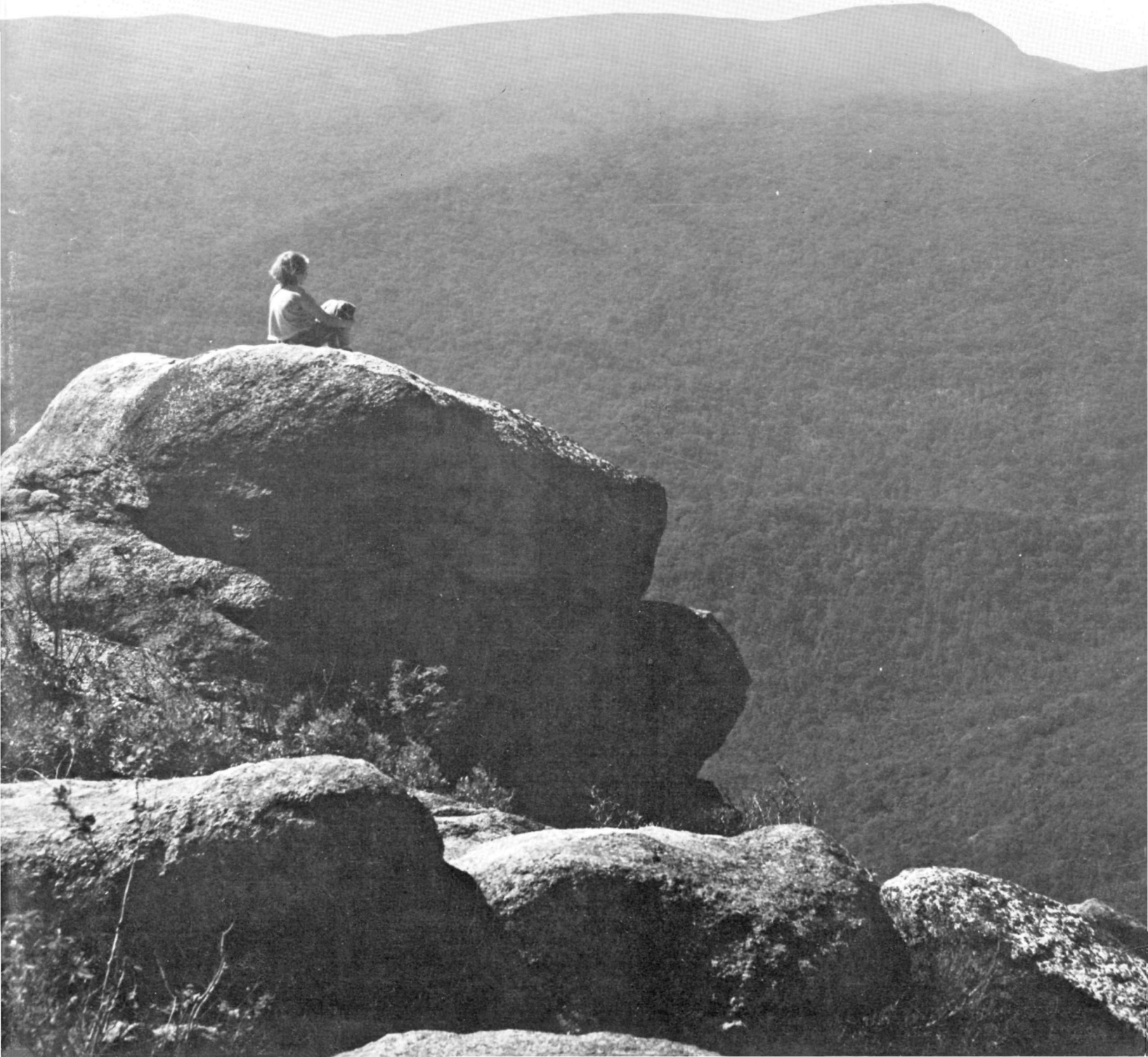
# NATIONAL PARKS & *Conservation Magazine*

**The Environmental Journal** **November 1972**



# ECOLOGICAL FORESTRY

THE CRISIS OF SURVIVAL, through which the present generations of man are fated to struggle, has many facets: air and water pollution, the extinction of plants and animals, the destruction of soils and forests, of historic sites and artistic treasures, of natural beauty and scenery, the exhaustion of metal ores and mineral fuels, the impact of senseless urbanization, the constant threat of famine and nuclear war, the violence of the population and technological explosions, the complexity, instability, acceleration, expansion, and impersonality of governmental and economic institutions, the persistence of brutal tyranny in many countries, and seemingly a deep-seated death wish, lying like a dark tide under the minds of too many people in too many places.

