Hopefully it may lead to another policy study and report.

Deliberations of the original committee were concerned principally with service to the hunter, and the report itself was, as they said, ". . . a plan for stimulating the growing of wild game crops for recreational use." It was written by distinguished sportsmen, who were careful to identify and disapprove illegal activities and outdoor slobbery. They undoubtedly expected that through well-calculated educational programs there would be great improvements along these lines. Experience of recent decades indicates that degrading behavior attends nearly every kind of mass activity, and it is a major issue wherever our out-of-doors is swamped by population growth.

On the other hand there has been a steady refinement of the public taste in favor of more sporting methods of hunting and fishing, as well exemplified by the increase in bow hunters. In the twenties, field archery was an embryonic pastime, and actual hunting with the ancient weapon was engaged in by a select few of esthetes who, often enough, made their own equipment. Last year a survey of the Wildlife Management Institute indicated that there are more than 800,000 licensed bow hunters in 36 states.

Game regulations and management—including the critical province of state-federal cooperation—were a logical purview of the newly renamed American Game Association. An abundance of such issues were crying for attention. As president Daniel A. Poole, of the descendant organization the Wildlife Management Institute (1971), said recently, there has been good progress in some areas with which the policy report was concerned: ". . . the development of college curricula in wildlife management, a switch in emphasis from artificial propagation and predator control to habitat improvement and natural propagation, development of a national wilderness system, and intensified federal-state cooperation in managing wildlife on public lands."

Leopold classified game into four categories: (1) species that were adapted to farmed habitats, (2) those that lived in forest and ranges, (3) wilderness game, and (4) those interstate and international travelers that we call migratory. This classification has management realism and is still useful. All types of game figured in early problems, and they still do.

In the 1930 report the committee advocated a vigorous program on agricultural lands that would recognize the rights of the landowner to trespass control, find ways to reward the farmer for managing game habitat, and preserve public access to private properties. Remark on this in a paper discussing the game policy, committee member Seth Gordon (1930) said "sportsmen" were agreed on two points: They would have to pay for their sport, and the landowner must have a square deal. But he laid at rest the idea that great accomplishments would derive automatically from raising license fees.

It has been pointed out frequently that licensed hunters have, indeed, paid heavily in support of constructive outdoor programs, but the change in problems has largely been one of proportion and degree.

Today's agriculture is characterized by the big-business cultivation of crop monocultures on vast areas. These can simply be left out of consideration for wildlife production. On smaller, less intensively used, and more diversified farms there are better opportunities to manage a by-product like wildlife. Usually this is not our highest priced land, and there are problem sites to be handled with a view of their low use capability. There are things the rural resident can do to bring his surroundings to life in beauty and stability. We have made progress in learning the realities and limitations of habitat improvement.

But the truth is that for forty years we have been waiting for someone to find a way to compensate landowners for producing wildlife for public use. It was a good idea, and if anyone comes up with new inspiration and a successful plan, I will be on his bandwagon in a hurry. But I see no real evidence that this is likely to happen on a large scale. As Leopold expressed it, wildlife is a "thin" crop. Frequently the per-acre yield and the dollar value are low. I hasten to recognize the benefits in big government programs that help reduce the intensity of land use for land conservation and economic purposes. The soil bank plan has pioneered the way for a still more valuable water bank system that can be another move toward mitigating the continuing drainage that has been so ruinous to great areas of wildlife habitat.

Today, it is evident that game management is only part of the culture and custody of living things. But this was clear also to the early policy makers, for they recognized ". . . the protectionist or non-shooting nature-lover, who is on the increase, and whose rights and opinions must be taken into account." Forty years later the 1970 Survey of Fishing and Hunting shows that American citizens spent 847 million man-days in the field at bird-watching, nature walks, and wildlife photography. This was nearly nine percent more than the total time spent at hunting and fishing.

Our modern outlook obviously covers the broad field of wildlife in all its forms. This means we are at the point where state programs should be supported, not only by the hunter and fisherman, but by general funds representing more fully the concern of all citizens for their living properties.

On second thought, perhaps those last words suggest a smug and homocentric attitude—actually it is one in

which I do not wholly confide. For in truth, is man the keeper of all his fellow creatures? Does the primate with the big brain, who developed a culture and spread over the entire earth, now own the birds and beasts, the atmosphere and the ocean, the sun, moon, and stars? Are these our properties to cherish or destroy? Whatever privileges we claim, we must thereby own to responsibilities of the husbandman and landlord. If we see the earth only as the household and garden of our kind, then we the occupants and dependents are also the guardians. Should not a new wildlife policy be explicit in the charge we assume?

I suggest that we are at a time in our history when men must rise to a new level of sophistication in their attitudes toward the earth and the life it supports. How could we state a respectable concept and durable motive for managing and protecting living things? What are we after today and tomorrow?

Possibly we could state it this way:

1. We manage native fauna and flora as a part of our natural scene for many non-consumptive uses and esthetic satisfactions found by perceptive men in the orderly world of nature.

2. We protect and husband wildlife as a harvestable resource, most notably for hunting and fishing and certain carefully controlled commercial uses.

3. We harbor and conserve other forms of life out of a prudence that says we are not ready to foreclose options for the future and decide which forms of life may share this earth with us and which may not. In principle we recognize that non-human creatures should live even though we have acquired the means of destroying them.

In our social concerns, we profess a protective interest in the rights of minorities. But sometimes we seem to forget to defend the majority against attacks their provisions of individual freedom have made possible. In particular, our legislative process has a built-in mechanism that frequently permits a local group or individual to despoil public property and values. This has been evident in the abuse of our public lands, and wildlife is one of the public interests at stake.

If majorities of the present are poorly represented, what is to be said about majorities of the future? They, of course, are consistently outvoted. The public interest seems to be nobody's legitimate business, at least not for tax purposes. In resources affairs rights of the ma-

jority are a forgotten cause. We hear of the possibility of a new constitutional amendment that would provide guarantees against environmental degradation. I suspect this is something to be pursued, and it might even include a right to have some areas of the earth left alone to take care of themselves.

This confusion of rights is matched by difficulties in the field of state and federal jurisdictions. There is a good basic logic in our system, but it may well need some modification to permit more effective action on nationwide and international issues. We have encountered this recently in efforts to prohibit widespread poisoning of the environment and the use of aircraft for killing wild creatures. The danger of wiping out remnant life forms such as the condor, black-footed ferret, eagles, and falcons is a national, even international concern. More broadly I could mention the depletion of resources of the high seas and the jeopardy of the world's cats. Which leads to another question: Do all the people of the world have a stake in vanishing species? If so, is there a logic by which our federal government could assume certain responsibilities within our own borders under the treaty making powers of the President?

In state governments too we see frequently an unfortunate limitation of jurisdiction. For we have game and fish agencies with few, if any, custodial obligations for other animal life. As noted previously, we can no longer isolate game and fish problems: we are in the business of protecting and managing all living things. In 1930 it was almost true that the hunter was right by definition. Now he must bear the burden of proof that his uses and management are not damaging to other interests. In this relationship he gains support for many essential programs. There are common causes that will, or should, bring together some strange bed-fellows.



In general, we probably can say that what is happening to wetland and water habitats still fosters some of our greatest wildlife failures. From the Arctic to mid-America we see the proliferation of water ills in many forms. Drainage, filling, channeling, silting, pollution, and eutrophication in many combinations create ever-renewed battlefields for the defense of native conditions and living things.

An end to this is not in sight. In particular we witness the gains of a strange concept among those preoccupied with replumbing the natural water systems of the continent. In terms of ultimate effects they evidently aim to destroy our environmental diversity, standardize people and scenes, and manage resources and living space to produce every human being who can find standing room.

I refer to the idea that if God did not divide water supplies evenly among various regions, then it is up to man to do so. How far its proponents can go before provoking a revolution among the people who pay in taxes and the defacement of natural features remains to be seen. Against the background of centuries most of our water works will render transitory service to only a few generations; erosion and siltation still are geological processes. We are leaving people of the future a heritage of built-up floodplains and mutilated scenery. Ultimate costs cannot be calculated, and even the immediate price frequently is charged to the future. In the great plans did anyone ever hear about the half-life of a reservoir?

I give some emphasis to this because water problems are at the root of many trends adversely affecting our wildlife, both aquatic and terrestrial. It is evident that our opportunities and limitations in managing wildlife are intimately tied in with what is done with the surface of the earth, its soils, waters, and vegetation. It is true today and forevermore that we will not manage living things without managing environment. That is the big job in planning and operations, and natural processes will do the rest. One could say, perhaps, that the realization of wildlife benefits depends on how successfully we zone our living space for the kinds of uses that permit resources to be self-renewed.

The 1930 report mentioned the mobility of Americans, but I am sure that even the wise men who drafted it could not foresee the problems spawned in this field. Easy transportation has created a new dimension in the public use of wildlife, greatly multiplying the demands of urban dwellers on resources far removed from their local scene. Of peculiar interest is the so-called off-trail vehicle. Several years ago the cover of a mechanics magazine carried a spectacular illustration of a motor-driven monster. "Rugged new all-terrain vehicle!!" the ad proclaimed. "It breaks trail anywhere, knocks down brush and small trees as it goes!"

This personifies a feckless and unsophisticated attitude that is increasingly among city-bound people. It regards everything beyond the back fence as a chaos of nature to be tamed and ordered through modern technology. Is there such a thing as a legitimate off-trail vehicle? In principle I think not, and we probably are in the process of making this limitation stick relative to snowmobiles, dune buggies, and any other terrestrial wonder that leaves tracks. In Michigan's northern state forests there are now some 700 miles of maintained trails open to snowmobilers. This is the way of the future, since it is evident that vehicles of every kind will continue to increase.

Perhaps it is natural always to regard the present as a unique dividing line between two alien eras—that of the past and that of the future. But the threshold of the seventies might well be conceived as separating two phases of our modern cultural history. In the first phase we achieved enough medical technology to reduce greatly the checks on our own numbers. In terms of what a human living standard could be, and with the outlook that high living standards must be maintained into the future, the world has been vastly overpopulated. We indulged in open-ended exploita-

tion of the resource base, and we simply threw aside the by-products and leftovers as though they had no value. In the frantic pursuit of what we call plenty we had little time to borrow the troubles of tomorrow. A major share of our economic expertise has been devoted to rationalizing and speeding from year to year, and from one election to another, the process of using up our earthly substance as though it had no end.



In this impetus of what we call progress, the stresses and problems of humanity are multiplying on an exponential scale. It has been calculated that our total technology is doubling in 15 years. There has been no time to engender the wholesome mores and traditions that would put resource use on a lasting basis. Philosophies are not developed in crash programs. Inevitably a set of moral imperatives must come if mankind is to survive in what we regard as respectability. Most people will be guided, not by scientific facts, but by what they consider to be right, without necessarily knowing why.

As long as "growth" in population and resource demands is the best working policy we can muster, we are still in the crude phase of our technological age. We are in a state of social savagery if we sit by and allow the whales of the ocean to be exterminated. We have not yet arrived on the modern scene as long as New York City can dump each week 1.5 million cubic feet of trash into the Atlantic off Ambrose Light.

The great need of these times is for the human population and its resource uses to be put on a relatively stable basis. The entire earth must be a renewable ecosystem if man is to have a future. Wildlife is one of those assets in which there is, literally, no limit to qualitative improvement.

If ever our educational institutions had a significant challenge, it is in cultivating in the minds of young people an awareness and respect for man's earth-origins and earth-dependence. This is the new departure in environmental education, and only small minorities on school faculties have any background for servicing it. For our scientific majority the specialist role is appropriate and endlessly valuable, but it is the generalist who must create a framework on which great revelations and small facts can be arranged in an orderly cosmography. I suggest that much of the great social unrest that pervades the world is founded in the ideological vacuum through which many people see the earth and human destiny.

I have emphasized that wildlife policy must be based on sound policies of land and water use. What we are doing now in these fields is largely to serve, at levels it will be impossible to maintain, the overdemands of a wildly expanding technology. Behind this is the massive advance of population—during 1972 there

will be added to the earth's population 74 million more people, with all their needs and aspirations. In the long view our management of all resources must be based on a realistic population policy, and there is only one way to go—toward zero population growth and then a progressive reduction in human numbers.