Each facet of the Crisis must be met for the dangers it presents in itself, and yet as part of the syndrome. The Crisis commands obedience to the ecological imperative: men must live as part of the Community of Life, or they shall not live at all. The attitude toward Nature as a thing to be dominated, which has prevailed since the Renaissance, must yield to the purposes of care, concern, protectivity toward all living things, from soil to fellow men. Else we shall not survive.

The reestablishment of the principle of ecological forestry, in contrast to the mechanical forestry which has dominated timber management in this country and throughout the world during the last 25 years, would be a salutary place to start the essential environmental revolution. Ecological forestry means harvesting which conserves and replenishes the soil, watercourses and water tables, plants and animals, microclimate, natural beauty and scenery, and the forest itself for itself, as solar engine, as oxygen generator, and as generous producer of essential commodities such as lumber, pulp, cellulose, in perpetuity. It conserves the interrelationships among all these things as the forest ecosystem, and offers the sylvan environment permanently to men as human habitation.

GENERALLY SPEAKING, ecological forestry, which can be spoken of simply as silviculture, implies the use of harvesting methods such as individual tree selection, group selection, shelterwood, or small-patch clearcutting. The ideal system would be light selective thinning through all age classes on short cycle and long rotation. There may be situations where silviculture is impossible, but the burden of proof should be on its opponents, and in many such cases the corollary would be that cutting should be avoided entirely.

Contrasting with the silvicultural methods of harvest is clearcutting, which has certain commercial advantages which make it the dominant method of timber management in an avaricious age. Clearcutting can result in serious erosion, dessication, profound disturbances in plant and animal populations, impairment of recreational and environmental assets, and harm to practically all the values with the protection of which silviculture is concerned. It is widely employed because it removes the entire forest at one sweep, and profits can be taken quickly. Lending itself to the use of big machinery and chemical controls, it comports with the thought patterns of technological man. It may involve burning or bulldozing the land after clearance, often with aerial reseeding, accompanied by the use of rodenticides, which kill other wildlife besides rodents, and dangerous herbicides.

THE NPCA has a direct and primary interest in pressing for ecological forestry as contrasted with the modern abuse of clearcutting: the National Parks cannot be protected against the traffic and the overcrowding which now threaten them unless better use can be made of the surrounding National Forests for recreational purposes. But the recreational use of the forests becomes impossible if they are to be mowed down like a field of grain every few decades.

The NPCA undertook last year to prepare a series of studies to prove to a heedless profession and a concerned public that ecological forestry has always been and still is feasible. The first two, by Twight and Minckler,* have now been published, one based on data developed at the Kaskaskia Station of the Forest Service and by the authors; the other on data developed by the Goodman Lumber Company in northern Wisconsin and by the

*Continued on page 39*

*Peter A. Twight and Leon S. Minckler: *Ecological Forestry for the Central Hardwood Forest*, April 1972; and *Ecological Forestry for the Northern Hardwood Forest*, July 1972. Washington, D.C.: National Parks & Conservation Association. $1.00 each.

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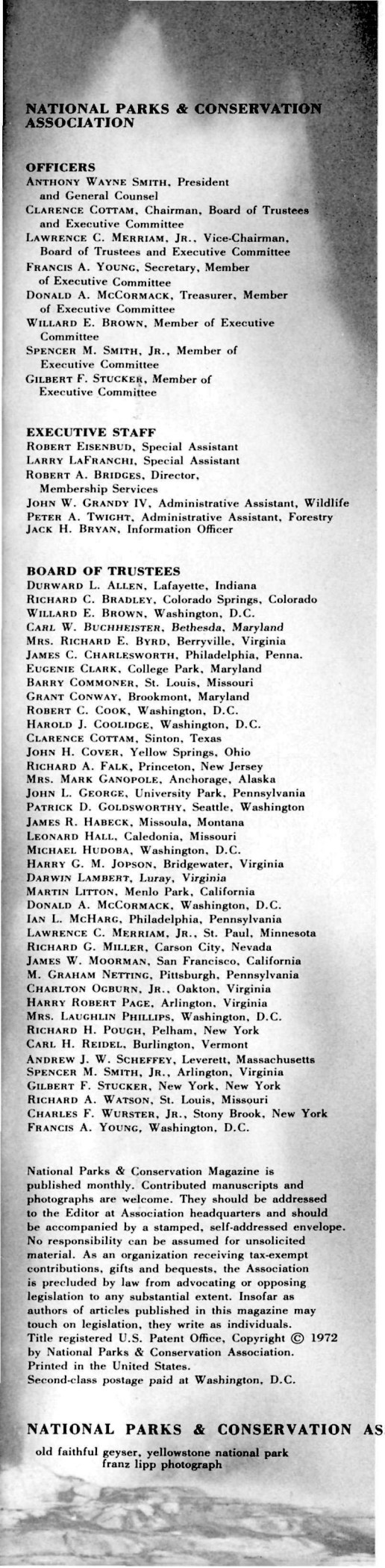

old faithful geyser, yellowstone national park
franz lipp photograph

# NATIONAL PARKS & Conservation Magazine

**The Environmental Journal** **November 1972**
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**VOLUME 46 • NUMBER 11**



**COVER** *Hawksbill Mountain from the top of Old Rag Mountain, Shenandoah National Park, by Jack Jeffers*

Wilderness now clothes the slopes of Shenandoah National Park. The weary hiker who toils to the top of Old Rag Mountain is rewarded and refreshed by a breathtaking panorama of the wild heart of the park. Where the land once was hunted, tilled, and logged, now the forest has returned, wild creatures roam unharried, and sounds of the earth are those of rushing streams, scratching wild turkeys, and the haunting cry of the crow. (See page 4.)

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# Shenandoah National Park with Love

*article & photographs by* Darwin Lambert

*A Day* Man and nature, past, present, and future, blend in Shenandoah National Park, Virginia. The whip-poorwill's call at the first dilution of dark signals the retirement of night creatures—bobcats and raccoons, deer-mice and bats, skunks and owls and moths—and may also awaken a camper from Cleveland or a hiker from Philadelphia. As medleys of bird voices repeat the theme of dawn, perhaps led by that virtuoso, the wood thrush, sunrays touch high mists that rise from deep forests, making sky designs that hint the involved processes of weather and life.

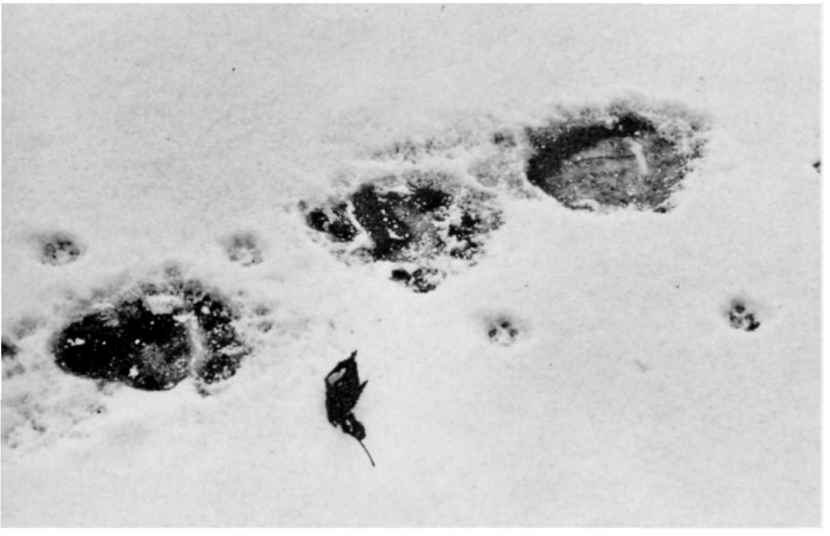
Nature's light tints Hawksbill and Stony Man, the two peaks that rise more than 4,000 feet above sea level. It tints Mount Marshall, Trayfoot, and many others above 3,000 feet. It penetrates to touch a Byrd's Nest shelter for hikers or an old stone chimney of the mountaineers. Illuminated dew on flowers may send pearly glows into the eyes of an eager child or may sparkle like diamonds, amethysts, emeralds, and rubies. Those green factories, the leaves, absorb sun-energy, breathe in carbon dioxide to mix with minerals, breathe out oxygen mixed with moisture, manufacturing the food of all living things.