This means a control of birth rates around the world, and it has hardly begun. In the United States we do not yet have a population policy. Like many other moves in the public interest, the formulation of such a policy is politically inexpedient. It is blocked by an atavistic allegiance to longstanding ways of thought, to an irresponsible consecration of economic growth (the easy way to profits), and the confusion of scientific specialists whose disciplines are adrift without benefit of an organizing concept. The immediate prospect is that we will not have a population policy until enough people become aroused to demand one effectively.

But we cannot wait for that. We must assume a calculated optimism because this is the only constructive course. In planning for what is right we can only assume that men will act wisely, that the next instar of human development can be continued indefinitely, that a refined culture will not be dependent on the using up of limited funds of earthly properties, that our mores of the future will require environmental enhancement as the only permissible change.

There are many uncertainties, but we do need another look at wildlife policy—and, beyond that, the next one in our future should come in less than 40 years. ■

Dr. Durward L. Allen, professor of wildlife ecology at Purdue University, has held influential offices in many scientific and conservation organizations and has been widely honored for his many contributions to conservation and to the understanding of ecological relationships, particularly concerning predator-prey relationships, big game management, and wilderness preservation.

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The report* of a distinguished Committee on North American Wildlife Policy commissioned to formulate a new wildlife policy in response to this call was presented at the March 1973 North American Wildlife and Natural Resources Conference. The report contains many excellent proposals that NPCA hopes will be implemented by federal and state governments. In addition, a contract study is currently in progress which will make recommendations to the Department of the Interior and to the Council on Environmental Quality concerning federal and state management of nongame wildlife.

*Available for \$1.00 from the Wildlife Management Institute, 709 Wire Building, Washington, D.C. 20005.

INDIANA BAT

a cave-dweller in trouble



article by

Arthur M. Greenhall

photographs by Roger W. Barbour

Human disturbances are contributing to the decline of a native flying mammal



FROM "BATS OF AMERICA," R.W. BARBOUR AND W.H. DAVIS, COURTESY OF UNIVERSITY OF KENTUCKY PRESS

OVER THE PAST twenty years bat populations in America have declined drastically. Conservationists and zoologists alike think that the decline has been the result of direct killing, destruction of habitat and roosts, urbanization, and pesticides. Strange as it may seem, some part of the decline may be attributed to well-intentioned speleologists, who often have unwittingly disrupted breeding bat colonies by their visits, and to the activities of interested but inexperienced bat banders. Fortunately, in the past few years both groups have recognized the potential dangers of their activities in this respect, and they are taking appropriate measures. However, one of the greatest problems in the conservation of bats is education of the lay public.

Of the forty different species of bats found in the United States, the majority are insectivorous cave dwellers. Protection of these bats can be justified on sound economic grounds, inasmuch as each bat consumes from two to four grams of insects per night. Large quantities of economically significant agricultural and silvicultural pests are eaten. In addition to the natural control of insects, cave-dwelling bats fulfill another important ecological role with their guano deposits, for such deposits in caves provide a major source of food for many cave-floor animals. Of more direct interest to humans is the small but lucrative industry that supplies bat guano as fertilizer.

Two native insectivorous species of bats are on the official list of endangered native fish and wildlife compiled by the Office of Endangered Species and International Activities in the Interior Department's Bureau of Sport Fisheries and Wildlife. First of these is the Indiana bat, *Myotis sodalis*, which is colonial and hibernates in caves. Second is the Hawaiian hoary bat, *Lasiurus cinereus semotus*, a solitary, tree-living species. Other bats that are considered threatened in the United States are the Ozark big-eared bat, *Plecotus townsendii ingens*, the Virginia big-eared bat, *Plecotus townsendii virginianus*, and the spotted bat, *Euderma maculatum*.

The Indiana bat has been of interest to biologists because of its specialized roosting habits and a mystery

concerning its summer habits. Because it is not a very adaptable species, it is extremely vulnerable to the many pressures that have contributed to its decline. Many of the points mentioned in the following discussion also can be applied to other American species of bats.

A relatively small bat with a wingspread of about ten inches, the Indiana bat is dark gray with dull rather than glossy fur. Most bats of the genus *Myotis* are difficult to identify, and the Indiana bat may be confused with several other bats, such as the little brown bat, *Myotis lucifugus*, and the gray bat, *Myotis grisescens*.

The Indiana bat is known primarily from the caves in which it hibernates. Its past distribution included the midwestern and eastern states from southern Wisconsin east to Vermont and south to Oklahoma and northern Florida. The species has shown a drastic population decrease since 1950, and little is known of its population size in the East and North. At present the species has a fairly restricted geographic range; 90 percent of the known population is found in two caves in Kentucky, and in a cave and a mine in Missouri. The other 10 percent occurs in groups varying from about twelve individuals to a few thousand in several dozen caves and mines in Illinois and Indiana. A total estimate of the present population of Indiana bats is believed to be about 500,000, and the cave areas of these states are thought to be the center of abundance.

This bat congregates by the thousands in a relatively few sites with very precise atmospheric conditions. Temperature seems to be the most important factor determining the selection of the hibernation site, with midwinter cave temperatures averaging only 37° to 43°F. (3° to 6°C.). Relative humidity is high, ranging from 66 percent to 95 percent, with an average of 87 percent throughout the year. Such an exact combination of conditions is found in only a few caves and is restricted to a rather narrow zone near the cave entrance. Because any disturbance that might alter these conditions is more likely to come from outside the cave than from within, the Indiana bat is more vulnerable than species of bats that hibernate deeper inside the cave. Bats hibernating near the cave entrance would be the first to suffer from an outside disturbance—vandalism, flooding, explosions from quarrying activities, the burning of debris in cave entrances, or a disturbance causing the collapse of roosts.

One interesting aspect of the behavior of cave bats is their habit of clustering together in bunches. The size, shape, and number of individuals in a cluster generally varies according to species. The various types of clusters are adapted to different temperature and humidity zones; thus several different species of bats may occupy the same cave in winter. The Indiana bat characteristically forms large, tight, compact clusters of

as many as 5,000 individuals, although usually a cluster is composed of about 500 to 1,000 bats. The size of an Indiana bat cluster and its location near the cave entrance is about the same every year. A cave may contain more than one cluster.

When insectivorous bats enter hibernation they are heavy with fat deposits that enable them to survive the winter if not disturbed. Because even minimal disturbance during hibernation may arouse bats to an active state that drains their energy supplies, any premature arousal may kill them.

Inasmuch as a high percentage of all individuals congregates in only a few caves in winter, any local disturbance near these caves could be a major catastrophe to the Indiana bat. However, the same disturbance might not seriously affect a randomly distributed species such as the big brown bat, *Eptesicus fuscus*, which occupies the same caves but does not form tight clusters and usually hangs singly and farther away from the cave entrance. A single stone thrown by a vandal at a large cluster of Indiana bats could kill a great many individuals.

A series of such disasters actually occurred at Carter Caves State Park, Kentucky. In the winter of 1957, hundreds of Indiana bats were killed when they were stoned from the low cave ceiling. In December 1958, vandals discharged firecrackers and homemade bombs in the midst of the clusters. On December 26, 1960, three boys tore great masses of bats from the ceiling, then trampled and stoned the helpless animals. Thousands of these bats fell into a stream that flows through these caves and were drowned before they could arouse themselves from their torpid state. An estimated 10,000 bats were killed.

Although random invasions by vandals may kill large numbers of bats at one time, the simple act of entering a roost by a speleologist, bat biologist, or well-intentioned visitor may arouse hibernating bats. The activities of bat specialists whose studies require the handling of bats for banding have been continued for more than twenty years and could have caused a measurable decline in the numbers of well-known cave bat populations. Year after year teams of interested but inexperienced students have gone into roosts to band as many bats as possible for meaningful, long-range population studies. In the past few years, bat biologists have themselves recognized the potential danger of this practice and are taking appropriate measures. One expert bat bander, having noted a decline in the numbers of the Indiana bats and gray bats he was studying, observed population recoveries when he reduced his visits from several to one a year.

Other causes of bat decline have been those commercially operated caves containing Indiana bats and other bat populations where visitors were allowed to



watch the bats. Loss of habitat and roosts also have been attributed to limestone quarrying and the destruction of roosts through urbanization. Another factor has been the construction of dams that have inundated large areas that contain bat caves. If constructed, one dam proposed by the Army Engineers on the Meramec River in Missouri will inundate approximately 100 caves that are known to be wintering roosts of the Indiana bat and the gray bat.

According to many bat biologists, there is little doubt that pesticides have threatened the survival of some species of bats. Inasmuch as the Indiana bat is insectivorous and is found in areas where other insect-feeding bats have declined as a result of pesticide poisoning, it is possible that pesticides may be an important cause of the decline of the Indiana bat, although no pesticide-related studies have yet been made on this species. But British studies on other species of *Myotis* do indicate a relationship between the use of pesticides and a decline in bat populations.

Because the Indiana bat is listed as endangered by BSWF's Office of Endangered Species, the way has been paved for the preparation of a status report and a proposed recovery plan that, it is to be hoped, will be implemented as soon as possible.

The National Parks and Conservation Association reported in its September 1972 magazine that it had written the Secretary of the Interior saying that "population levels of various species of bats now are either very low or are showing significant declines" due to disturbance of roosting sites, disturbance by untrained banders, lack of public understanding of bats, and lack of adequate laws protecting the mammals. The Association said further that, because bats are migratory and cross international boundaries, they deserve and need the same basis for protection as that afforded waterfowl and other migratory birds.

As of November 1972, BSWF placed a moratorium on the issuance of bat bands to new banders or for new projects. The current supplies of bat bands will be issued for use only for the completion of projects that do not involve any species of bats whose populations are declining. These restrictions will ease one of the major causes of disturbances to bat colonies in general and to the Indiana bat in particular. Most banding is done while the bats are hibernating in winter, so the handling of the animals for banding inevitably disturbs and arouses them. In addition, bands that are not applied with the utmost care can cause fatal infections.

The BSWF also announced that appropriate steps will be taken to explore the possibility of developing an international treaty for the protection of North American bats. Conservationists hope that the Bureau will proceed swiftly.

Large numbers of Indiana bats live in the various caverns of Mammoth Cave National Park in Kentucky. Iron gates or chainlink fences have been installed at most of the entrances to park caves harboring Indiana bats. The barriers permit the bats easy passage while



A cluster of hibernating Indiana bats.

keeping people out. And since the Environmental Protection Agency recently banned almost all uses of DDT, Park Service naturalists at Mammoth Cave have reported an increase in the numbers of the Indiana bat there.

Concerned with the protection of all endangered species found on lands under its jurisdiction, the U.S. Forest Service has contracted with an expert on the Indiana bat to obtain population data in the caves on public forest lands in Indiana.

Some states have passed legislation protecting the Indiana bat, with Kentucky taking the lead by erecting chainlink fences around the two entrances of Bat Cave in Carter Caves State Park, which suffered the extreme vandalism mentioned earlier.

The National Speleological Society has been requested by bat biologists to adopt certain policies that will allow speleologists to pursue their interests while minimizing the impact on bat populations. The society has appointed a Bat Conservation Task Force that has instructed members to avoid important bat caves during the critical part of the year. Members have been asked not to publish precise locations of newly discovered caves in books, bulletins, or newsletters. The society also has managed to prevent the spraying of pesticides in the Mark Twain National Forest in Missouri, where colonies of the Indiana bat and other bat species are known to occur. Scientific organizations, bat researchers, and commercial pest control groups who have become aware that their activities have been detrimental to bats are now cooperating to save these mammals.

The editors of the *Journal of Mammalogy*, published

by the American Society of Mammalogists, have established an editorial policy under which manuscripts dealing with endangered mammals will not be accepted for publication unless evidence is presented showing that research specimens were obtained legally and with the approval of all appropriate agencies, and that observations made were not detrimental to the survival of any endangered populations.

In a resolution of the Third Annual North American Symposium on Bat Research, in September 1972, individual bat biologists were requested not to undertake new investigations unless they promise to yield significant new information and can be carried on without need for bat banding, population sampling, or specimen collecting. It was pointed out that bat populations may be counted or estimated visually without disturbing the bats; also that hibernating bats should not be aroused more than once a year. Summer populations should be netted or trapped at the colony exits, not inside the roosts. Flightless young should be examined only at night when the adults are absent from the roost.

An additional action that must be taken is the location of new wintering roosts of the Indiana bat so that they may be protected. One of the most perplexing problems in the life history of this species is its distribution and habits in the summer. Summer records are scarce, and no maternity colonies are presently known. Where these roosts are found, they should be protected.

Further, it has been suggested that known roosts on federal and state lands should be closed to public traffic. Owners of caves on private lands might be per-

sued to close them in the public interest—especially during the bat hibernation period—and thus protect a threatened species. Private conservation groups might be persuaded to supervise protection of caves identified as harboring endangered bats.

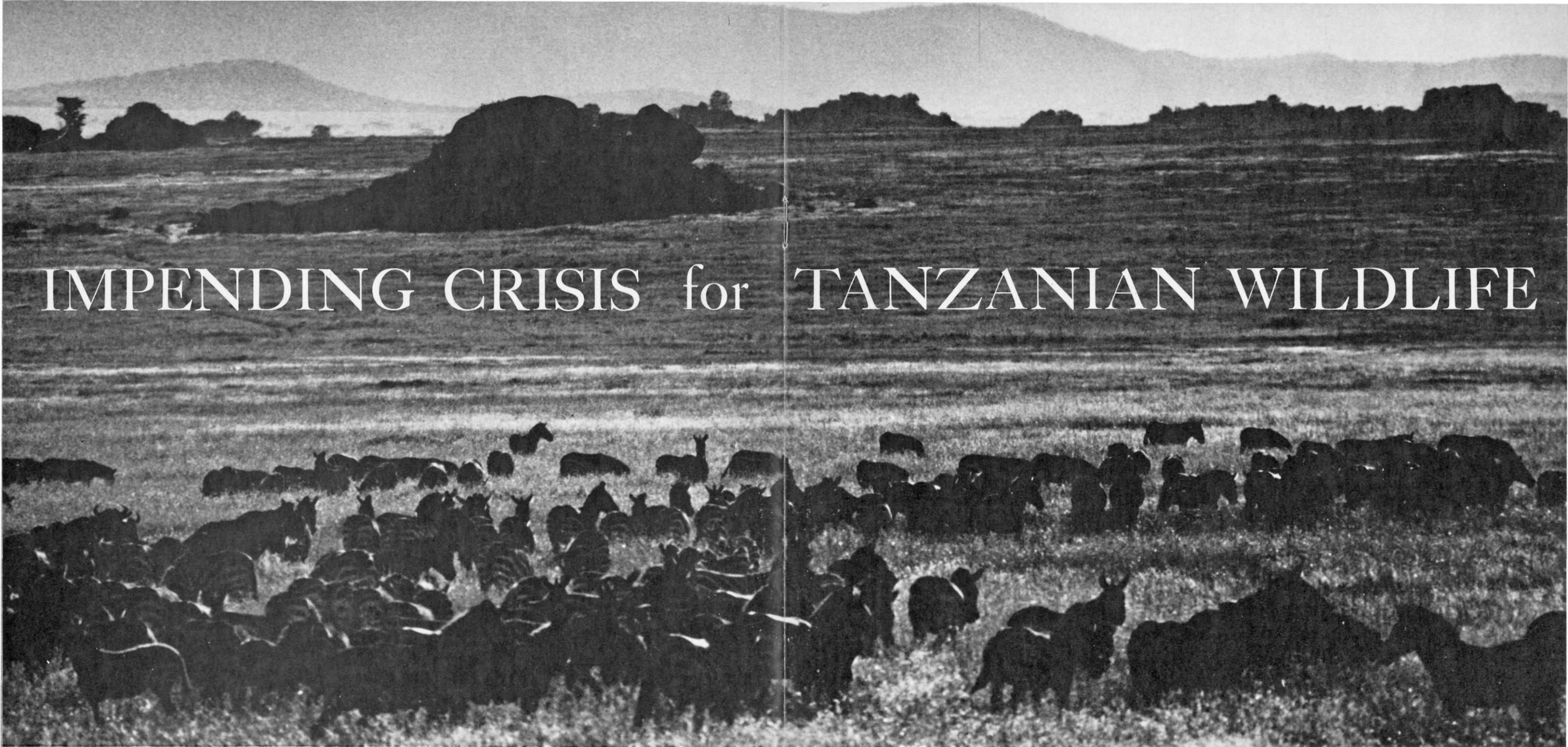
Practically nothing is known about the incidence of disease and pesticide poisoning of the Indiana bat. Numerous state public health departments have recommended that endangered bats and other threatened bat species not be collected specifically for such surveys, but rather that dead or dying bats should be sent to appropriate state and local laboratories for examination. It is stressed that bats in this condition should be handled with great care, because they could contain disease organisms. However, it is safe to use thick gloves, forceps, or a stick to place them in a bag or jar for shipment to local health authorities.

The National Pest Control Association has requested members to save bats killed in extermination programs so that carcasses can be identified and examined for pesticide residue as well as for diseases. The association has also accepted an offer of assistance from certain bat research workers in cases where bat control is indicated to prevent indiscriminate killing of bats in pest-control campaigns.

The concerned and interested public can assist in the protection of endangered bats, and the better informed the public is, the more useful its efforts will be. The most important fact to be publicized is that the majority of bats in the United States perform the useful function of keeping down insect populations. If bats are not disturbed or eliminated, they will continue with this useful task. Occasionally bats are found to be rabid, but not frequently enough that the U.S. Public Health Service considers them a major public health problem. However, the public is cautioned never to pick up *any* bat—even a dead one—with bare hands. Ailing or dead bats should be reported to the health authorities. Children, especially, should be instructed never to handle bats or throw anything at them, but rather to leave them alone. Sometimes bats will roost in the attics of dwellings. Rather than risk destroying the bats, one should seek professional help for their proper removal.

An informed public, including both scientists and laymen, can assist conservation groups and government agencies in establishing a sound bat conservation program that utilizes the biology of bats as the basis for its decisions. ■

Arthur M. Greenhall, a zoologist with the Interior Department's Bureau of Sport Fisheries and Wildlife, long has been interested in bats and their conservation both in the new world tropics and in the United States. He recently terminated a several-year assignment in Mexico as bat ecologist with the Food and Agriculture Organization of the United Nations investigating vampire bats, and he has now returned to the Bird and Mammal Laboratories at the National Museum in Washington. He is a research associate of the Smithsonian Institution and a member of the International Council for the Protection of Endangered Bats.



IMPENDING CRISIS for TANZANIAN WILDLIFE

The Serengeti Plain—grassland or garden patches, cattle or wildlife?

the world must soon decide
whether it will support or risk losing
Tanzania's spectacular wildlife areas

article & photographs by
NORMAN MYERS

TANZANIA contains two of the most striking wildlife areas in East Africa, if not in the whole world: the Serengeti Plain and Ngorongoro Crater. Hardly anywhere else can you see more than one million animals on an annual migration or 25,000 animals in a mere 100-square-mile area throughout the year. Yet, at the end of Tanzania's first decade of independence, after some extraordinary feats of wildlife conservation, both these areas could be heading for trouble.

Tanzania started off on new-found nationhood with

one national park. Now it has seven, and another three are being established. These areas cover about 14,000 square miles of Tanzania's 365,000 square miles. The Selous Reserve, one of a string of game reserves, is almost twice the size of the largest park in Africa with an area of over 25,000 square miles. Tanzania spends a greater share of its national revenue on its parks than the United States spends on its national parks, even though Tanzania's national budget amounts to only half of what New York City spends on ice cream each



Newborn wildebeest learn to walk within ten minutes



Leopard with gazelle



Zebras pursued by African hunting dogs

Decisions made now will determine whether the natural order in Africa will continue.

year. This country is one of the poorest in the world, with an average annual income under \$100. Yet it has one of the finest records in the world regarding the preservation of its wild heritage. If Tanzania's record of accomplishment far surpasses what most other countries have done, it is even farther ahead of what the doomsayers were predicting when Britain gave up its colonial tutelage in 1961.

But there are far-reaching problems. Tanzania has only fourteen million people for its huge area, but the onlooker who divides populace into land area and comes up with one of the lowest population densities on earth should try to live as the Tanzanians do. He would find that one-third of the country is off limits, unless he wants to experience tsetse-borne sleeping sickness. Most of the rest of the country is too dry for cultivation and can support no more cattle-raisers than can Nevada or Utah. Nor can Tanzania set up industry inasmuch as it has far less mineral wealth than any similarly sized portion of the United States. Nor has it enough gamblers for a Las Vegas-style enterprise; a local citizen rarely spends as much in a year as does the most cautious indulger on the Sunset Strip in a single evening. Some of the small patches of the country suitable for cultivation support as many as 1,600 people to a square mile, which is half as much land as the average Indian peasant enjoys. This is horticulture, not agriculture.

Yet the Chagga people on the slopes of Kilimanjaro produce some of the best coffee in the world. But world coffee prices rocket up and down as much as 50 percent in a single season, causing unstable income. Prices of imported manufactured goods, on the other hand, such as machinery and radio sets, climb steadily upward, often twice as fast as the price of coffee, tea, or cotton. Tanzania used to lead the world in producing sisal, and much of its economy depended on this natural fibre. But a synthetic substitute, which was supposedly

stronger though nonbiodegradable and P.C.B.-producing, was discovered. This innovation helped the technologically advanced world's balance of payments but resulted in thousands of Tanzanians losing work in a country where there would be national rejoicing if the unemployment rate fell to a mere 10 percent (half its usual rate). More hungry hordes turned to the land for subsistence agriculture instead of the sisal cash crop.

These land-seeking multitudes are joined each year by an average annual population growth of 3.5 percent, one of the highest rates in the world. Tanzania is not producing more children than was typical for families in pioneer America; more are surviving. Tanzania meantime has no West to expand into, no territories overseas for migration, no sources of raw materials in colonial possessions. The people have no options. No wonder Tanzanians are taking a long look around their landscape to see where there is spare land with enough rainfall for arable agriculture. More are noticing that two such areas could be the Ngorongoro highlands and the western reaches of Serengeti.

These factors are the factors that count for the man in the fields. He in turn is the man who ultimately can make or break the future of Tanzania's wildlife. Ask the man living up against the borders of the Serengeti what he thinks of those throngs of wildebeest migrating around the region, and he may, perhaps, produce some talk about great national heritage. Ask him again, ask as if you really want to hear his opinion, and he may admit how much he likes wildebeest stew or gazelle goulash. There will be time for philosophizing about wild nature when the talk is not drowned out by rumblings from his stomach. This is why 40,000 animals a year at least are caught in poachers' snares around the Serengeti, probably far more than the 2,000 lions take. This total, however, is nothing compared with the twenty-four million pounds of canned meat which, it

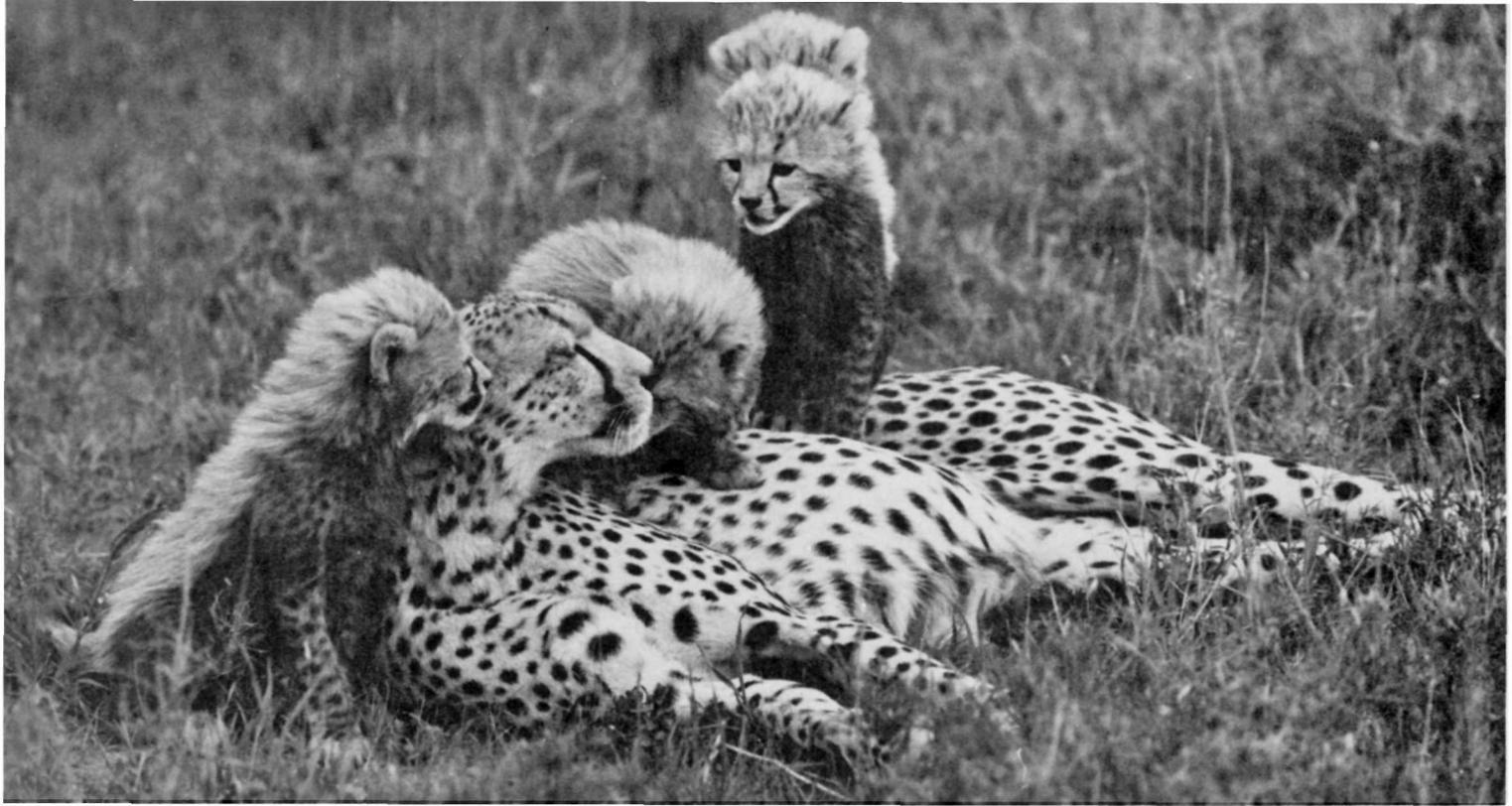
is calculated, could be taken from the wildebeest through a properly conducted cropping scheme. The project would leave just as many wildebeest another year for the man who insists that wildlife is a thing of beauty to be exploited never. And some of these animals could be used for more than their meat. A zebra skin is worth \$50 to the local people at Ngorongoro where a small-scale scheme is underway, whereby people making a living out of zebra alone could earn more than from cattle in the same stretch of country.

Some people might object to cropping in the Serengeti on the grounds that it would eventually decimate wildebeest, zebra, and gazelle populations. But sustained-yield cropping, as the name implies, takes only the number of animals annually that can be replaced within a yearly reproductive cycle. A properly conducted cropping would no more lead to the demise of the Serengeti migrations than a rancher's annual harvest leads to the end of his cattle herd. Of course, the cropping would have to be managed under the auspices of experts in herbivore population dynamics. Such dynamics depend on the natural proportion of males to females within a herd, the proportion of young to old, the amount of grass available, and the effects of disease at a particular stage of a population's cycle.

A reduction in the adults of a herd, up to a point, results in an increase in fertility and a lower mortality rate among the young until the number in the herd reaches equilibrium with the new predation pressures from cropping. Rather than steadily cutting back on the migratory thousands, then, a scientifically conducted operation would tend to produce more wildebeest calves per year without decreasing overall totals. A team of FAO experts is currently preparing to take a crop of Serengeti wildebeest when the herds move out of the park into the Loliondo hinterland in Masailand as part of their annual trek.



Well-protected elephant calf



Cheetah cubs stick close to mother.

CHOICES must soon be made between wildebeest and cattle and between savannah grasslands and mealie patches in much of the land surrounding Serengeti Park. The park is twice the size of Yellowstone, but it is only half what the animals need for their year-round needs. The animals migrate outside the park's borders through a much larger area surrounding it. As the land bordering the park is put into cultivation or is fenced off for grazing domestic stock, man's activities and the wildlife's needs conflict. Hitherto this problem has not created much bother; there was no real pressure either way. Now the conflict is brewing with every tick of the clock, with every newborn child, with every fresh blow dealt by world trade patterns to Tanzania's infant economy, with every affront to the newly found national pride that tells Tanzania it may not follow its own views on neighboring Rhodesia on pain of losing overseas aid.

One year ago the tide started to turn against the Serengeti Park. After years of seeing extra bits tacked onto the park's area, a local administrator, under pressure from his people for more living space, suddenly excised 100 square miles of land, a strategically important block across the main wildebeest migration tracks. When conservationists remonstrated that the park was a major money-earner for the nation, the local people replied that so far they had scarcely seen a single dime directly attributable to the park. To date, the zones surrounding Serengeti have allowed a breathing space for the park's ecosystem. Now these buffer zones threaten to become a noose to strangle the life out of the wild community. If the eco-unit is reduced by half, the animal numbers could well plunge by more than half. Then the wildebeest might find there is less

need to go on migration, inasmuch as a year-round trek reflects density in one area after another, season after season. Fewer wildebeest have far fewer inducements to go anywhere much in search of fresh grass and water. There used to be a springbok migration in South Africa until that country became developed. There used to be a bison migration in the great plains of North America. The Serengeti migration is one of the last of its kind to be seen on the earth.

The spectacle is still being seen in Tanzania by many people who travel around the world to see it. Besides contributing tourist dollars, many of these people are generous donors to the cause of preserving Tanzania's wild heritage. Fund-raisers in North America and Europe used to contribute over half a million dollars a year to go with the nearly one million the Tanzanians spend themselves. Although these gifts have been substantial, they are not enough.

For one thing, many safari tours begin in the safari capital of East Africa, Nairobi, over the border in Kenya. Most of the revenue from the safaris stays with Nairobi organizers; the vehicles and drivers are mostly Kenyan. Kenya attracts at least twice as many tourists and perhaps three times as much of their foreign exchange as does Tanzania. In a sense, Tanzania is subsidizing Kenya's tourist industry by offering such prime attractions as Serengeti and Ngorongoro within striking distance, while bearing an unfair share of the costs of keeping such wilderness staffed with wardens and poaching patrols, as well as meeting the pressures for stringing the wildlands with ranch fences.

ONE SOLUTION to the problem of revenues is the proposed World Heritage Trust. This proposal was



Egrets eat insects stirred up by zebras and wildebeest.

adopted by the UNESCO General Conference in Paris in November 1972 and is receiving much support from the new UN Environmental Agency, IUCN, NPCA, and similar organizations. The convention setting up the Trust is now in the process of ratification by the United States Congress and by governments around the world. When it comes into force, it will prepare a list of world heritages in danger, allowing countries such as Tanzania to request assistance where needed. Funds will be available through UNESCO, allowing the more affluent countries to help Third World countries without the paternalistic spirit that detracts from much bilateral aid. Member countries will contribute a sum equivalent to about 1 percent of what they usually contribute to UNESCO, plus further voluntary contributions. No doubt, the United States government will be moved to contribute extra funds if public opinion supports it.

Meanwhile, tourism continues to provide a modicum of incentive for wildlife protection in Tanzania. That tourism and the conservation it stimulates continue is due primarily to President Julius Nyerere—a man who leads with a shovel in his hands and the African sun on his back. He is one of the more capable exponents of nation building in Africa, combining fine ideas with fine ideals. Insofar as he continues with wildlife protection, he is dealing with a field that could be defined, like politics, as the art of the possible. Present prospects suggest that long before the end of the century, safeguarding the Serengeti could become the agony of the impossible. The Serengeti must justify its existence by meeting the needs of the local community as well as the aspirations of nature lovers everywhere. This will be the challenge, then: to provide work, food, and land for a growing population while preserving one of

the world's unique wild heritages. There are no easy answers, and more money is only one of the solutions.

THIS PROBLEM will tax the capacities of not just ecologists but of economists, sociologists, anthropologists, demographers, and whoever else is able to assist an emergent nation in Africa. The field is the New Conservation. The wildlife supporter from outside had better know his figures for grain production and tea exports and consider buying a shirt of Tanzanian cotton rather than Megacorporation's synthetic fabrics at home if he really wants to make a contribution to saving the wildlife in a manner that will be listened to in the fields. If he ignores these aspects, he may antagonize the people who control the future welfare of the wildebeest.

Conservation is now directed at the total environment, and ecology must encompass human ecology in some shape or form. Everyone knows that, but few are ready to meet the challenge it implies. Anyone not so sure should go and spend a day not only gazing at Tanzania's animals but living with Tanzanians, especially with those people appearing in hundreds every month along Serengeti's western borders. By sundown he would know well enough what the message is about.

Dr. Norman Myers, wildlife ecologist and citizen of Kenya, lives in East Africa where he writes, photographs, and films his impressions of Africa. His recent book *The Long African Day* (Macmillan, 1972) is an unforgettable account of the beauties and problems of Africa and her wildlife—profusely illustrated with intimate shots of African wildlife. He is now working on a second book expanding the themes dealt with in this article.

PUFFBALL PLAY

Eileen Lambert

Easily identified, puffballs
add a touch of wild elegance
to a simple meal



DARWIN LAMBERT

LYCOPERDON CANDIDUM

“Hey—stop! There’s some puffballs!” I exclaimed. My husband probably thought I was daft, but he pulled off the road. Botanizing at sixty miles an hour is difficult, but it’s amazing how your vision sharpens and quickens when you “tune in” to puffballs. Even at a distance of a hundred yards those roundish, whitish objects were unmistakably delicious food, not rocks. With a wary eye out for a pasture-guarding bull, we went through the barbed-wire fence and selected a few puffballs for dinner.

Some were too old to be edible, but I pinched off a bit of the mushrooms near the bottom to see if they were still white inside before I picked. These were common pasture puffballs, *Calvatia cyathiformis*, the second largest kind in the eastern United States next to giant puffballs. Some were four or five inches broad and up to six inches high; smooth, nearly white globes on thick bases, similar to large light bulbs. I discarded three when I cut them in half. One was tinged with yellow at the base and two were worm-infested. The rest were pure white, so fine-grained inside the round tops that they resembled angel food or perhaps slightly brittle cakes of yeast. This upper mass blended into the slightly coarser, breadlike texture of the thick bases. Sautéed gently, they were superb.

Puffballs are considered safest of all mushrooms for beginners to look for. Although not all of them are good to eat, none is poisonous, and it is easy to identify the edible ones. They may be shaped like balls, pears, or light bulbs, but they do not look like the typical version of a mushroom or “toadstool” with

umbrellalike cap, gills, and stem. You can’t always tell, in the early edible stage, exactly which of the various species of puffballs you have—you need a microscope and mature spore-producing specimens for that—but you can eat them with confidence if they pass the following infallible puffball test.

Cut each specimen in half vertically. If the interior (gleba) is white, firm, and homogenous throughout, it is a young, edible puffball. Enjoy fearlessly, if it isn’t wormy. If a distinct stem runs through from top to bottom, your specimen is not a puffball. If there is the outline of a cap, gills, and stem, it could be the button stage of a deadly poisonous *Amanita*, common in some areas and fruiting at the same time as puffballs. If there is a ring of jellylike material under the skin, it is an immature stinkhorn, nonpoisonous but very unappetizing. If the gleba is firm but lavender or purple, it is a true puffball, all right, but of the genus *Scleroderma*, nonpoisonous but inedible.

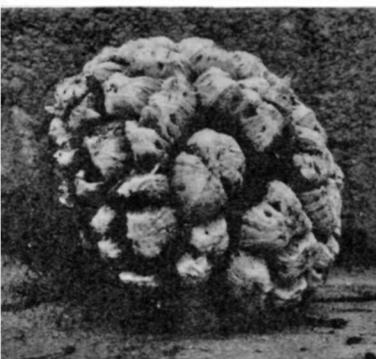
Puffballs belong to the group of mushrooms known as gastromycetes, or “stomach fungi,” which produce spores inside the fruiting body and release them in smokelike “puffs” when they mature. Children sometimes call them “devil’s snuff boxes” and delight in squeezing or stamping on them. Wind, raindrops, and passing animals also make them “puff.”

Old “puffers” are no longer fit to eat, however, as only immature stages are edible. When the inside begins to turn yellow or watery, or if they are already powdery, you’re too late. I learned the hard way. My thrifty nature has compelled me to trim off the yellow part and try to salvage the white part, but when I cooked them they smelled unpleasant and did not taste good. Though unappetizing, they were not poisonous.

Shortly after we moved to our Blue Ridge hollow, we noticed something on the lawn at the edge of the clearing that resembled a pale loaf of bread. Manna from heaven? An oblong ball approximately seven by nine inches, creamy white, firm to the touch, it was smooth as fine leather. Although by no means as large as they grow, it was, nevertheless, one of those relatively rare giant puffballs, a *Calvatia gigantea*.

I severed the strong cordlike root and took it to the kitchen. We were lucky. It was in prime condition. Sliced half an inch thick and sautéed gently in

CALBOVISTA SUBSCULPTA



CALVATIA CYATHIFORMIS



PHOTOS COURTESY OF THE NATIONAL FUNGUS COLLECTION UNLESS OTHERWISE NOTED

margarine until golden, it was the most delectable mushroom I've ever eaten. (My husband argues that although it was indeed choice, morels are even better. There's no accounting for taste.) We had three good meals from that one big mushroom. Giant puffballs the size of a basketball or even a bushel basket are sometimes sold in farmers' markets in late summer.

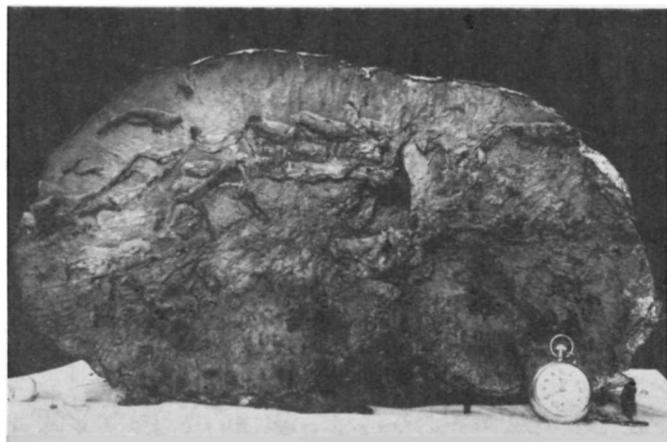
There are other edible puffballs, some much better than others, and, of course, they don't taste like commercial mushrooms, which are of the genus *Agaricus*. Gemmed puffballs, *Lycoperdon perlatum*, are very good and also common and widespread. We've enjoyed them from Alaska to the east coast. They are small—one to two inches broad—sometimes round, sometimes pear-shaped; and when you find them, you usually find enough for a meal as they often grow in thick clusters. The young fruits are a soiled white and covered with soft, dry, wartlike spines. Some people prefer to peel them before cooking, but the spines rub off easily. We have found them from late spring to frost in Alaska and in summer and fall in many other places. We find them along woodland trails and in clearings. Be careful of any sign of yellow inside. One oldie can ruin a panful. Spores are puffed out of a small, round opening that forms at the top of the ball at maturity.

Lycoperdon candidum are even smaller than gemmed puffballs, ranging from half to one inch high and from half to an inch and three-quarters thick. They're usually round or slightly flattened with pointed warts on the white outer skin. We find clusters of them on our lawn and in pastures and use them to turn scrambled eggs into an elegant dish.

Lycoperdon pyriforme, the pear-shaped puffball, is good, widely distributed, and often very abundant. It usually appears in tightly packed clusters on old stumps, uprooted trees, or aging sawdust, but also in damp ground and grass in late summer and fall. Growing in the shade, it is pale yellow with scaly, rusty warts when young. The warts fall off with age. Be open-minded about color, though, because good young ones growing on sunny sawdust piles may be reddish brown. They are small, one to two inches in diameter and up to three inches tall.

Calvatia booniana, the western giant puffball, is prominently sculptured and is comparable to *C. gigantea* in flavor and reaches a foot high and two feet across. It's not very common but is sometimes found in arid places in spring and summer, especially around old corrals or out in the sagebrush.

CALVATIA GIGANTEA: This puffball was 12 inches high, 18 to 19 inches in diameter, and 5 feet in circumference.



LYCOPERDON PYRIFORME

Baseball-sized *Calvatia sculpta* is also a choice western species in spite of its formidable but very distinctive long, pointed spikes. It is sometimes very numerous under evergreens in mountains from spring to early fall.

Calvatia fumosa is a small, rather bitter, smooth, smoky fungus with an unpleasant odor. *Lycoperdon echinatum* is a small, very prickly, ice-cream-cone-shaped fungus—edible but inferior in flavor. Each species should be judged on its own merits.

I don't suppose knowledge of puffballs will trim your grocery bills, but they can add gourmet touches to ordinary meals. Big ones can almost be a meal by themselves. Smaller ones, sliced or diced and sautéed can upgrade many dishes. I prefer to garnish with them rather than add into a casserole where their fine flavor may be lost.

Gastromycetes are primarily summer and fall fruits even though a few are found in spring. The best time to find most of them—especially the popular and common pasture and gemmed puffballs—is during a cool, rainy spell in August or September.

You don't have to make long jaunts into the boon-docks to find them, either. Some species can be found in city yards and parks. But if you should be out in the countryside—driving, hiking, camping, or doing your thing, whatever it may be—and you happen to find some fresh young puffballs, you can turn a simple meal into an elegant one.

This good fortune came to my husband and me last September. While camping near a clear stream in an aspen grove in the high Uintas in Utah, we followed an animal trail across a sagebrush clearing after dinner. Recent rains had brightened the foliage. Aspens already turning gold contrasted against dark firs and spruce, and we watched eight mule deer quietly fade into the forest. Then we found a batch of puffballs that, though strange to us then, passed the infallible test—*Calbovista subsculpta*, I believe. What a breakfast they made! And what a memory! Puffballs sizzling in our old black skillet over a campfire. Scrambled eggs. The aroma of camp coffee and wood smoke. Golden aspen leaves shimmering in the early light. Serendipity. ■

Eileen Lambert has studied and enjoyed nature in many of North America's wild places, including the Far West and Alaska. She and her husband now live in the Blue Ridge Mountains of Virginia. Her nature writing appears in both conservation and travel magazines.

NPCA at work

Lassen Volcanic ski facility A bothersome national park system problem has been developing at Lassen Volcanic National Park in northern California, where pressure has been brought to bear on the Park Service for expansion of an existing mechanized ski facility and additional parking facilities, restrooms, and other accommodations. The Service's original position on the matter was that any public demand for development of ski areas ought to be fulfilled outside the units of the park system. However, it appears that the Service has reversed itself on that position and now favors expanded development at Lassen Volcanic.

NPCA has written Joseph P. Rumberg, the Service's deputy associate director for operations, indicating its concern over the new official position. It was pointed out that the development would be incompatible with the purposes of the Service's organic act; that Lassen Volcanic is not a recreational area and expanded facilities for intensive recreational skiing there would be inappropriate. "We would appreciate an explanation of the rationale for your sudden approval of the proposal that you previously opposed," wrote NPCA.

The Association also pointed out that approval of a major expansion of a concession in a park well might constitute award of a new concession, requiring compliance with applicable statutes and regulations. Further, said NPCA, project approval would require preparation and circulation of an environmental impact statement. "We doubt . . . that it would be possible to write an adequate impact statement without also implicitly admitting impending violations of NPS's organic act," the letter said. In summary, the Association urged the Park Service to reject the plan as clearly being contrary to the best interests of the national park system.

Wilderness in Shenandoah Some six years ago NPCA published a wilderness plan for Virginia's Shenandoah National Park that would have designated about 90 percent of the long, narrow park as wilderness. The Association warned at the time of the likely effects of ever-increasing visitor use pressures there—that greater use would bring greater demand for facilities and development; that eastern wilderness opportunities were shrinking rapidly, and that maximum wilderness acreage should be sought by the National Park Service for the park.

Wilderness planning for the park system lagged, however; the predicted visitor use increases materialized, along with the demand for facilities; and today the best feasible wilderness designation in Shenandoah seems to be a little less than 60 percent of the park.

The House Subcommittee on National Parks and Recreation has been considering two bills for designation of wilderness in Shenandoah. In particular, HR 6552 would designate today's apparent maximum feasible acreage (112,687 acres, or about 58 percent); and on invitation NPCA has testified in support of that bill and has urged its adoption. NPCA pointed out that present prospects

are for even greater use pressures on the park, and that adoption of the bill is an urgent matter.

It will doubtless interest NPCA members to learn that the Park Service has dropped its "buffer zone" concept in wilderness planning. In many past wilderness plans the Service has insisted that it needed such zones, an eighth-mile wide, around wilderness units for "present and future management purposes." NPCA always opposed the concept in Service wilderness field hearings and at congressional hearings on invitation on the grounds that the Service's own wilderness management criteria allows entry to wilderness areas for management, and that the zones could only invite future development. The Shenandoah Park proposal makes no reference to buffer zones.

Of further interest is the fact that the Park Service obviously has not shelved its plans for one day straightening the incredibly serpentine boundaries of Shenandoah, which have caused no end of administrative and public use difficulties. Two large projecting parcels of the park have been omitted from wilderness designation for their potential land exchange value, NPCA understands.

Wilderness: Point Reyes NPCA also has commented on the Park Service's revised draft environmental impact statement for proposed wilderness at California's Point Reyes National Seashore north of San Francisco. Here the Service recommends only 10,600 acres for wilderness of a total 64,500-acre seashore acreage—a plan NPCA characterized as falling far short of its expectations. The Association's wilderness and master plan for Point Reyes, published in 1971, recommended wilderness designation for most of the seashore along with placement of visitor facilities outside unit boundaries, serviced by a system of public transportation on existing roads.

The draft statement analyzed the impact of three alternatives to the 10,600-acre proposal: no wilderness, and less and more wilderness. NPCA indicated that the first two cases would seem unacceptable. Part of the Service's concern about larger wilderness at Point Reyes seems to lie with the potential loss of profits to concessioners and support facilities. However, NPCA wrote that the impact statement not only should analyze benefits of potential economic gain but also should weigh social values gained by designating more wilderness. Another point canvassed by the draft statement was inconvenience of extensive wilderness for visitor access purposes. On this the Association again urged institution of a system of public coach transportation on existing paved roads, with frequent pickup and alighting service, that would permit visitors to explore as little or as much of the seashore as they wanted while allowing the more venturesome to continue backpacking and wilderness camping pursuits.

The Association's wilderness and master plan studies for Point Reyes Seashore and twenty-four other park system units are still available in book form as noticed in the advertisement on page 32 of this issue.

Endangered species bills Two environmentally important bills being considered by the Senate in the first session of the 93rd Congress—S 1592 and S 1983—conceivably could lead to an Endangered Species Act of 1973; and during June a panel of Senators of the Commerce Com-

mittee's Subcommittee on the Environment discussed the bills with environmentalists and heard their views and suggestions. On invitation, NPCA was represented at the discussions by its administrative assistant for wildlife, Dr. John W. Grandy IV, who indicated that the Association felt the following general points ought to be incorporated in any new endangered species act:

In the case of animals, the definition of "take" should include "threatened destruction, modification, or curtailment of habitat." Adequate habitat is the key to survival of most endangered species; coupled with that should be the authority of the Secretary of the Interior to prohibit "taking."

The purposes of such an act should be to restore endangered species so that the species are no longer covered under the act. Regulations regarding occasions on which an endangered species may be taken should be revised to reflect the need for restoration.

"Species" should be defined as a species, subspecies, or substantially isolated population segment of a species or subspecies; thus managers would be dealing with manageable units. A management system will not be flexible enough to meet the needs of the organisms unless managers are able to use the best techniques available for managing each population segment.

In the public interest the federal government should have regulatory authority over taking of an endangered species. States should be provided money on a cooperative basis for managing endangered species and aiding in enforcement of pertinent laws. Jurisdiction over all endangered fauna should reside with the Secretary of the Interior.

Dr. Grandy indicated that in the Association's opinion S 1983 was the best legislation on endangered species it had seen; that the measure if enacted would provide a great impetus to the current efforts in this field.

BLM and the ORV In February 1972 the President noted in a conservation message to Congress that policies and procedures are needed to "insure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands . . . and to minimize conflicts among the various uses of those lands." The President requested heads of federal land administration agencies to formulate plans for a more rational pattern of ORV use on the public lands

—a use that has been growing rapidly in the past several years and effects of which have been causing deep concern among environmentalists and many lay Americans.

The Presidential directive particularly affected the Bureau of Land Management in the Interior Department, which administers a substantial percentage of all public lands of the nation—nearly a half-billion acres.

The Bureau recently has presented the public with its proposed regulations for ORVs on its lands, and the general reaction of the conservation world to the effort has been shock and disappointment.

NPCA has written the Secretary of the Interior, Rogers C. B. Morton, expressing its disappointment on the outcome of the Bureau's plans to control ORV use. "The proposed regulations establish a bias in favor of ORV use on BLM lands," the Association said. "All BLM lands would be presumed open to ORV's . . . and mineral explorers and developers would be permitted unrestricted ORV use of even those lands which were later designated as closed to other ORV users [under the proposed regulations]."

"The public interest in this already biased designation process would be further impaired by the inadequate provision for public participation [and the provision] which leaves the designation process to the discretion of the 'authorized officer.'"

"We respectfully urge that you direct the Bureau of Land Management to remedy the inadequacies in the proposed regulations for the use of off-road vehicles so as to conform with the President's directive . . . and to secure the public interest in the public land and resources."

Marshlands & the Navy NPCA has learned that the U.S. Navy plans to do some dredging in Lake Chubb, a shallow lake near the Little Creek Naval Amphibious Base at Norfolk, Virginia, to build a ship-handling training course. The dredging would likely destroy the only substantial marsh and wetland areas on the lake.

It appears that the Navy means to prepare an environmental impact statement on the operation, but it appears further that the statement is to be prepared after Navy approval of the project, not before as required by the Environmental Protection Agency. NPCA, in a letter to the office of the Chief of Naval Operations, objected to this procedure. "It appears . . . that any decision or final approval of the project at this point would be

premature and highly irregular," the Association said. The letter also referred to the recently issued statement of the Environmental Protection Agency (discussed elsewhere on these pages) that indicates a federal policy and commitment to protect and preserve wetlands wherever possible. NPCA expressed the hope that the Navy would find acceptable alternatives to the project that would make destruction of wetlands unnecessary, and requested that it be furnished a copy of the pertinent impact statement when available.

Whaling moratorium asked NPCA and eleven other environmentally oriented organizations have written the Prime Minister of England, the Right Honorable Edward Heath, asking the assistance of the the British government (continued on page 29)

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A dolomite bluff near Onondaga Cave on the Meramec River in Missouri. The Missouri Speleological Survey says that some 100 caves with their valuable archeological paleontological information will be flooded out by the proposed Meramec Park dam of the Army Engineers. One of the largest benefits claimed for the dam and its reservoir is water-based recreation, although many might think that the river in its natural condition already offers remarkable opportunities in that respect. Photograph is by Chester Danett.

Disasters in Water Development: II

THE MERAMEC PARK DAM

Missouri

AUTHORIZED IN 1966 AS PART OF a system of 31 Corps of Engineers dams in Missouri's Meramec River Basin, the \$87.5 million Meramec Park dam would flood out a significant section of scenic river containing caves, bluffs, springs, and a number of endangered species of animals. The only way the Engineers can justify the project economically is by neglecting the dam's destruction of natural recreation and existing fish and other wildlife values and claiming enormous benefits for reservoir fishing and flatwater recreation.

The Missouri Speleological Survey has pointed out that the Meramec Valley in the vicinity of the dam has the highest known cave density of any river system in the world. About 100 caves will be flooded by the dam, along with their valuable archeological and paleontological information. The Meramec has the richest variety of freshwater clams of all Missouri rivers; three presently endangered species of clams are threatened by the project. Other endangered species of animals that inhabit the caves, such as the Indiana bat, position of which is examined elsewhere in this issue, also are threatened with destruction by the dam. Its reservoir would wipe out roughly 80 percent of the river's native species of fishes. Water would back up into the Huzzah and Courtois rivers and reduce smallmouth bass habitats on two of the

finest streams for these fish in the Midwest. The U.S. Geological Survey has noted existence of more than 70 large springs in the Meramec Basin, and more than 350 archeological sites are known in the area. For all these natural and human interest reasons the Meramec should be kept free of dams.

Since the dam would be built in a highly porous area filled with caves, extensive grouting of all cracks in bedrock will be required or the reservoir might not fill. The Corps admits it does not know the exact cost of grouting, and it will be difficult to assess eventual costs. (On the Gathright dam in Virginia the Corps already has experienced cost overruns because of the same problem.)

Flatwater recreation on the reservoir constitutes the largest single category of benefits used to justify the project. Use of any reservoir recreation benefits as a justification is highly questionable, in view of the fact that Missouri is replete with large lakes suitable for flatwater recreation. The state also will have the large Truman and Cannon reservoirs now under construction. Furthermore, serious eutrophication may occur if a reservoir is built in this area because of problems with underground drainage and septic tanks in karst limestone areas.

The Corps' projected flood control benefits are dubious, since they are

partly dependent on the operation of the Meramec Park dam in conjunction with two other dams, the Big and Barbeuse; and it is questionable whether these two dams will be built. Acquisition of floodplain lands to establish a recreation area, jointly proposed by St. Louis and Jefferson counties in 1967, could be accomplished for less than a tenth of the cost of the three dams.

Conservationists went to court in September 1972, challenging the legality of the Meramec Park dam's authorization and alleging that the project does not comply with the Fish and Wildlife Coordination Act and the National Environmental Policy Act, and that benefits of the project do not exceed costs.

Conservationists are urging up-to-date comprehensive river basin planning and establishment of the Lower Meramec National Recreation Area instead of construction of the Meramec Park dam. This would simultaneously take care of the flood control and recreation objectives of the project and would cost far less. The situation affords an unusual opportunity for integrating natural parklands, ancient Ozark geology, agricultural and recreational floodplains, and vast upland forests to create a truly unique national recreation area.

NPCA members wishing to comment on this project can write: Major-General J. W. Morris, Director of Civil Works, Corps of Engineers, Office of the Chief of Engineers, Forrestal Building, Washington, D.C. 20314.

(continued from page 27)

in stopping the killing of the great whales. The International Whaling Commission held a week's meeting in London during the week of June 25, at which time a resolution was to be introduced calling for a ten-year moratorium on all commercial whaling, excluding whaling by aboriginal peoples. The letter asked the British government to instruct its delegation to support this urgently needed measure.

In spite of last year's 53-0 vote of the Stockholm Conference on the Human Environment in favor of such a resolution, the IWC, dominated by the whaling industry, rejected the idea shortly thereafter, and whaling continues to jeopardize existence of several species of whales.

Over the past few years the United States, which supports the moratorium, has closed down all its whaling stations and has banned import of all whale products. The letter pointed out that the U.S. has suffered no adverse consequences from the action. "There is no product derived from the whale that anyone really needs or for which there is not a readily available substitute," the letter to the Prime Minister said. "We have no right to rob the world's peoples, and future generations, of this irreplaceable resource for the sake of an easy profit." The letter concluded, "We hope that your country will join with those of us who are trying to stop the unnecessary slaughter of these fascinating but threatened animals while there is still time to save them."

EPA wetlands policy The Environmental Protection Agency recently has published a statement of policy on the protection of the nation's wetlands that likely will be widely applauded by environmentalists, and already has been by this Association.

"The purpose of this statement," said the agency, "is to establish EPA policy to preserve the wetland ecosystems and to protect them from destruction through waste water or non-point source discharges and their treatment or control or the development and construction of waste water treatment facilities or by other physical, chemical, or biological means."

Discussing the implementation of the policy EPA indicated that it would be applied "to the extent of its authorities" in federal program activities, regulatory activities, research, development and demonstration, technical assistance, control of pollution from federal institutions, and administration of construction and demonstration grants, state program grants, and planning

grants programs. "In its decision processes, it shall be the agency's policy to give particular cognizance and consideration to any proposal that has the potential to damage wetlands," said EPA in part.

In a congratulatory letter to Mr. Robert Fri, EPA's administrator, NPCA expressed its pleasure with the agency's officially announced position "and, we assume, [that] of the U.S. Government," regarding wetland values and protection. "We are hopeful that adequate implementation of this policy statement will be a significant aid in the effort to preserve the nation's wetland resources."

Meramec Park dam NPCA recently has written the Director of Civil Works of the Army Engineers expressing its distress over continuing plans of the agency to construct the Meramec Park dam on the Meramec River in Missouri, described on the page opposite.

Among other reasons militating against the project, NPCA said, is destruction of endangered species habitat; specifically, that of the Indiana bat. (See the major article on this endangered species on earlier pages.) NPCA expressed concern that the Engineers had not adequately evaluated this factor and had not pointed out the high cost of the project in terms of general archeological and paleontological damage and destruction.

Particularly in regard to the endangered Indiana bat, the Association wrote that "the key to the survival and restoration of most endangered species is the maintenance of sufficient high quality habitat. To the extent that

this project destroys habitat of endangered species, the Corps of Engineers will have further reduced [their] changes for survival . . . and frustrated the clear intent of the Endangered Species Conservation Act of 1969." NPCA brought to the attention of the civil works director the recent policy statement of the Bureau of Sport Fisheries and Wildlife, preamble of which points out "the obvious need for conservation of bats in North America."

The Association said that it would appreciate receiving from the Engineers any data they might have on its calculation of the cost-benefit ratio for the proposed Meramec Park dam "including, but not limited to, the discount rate used and the individual costs and benefits included in calculation of the ratio."

Wild and scenic rivers A measure currently under consideration by the House Subcommittee on Parks and Recreation, HR 4864, proposes several amendments to the present Wild and Scenic Rivers Act. Two of the amendments would increase funding under the act by a very substantial amount, and would extend the act's five-year moratorium (due to expire October 1973) on water project construction affecting rivers under study for possible classification.

At subcommittee public hearings in Washington on invitation, NPCA supported both purposes, suggesting in regard to the first that the moratorium might be more effective if it were in operation from the time a particular river was placed on the study list to

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 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 congressman 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 First Session of the 93rd Congress is available in three editions, prices of which include postage: bound in hard cover, \$6.80; paperback, \$5.50, and thumb-indexed, \$9.35.

the time the study had been completed. NPCA further suggested that the legislation be amended to assure that sufficient interests in lands be acquired in each case to protect features essential to maintenance of designated river characteristics, including where appropriate lands to the edges of existing floodplains; or in the case of mountainous terrain, lands to the tops of crests along rivers. Management of such lands would not necessarily involve federal purchase, said NPCA.

It was also suggested that a section of the bill be reworded to prohibit projects of any federal agencies from downgrading those qualities of a river making it eligible for classification under the Wild and Scenic Rivers Act; this might be accomplished by restricting all projects requiring federal loans, grants, or licenses.

Finally, the Association recommended the act be amended to allow for up-

grading of a scenic river to wild river classification if its management were sufficiently good to qualify it for the higher status.

news notes

Conservation awards The annual conservation awards of American Motors, made since 1953, have now been made for 1973 and contain the names of three persons of particular interest to NPCA members: Dr. Spencer M. Smith, Jr., newly elected chairman of the board of NPCA and secretary of the Washington-based Citizens Committee on Natural Resources; Edmund H. Harvey, president and founder of Delaware Wild Lands, Inc., and Jerry T. Verkler, for many years staff director of the Senate's Interior and Insular Affairs Committee.

In making the twenty awards for 1973 American Motors lauded Dr. Smith for his in-depth knowledge and sound judgment on American environmental programs and problems and for his successes in bringing together the often conflicting viewpoints of contemporary conservationists, saying that he had contributed as much or more to the direction of national conservation programs as any currently active environmentalist.

Mr. Harvey is widely known for his activity in protecting natural areas, with special emphasis on the East Coast, where notably he is identified with the coalition of individuals and organizations, including NPCA, that have worked to keep Assateague Island National Seashore on the coasts of Maryland and Virginia in as natural a condition as possible and free from overdevelopment and misuse.

Jerry Verkler, widely known in the

SENATE PASSES A LAND USE POLICY AND PLANNING ASSISTANCE ACT

On June 21 the Senate passed S 268, the Land Use Policy and Planning Assistance Act, by a final vote of 64 to 21. The bill provides incentives, principally through a grant-in-aid program, for all states to develop programs in wise land use. The bill neither calls for state zoning nor federal control of state and local land use decisions; rather, it emphasizes local control and implementation of land use decisions, subject only to state standards insuring that the broader public interest is fully considered in decisions of more than local impact. Only major area of substantive federal policy is the requirement that a state appropriately identify and protect, under state law, areas of critical environmental concern of more than statewide significance where there is a legitimate federal interest in the use to which such land is put. S 268 assures that neither federal nor state governments can deprive an individual of his property without due process and, if warranted, compensation. Yet it goes farther toward establishing an environmentally sound framework for land use decisions than its unsuccessful predecessors of the past two Congresses.

With the excellent guidance and leadership on the Senate floor of Senate Interior and Insular Affairs Committee Chairman Henry M. Jackson, the bill's principal sponsor, and that committee's Public Land Subcommittee Chairman Floyd K. Haskell, who served as floor manager for the bill,

S 268 survived a serious challenge in the form of amendment after amendment to weaken it by removing or seriously weakening such key features as the requirement that states designate and define areas of critical environmental concern which are of more than statewide concern; provisions for regulation of second-home developments and recreational subdivisions (added by Senator Gaylord Nelson); the funding for the bill; and the requirement that the Council on Environmental Quality study the need for federal substantive policy. All these amendments were defeated through the vigorous efforts of the bill's sponsors.

A major loss for the bill on the Senate floor came with the defeat of the so-called sanctions amendment offered by Senator Jackson. The amendment, which lost by a vote of 44 to 52, provided for a gradual reduction of airport, highway, and Land and Water Conservation Fund monies for states that did not meet the requirements of the act by undertaking development of a land use program. This amendment would have provided an additional incentive to states that might otherwise be reluctant to develop a land use program. The only inducement for states to comply with the bill as passed is the grant-in-aid money provided; also, the bill contains no penalty provisions.

Defeat of the sanctions amendment can be attributed mainly to the failure of some Senators to back the Administration's support for sanctions. Sena-

tor Edward Muskie, although opposing the inclusion of sanctions at this time, successfully added an amendment providing for congressional consideration of the need for sanctions as well as federal substantive policy within three years of enactment of the legislation. Hope for addition of sanctions to the bill now shifts to the House of Representatives, where the land use bill is still in the Interior and Insular Affairs Committee. If the House passes a bill containing sanctions there is a good chance that a land use bill emerging from a House-Senate conference committee would contain sanctions, particularly since the sanctions amendment lost in the Senate by only eight votes.

Another amendment, of particular interest to NPCA members, was successfully added to the bill by Senator Hubert H. Humphrey. This amendment calls on the states to recognize the special pressures exerted on and around federal lands—national parks, seashores and lakeshores, wild and scenic rivers, wilderness areas, and others—and takes these special pressures into account in allocating grant funds to the states for land use planning around such areas of national concern. Purpose of the amendment is to induce the states to make wise use of lands adjacent to protected federal lands one of a state's top priorities in its land use program.

NPCA heartily applauds this far-sighted effort by the Senate to enact wise land use policy, and hopes such an environmentally sound concept can be signed into law during 1973.

nation's capital and elsewhere in the country as a person deeply concerned with the nation's natural resources and environment, has been able to furnish invaluable guidance over the years to such landmark legislation as the Wilderness Act and the establishment of the Council on Environmental Quality, as well as measures for new national parks, monuments, seashores, and the general betterment of the American environment.

Norway protects predators The remaining bears and wolves in Norway's forests, mountains, and high plateaus are now being protected by the Norwegian government. The Norwegian Ministry of the Environment estimates that there are only fifteen bears left in Norway. Wolverines—sometimes known as “gluttons”—are being protected in the southern half of the country. The number of remaining wolverines is estimated at 100–150. Lynx will be protected during their reproductive season. Exceptions will be made when bear, wolf, wolverine, or lynx attack domestic animals or reindeer. The cost of damage to livestock by any of the predators will be refunded by the government.

East African tours NPCA's East African field trips touch on the problems, not visible to the naked eye, that make East Africa humanly fascinating. Conservation of wildlife is a far-out concept to primitive people living in the wild, so children are being taught to value the animals and their native habitat.

Close by the main gate of Kenya's Nairobi National Park, which all of NPCA's East African field trips visit, are the Animal Orphanage and adjoining Wildlife Education Center. The remarkable young African who heads them both, David Mbuvi, has put them to imaginative use in teaching conservation. The Orphanage's main function is to succor, and if possible to rehabilitate, animal waifs for return to life in the wild. Since many are sick, visitors are forbidden to feed them at will. But groups of schoolchildren brought to see them are encouraged to assist at regular feeding times. As most of the animals are quite tame, and the leopard kittens purr amiably, the children begin to feel friendly toward wild creatures that they might otherwise regard as so much meat.

In the Wildlife Education Center, three-dimensional exhibits showing young animals in their nests light up when appropriate buttons are pushed.

(continued on page 32)

THREE MORE TRACTS IN GREAT DISMAL SWAMP ACQUIRED

AS REPORTED IN THE APRIL Magazine, nearly 50,000 acres in the Virginia portion of the Great Dismal Swamp, which lies overall in southeastern Virginia and northeastern North Carolina, recently were acquired by the Nature Conservancy through donation by the Union Camp Corporation for eventual administration as a wildlife refuge by the Bureau of Sport Fisheries and Wildlife.

More recently the Conservancy has acquired an additional 13,000 acres of the Dismal, this time in North Carolina below but adjacent to the Union Camp donation. The acquisition, costing 2.2 million, consists of three parcels, of which the two most southerly are expected to be transferred to North Carolina for a state park. The third parcel, abutting the projected Great Dismal Swamp National Wildlife Refuge, “will be the object of joint investigation by the state, Department of the Interior, and the Conservancy into how to preserve, protect, and pay for [it].” North Carolina plans to seek federal Land and Water Conservation Fund money to purchase the park lands from the Conservancy at cost, the natural land acquisition organization has indicated.

First President George Washington, who was familiar with the swamp on the basis of numerous trips into it, once called it a “glorious paradise” for plants and animals. The Great Dismal may have lost some of its glory since Washington's time, having shrunk through drainage and development to something less than half its

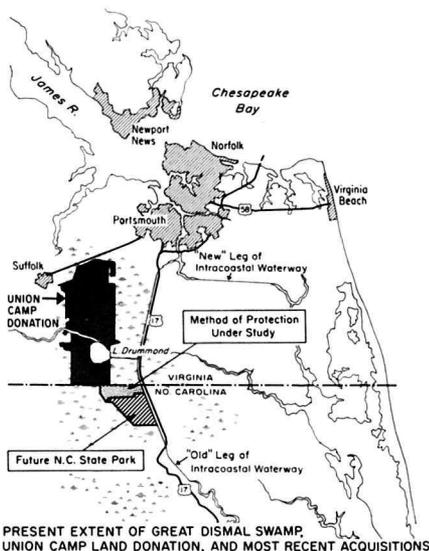


The Great Dismal Swamp supports a diversity of animal life, including an isolated, threatened population segment of the American black bear.

original estimated 2,200 square miles. Nonetheless, even today its plants, animals, and geologic history—at least what is clearly known of the latter, which is not a great deal—make the vast area a nature treasure well worth national protection and good management.

The swamp is the most northerly, and perhaps also the most ecologically complex, of the chain of great swamps that marks the southeastern coastal plain, and is the northern limit for many southern plants and animals as well as a common meetingplace for these and more northerly forms.

We have mentioned on several occasions, most recently in April, that the Army Engineers draws vast amounts of water from Lake Drummond in the heartland of the swamp for locking small craft (down to row-boat size) through an obsolete leg of the Intracoastal Waterway. Alternative ways of getting boats through the canal are readily and inexpensively available, in terms of Corps projects, but as of this writing the Army has not moved to halt the drainage of swamp waters in this manner. NPCA and others have pointed out that short boat railways such as are commonly used at marinas all over the country would do the job if the ancient canal, for which there is a more modern alternate route, is to continue in use; but nothing has happened as of presstime.



IMPORTANT NPCA PUBLICATIONS

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After Mr. Mbuvi has given a short talk about an exhibit, the children are led to imitate the creatures shown in it. With long pieces of string, for example, each child tries to build a nest like the weaver bird's, using only two fingers to simulate the bird's beak. Through such ingenious exercises, young Kenyans are learning to identify with wildlife and to respect it as a great national treasure.

AEC impact statement The U.S. Court of Appeals in the nation's capital recently has reversed a lower court decision in ruling that the Atomic Energy Commission must file an environmental impact statement on its fast-breeder nuclear reactor program. The decision was made in response to a suit filed by the Natural Resources Defense Council on behalf of the Scientists' Institute for Public Information. AEC has been assailed by environmentalists for failing to consider the hazards of plutonium and dangers from radioactive wastes as it proceeds with the fast-breeder program. In writing the opinion for this landmark decision, Judge James Skelly Wright said that waiting until technology is translated into commercial projects "before considering the possible adverse environmental effects attendant upon ultimate application of the technology will undoubtedly frustrate meaningful consideration and balancing of environmental costs against economic and other benefits. . . ."

Aldrin/dieldrin hearings Hearings by the Environmental Protection Agency to determine whether all remaining registrations for uses of the two chlorinated hydrocarbon pesticides aldrin and dieldrin should be canceled are in progress in Washington and may continue for some time. The two chemicals are close relatives of DDT and are widely thought to be even more dangerous to human health than that chemical.

NPCA presented its views on the matter nearly a year ago when it urged EPA to suspend all registrations of aldrin/dieldrin uses, allowing only a grace period in which users could become familiar with new control techniques.

EPA previously had issued a cancellation order on most uses of the two chemicals but did not ban their use in mothproofing, termite control, and plant dipping in nurseries. The hearings are expected to determine whether these uses also will be de-registered; the Shell Chemical Company, sole manufacturers of aldrin and dieldrin, and

others are expected to oppose cancellation of remaining registrations.

Both the Environmental Defense Fund, a private organization, and staff counsel for EPA itself are presenting essentially the same views advanced by NPCA in its late 1972 comment. NPCA is pleased to see that EPA essentially has accepted this position.

Chinese clam invasion NPCA has learned from the Delaware Museum of Natural History that a tiny but destructive molluscan invader from China now has been recovered on the central east coast, where it has been discovered in sizable numbers in the Delaware River between Philadelphia and Trenton. *Corbicula manilensis*, a clam generally only three-quarters of an inch long, also has been found in the Savannah River near Millhaven, Georgia, and in the Pee Dee River near Society Hill, South Carolina, in the South. In 1969 the shells of the species were found in layers three feet deep in the Delta Mendota Canal in California's San Joaquin Valley, and its eastward advance is not a surprise to scientists, since in recent years it has also been discovered in the Ohio, Tennessee, and Mississippi river systems. As is often been the case with other exotic species in the country, no really effective controls on the invader have been formulated.

The Chinese clam adds one more animal to a swiftly growing list of exotics in America. Such intruders, often without natural predators in their new territory, disrupt the local ecology, taking over at least part of the habitat and food supply of native species.

Reservation plan Ronald H. Walker, director of the National Park Service, has announced a pilot computerized campsite reservation system in six national parks during 1973—Yosemite, Yellowstone, Grand Teton, Everglades, Grand Canyon, and Acadia. About half the campsites in the six parks will still be available on the traditional first-come, first-served basis. Campgrounds in 86 other national park system areas will not be affected by the new plan.

Alaskan oil According to the Canadian Institute of Guided Ground Transport, Alaskan oil could be brought to the midwestern United States more cheaply by rail than by the proposed trans-Alaska pipeline. The oil could be brought to Chicago at \$1.07 a barrel via a combined rail-pipeline route, compared to \$1.30 a barrel via the

trans-Alaska pipeline and shipment by tanker to Seattle and thence by pipeline to Chicago.

Yuma clapper rail The Bureau of Sport Fisheries and Wildlife's Fish and Wildlife Service reports some good news on an endangered species of bird unfamiliar to many—the Yuma clapper rail, inhabitant of the desert country of the far southwest in California, Arizona, and the Republic of Mexico along the lower reaches of the Colorado River. A recently concluded survey of the bird, whose numbers have been estimated at only 500 to 1,000, has shown that there are "certainly more than 1,000" now present.

The survey, planned by the Service's species recovery team and headed by the manager of the southwestern desert refuge units, Monte Dodson, was accomplished with the assistance of personnel from the Bureau of Reclamation and the Arizona and California fish and game agencies and Indians of the lower Colorado River tribes. Survey teams worked on the desert for thirteen days during May, covering some 320 miles of river, the southern Salton Sea, and part of the delta of the Colorado.

The Yuma clapper rail has a limited

range that never has been clearly mapped, according to the FWS. Its eastern clapper rail cousin is plentiful and well known all along the Atlantic coast and the Gulf of Mexico. The Yuma clapper rail is larger and darker. Both species live primarily on shrimp, crayfish, crabs, insects, and other animal life of their respective areas; but the stark deserts of the Lower Colorado River basins have not encouraged intensive research on the Yuma rail, according to the Service.

Periodically the Fish and Wildlife Service revises its listing of endangered animals of the nation, and currently available from the agency is the 1973 edition of "Threatened Wildlife of the United States," off the press about three months ago. The Service's address is Department of the Interior Building, Washington, D.C. 20240.

conservation docket

Environmental legislation that has recently passed House, Senate, or both bodies has included:

Land Use: S 268, to establish a national land use policy, reported by Interior

and Insular Affairs Committee to the Senate May 29. At present this is a strong bill highly acceptable to most environmentalists. Passed June 21.

Dismal Swamp: HR 3620, to establish the Great Dismal Swamp National Wildlife Refuge in southeastern Virginia, passed the House June 5.

Water Resources Planning: S 1501, to authorize \$3.5 million for the Water Resources Council for Fiscal Year 1974, passed the Senate May 30.

UN Environment Program: HR 6768, to provide for participation of the United States in the United Nations Environment Program, passed the House May 15 and the Senate June 8.

Energy Policy Act: S 70, to promote commerce and establish a Council on Energy Policy, passed Senate May 10.

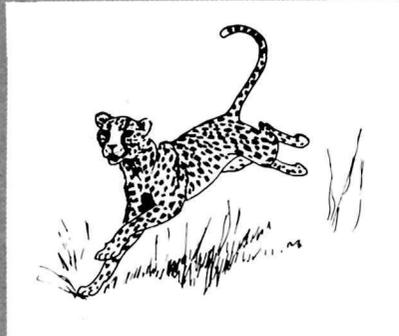
Recently introduced legislation of particular interest to environmentalists has included:

National Park System

Nantucket Sound: HR 8318, S 1929, to establish the Nantucket Sound Islands Trust in Massachusetts. To both Interior and Insular Affairs committees.

Channel Islands: HR 8064, to authorize a study of the feasibility and desirability of establishing a Channel Islands Na-

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tional Park in California. To House Interior and Insular Affairs Committee. **Cuyahoga Park:** S 1862, to provide for the establishment of the Cuyahoga Valley National Historical Park and Recreation Area in Ohio. To House Interior and Insular Affairs Committee. **Natural Areas:** HR 7785, to authorize the Interior Secretary to further develop a program for the designation and protection of additional natural areas throughout the nation. To House Committee on Interior and Insular Affairs.

Guadalupe Wilderness: S 1789, to designate certain lands in the Guadalupe Mountains National Park, Texas, as wilderness. To Senate Interior and Insular Affairs Committee.

Agricultural Hall Park: HR 7734, to provide for the establishment of the Agricultural Hall of Fame National Cultural Park in Kansas. To House Committee on Interior and Insular Affairs.

Fish and Wildlife

Humane Trapping: HR 8065, to discourage the use of painful devices in the trapping of animals and birds. To House Merchant Marine and Fisheries Committee.

Pupfish Refuge: HR 7983, to establish the Pupfish National Wildlife Refuge in California. To House Interior and Insular Affairs Committee.

Wild Horses: HR 7895, to require the protection, management, and control of wild free-roaming horses and burros on public lands. To House Interior and Insular Affairs Committee.

Forests and Forestry

Wood Supply: S 1775, to provide the homebuilding and construction industries with the increased production of

wood materials necessary to achieve the housing goals established by the Housing Acts of 1949 and 1968; to assure that this increased production is accompanied by a more balanced and efficient development of the national forest system and privately owned forest lands through establishment of a forest lands planning and investment fund; to regulate and control the export of timber from the United States; to amend the Export Administration Act of 1969 to establish a technical advisory committee to develop forecast indexes of domestic supply and demand for certain commodities to help assure that these commodities will not be in short supply. To Senate Committee on Housing, Banking, and Urban Affairs, and the House Committee on Agriculture and Forestry.

Eagles Nest Wilderness: S 1864 and HR 8164, to establish the Eagles Nest Wilderness in the Arapaho and White River national forests in Colorado. To Interior and Insular Affairs committees.

The Environment Generally

Florida Canal: HR 8200, to deauthorize permanently the recently halted Cross-Florida Barge Canal. To House Public Works Committee.

Agricultural Imports: HR 8207, to amend the Federal Insecticide, Fungicide, and Rodenticide Act to prohibit the importation of agricultural commodities when pesticides are used in a manner prohibited in the U.S. by federal law. To House Committee on Agriculture.

Energy Committee: HR 8120, to establish a Joint Committee on Energy. To House Rules Committee.

Waste Treatment: S 1877, to create river basin waste treatment authorities for the purpose of assuming control over planning, construction, and operation of waste treatment facilities throughout the U.S. in order to eliminate water pollution in the nation's rivers and streams. To Senate Public Works Committee.

Airport Noise: HR 8093, to permit state and local governments to prescribe curfews and other airport noise regulations for airports in their jurisdictions. To House Interstate and Foreign Commerce Committee.

Amend NEPA: S 1865, to amend NEPA in order to encourage the establishment of regional environmental centers. To Interior and Insular Affairs Committee.

Citizen Suits: HR 7947, to amend NEPA to provide for citizens actions in U.S. district courts against persons responsible for creating certain environmental hazards. To House Merchant Marine and Fisheries Committee.

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Bills introduced into Congress are referred to standing committees of House or Senate, which may then refer them for initial consideration to appropriate subcommittees. Public hearings on bills may be called both by subcommittees or standing committees. NPCA members, as citizens, may write committee and subcommittee chairmen asking that they be placed on lists for notification in the event of hearings. Members may also submit statements for the hearing records if unable to appear in person. Copies of bills may be obtained from the House Documents Room, Washington, D.C. 20515, or the Senate Documents Room, Washington, D.C. 20510. In the Conservation Docket, HR indicates a House bill, S a Senate bill.

Continued from page 2

world law governing the resources of the seas. A close cooperation between UNEP and the Oceans Authority which should emerge from the Conference will be vitally important.

It is possible that we are seeing the beginnings of control over vessel-source pollution in the new Anti-Dumping Convention, and hopefully, in the deliberations of the Intergovernmental Maritime Consultative Organization in the fall. These are matters with which UNEP must necessarily concern itself closely.

ON ENERGY, again the monitoring of pollution including radioactive wastes is important, but the stimulation of alternative techniques, such as solar energy, would be equally essential.

The emphasis placed in the Action Plan on soil conservation and the retrieval of land from deserts is encouraging and should be supported. It is possible that the recommendations for action should be strengthened.

It is good to have recommendations in the Action Plan on forestry, but these also should, in our opinion, be considerably strengthened.

The notion of substituting natural materials for synthetic ones, benefiting the affluent and the less affluent countries alike, as outlined in the Action Plan, is excellent.

The suggestions in the Action Plan with respect to industrial and agricultural complexes in human settlements have tremendous potentials.

ACTION on genetic resources, as suggested in the Plan, is imperative. The proposal to identify special measures for the perpetuation of wildlife resources is welcome, action is needed.

On wildlife generally, many of us are pleased that emphasis has not been placed on hunting and economics as justification of wildlife protection. The basic imperatives are ecological preservation and stabilization.

It was a significant accomplishment at the Conference which approved the Endangered Species Convention that the Convention provided for the establishment of a Secretariat by the Executive Director of UNEP.

The sections in the Action Plan on economics and trade are refreshing. The conventional notion that the developing countries must suffer through the pollution phase of economic growth is probably fallacious.

On population, it is understandable that the ideas turn at present around studies. But the basic economic and ecological problems of mankind cannot be solved without stabilization of population and UNEP should be a catalyst in this field.

A WELL-CONSIDERED effort should be made to move away from hard pesticides in agriculture toward soft pesticides and then to organic and integrated controls. This is desirable for many reasons from the viewpoint of the developing countries, and certainly from a worldwide ecological point of view. This will involve cooperation between UNEP and FAO.

By the same token, the industrial countries must reduce and eliminate the pollution of rivers, oceans, and atmosphere by the automobile and by industrial plants, as well as by their own agricultural chemicals.

We should undertake a transition from health programs based on wetlands drainage and the hopeless task of mosquito eradication by hard pesticides to programs of medication and immunization, the techniques for which are, for the most part, already available. This would mean cooperation between UNEP and WHO.

A similar transition needs to be worked out with regard to ecological forestry, by cooperation between UNEP and the forestry division of FAO and by work with national governments to change the policies of their domestic corporations; particularly, in the United States. All these are but examples.

THE FINANCIAL aspects of these programs will be vital. The nongovernmental organizations in the United States have been supporting the efforts in Congress to obtain the essential authorizations and appropriations for the United Nations Environment Programme, and they will continue to press for such action.

We would hope that ample segments of the fund would be devoted to the establishment of desks within UNEP itself to further its catalytic and integrative efforts, and that grants to agencies capable of sustaining their own activities would be limited.

This work will call for integrators, not specialists only, as Director Strong has already had occasion to suggest. You and he will have very strong support from environmentalists around the world in your vital work for the survival of life on this planet.

—Anthony Wayne Smith



WILDLIFE AND THE WORLD COMMUNITY

All the great conservation and environmental issues of our day have both national and international aspects, as this issue of the Magazine clearly shows. NPCA will continue to work both for better wildlife attitudes in America and for worldwide cooperation on a broad range of environmental matters, among which the growing problems of African wildlife may be cited. In this respect NPCA has supported the international conventions for protection of wetlands, islands for science,

and the world heritage of natural and cultural areas.

You can help insure that the Association's programs in these vital areas will meet the constant challenges in this country and overseas by renewing your membership in as high a category as you feel your present circumstances will permit. Despite spiraling costs we do not want to institute a general dues increase; rather, our decision has been to depend on the voluntary help and understanding of our loyal members.

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