Gradually the sun climbs, sending its energy-light more strongly into the crannies and folds of the park that dip as low as 700 feet above sea level near Shenandoah River. Woodchucks and deer feed on the grassy borders of Skyline Drive. Catbirds patrol picnic grounds. Butterflies visit milkweed and other flowers. People smell the fragrances of earth and feel the wind on their faces, many degrees cooler than in the nearest cities. From high points they look over the forest to farms, highways, towns, and distant ridges, see the magnificence that brought the agreement of such diverse leaders as Herbert Hoover and Franklin Roosevelt during the genesis of this park. The people feel both strangeness and familiarity, and within them the two might mingle and sing.

Many phenomena known elsewhere are vividly concentrated here. Clouds may boil up in the afternoon, thunder rumble, and lightning flash. Rain may fall until trees drip with it and creatures shake it from fur or feathers or clothes. The carpet of recycling leaves and the humus-filled soil soaks it up. The surplus tinkles and plunges down the rocks of Whiteoak Canyon, Dark Hollow, Doyle River, Overall Run, and the Devils Stairs. It seethes and chuckles in the hollows. Fish swim in it, and beaver may dam it. People drink it, here or far away, or run it through their factories until, bearing wastes and poisons, it reaches the sea to rise again purified and journey on the wind to fall on the land again.

The Allegheny ridges, distance-dimmed in the west, turn with the earth at last to hide the sun. Creatures of the day seek dens or roosting trees, camps or lodges, and night creatures roam again. The mother opossum may have babies clinging to her. The mother skunk may be followed by a line of replicas. The hard-to-believe luna moth may come to a camper's light. Orange flames invite an audience to a naturalist's fire, and there are pictures, talk, and meditation on the puzzles and the glories of earth.

*Morning—As sunrays touch mists rising from deep forests, deer graze the borders of Skyline Drive in Shenandoah National Park.*



*Winter—A fox leaves a line of tracks across a bear's in light snow, and winter rain glazes pine needle and twig to translucent brilliance, but old Stony Man slumbers serenely beneath his frosty beard.*

*A Year* Winter's ebb is more marked among plants than among animals. A Shenandoah bear sleeps or wakes as mood moves, perhaps makes leisurely tracks in shallow snow, and sleeps again. A fox leaves his line of prints across the bear's. A hiker stops and wonders, adding bootprints to the record. Woodpeckers stay busy, probing trees for nourishing borers, pecking half-dried persimmons for dessert.

The car-sheltered visitor sees farther into the forest now, sees perhaps through time as well as space, identifies ruins of mountain homes or Stonewall Jackson's line of defense in Browns Gap. Ridges and peaks once so femininely rounded by leaf-cover now show bony and angular. Old Stony Man accumulates frost on face and whiskers. Heavy snow and blizzards may spread a white sheet that, for days at a time, records the passage of only wild creatures. Waterfalls mix plunging spray with scintillating icy shapes glued by cold to dark rock. Rain may freeze wherever it touches, glazing twigs and branches until they bow gracefully or, under the most severe icing, crack like cannon and are damaged.

Even as snow lingers, spring begins. Catkins lengthen on hazels and alders. Buds swell on wild cherry trees, and grouse may feed on them. The titmouse and cardinal whistle, hesitantly at first, then strongly. Wood frogs converge on pools, work up a frenzy of quacking and clucking, deposit gelatinous egg-clusters that may freeze repeatedly into skim-ice but refuse to die. Soon the maple is misty red; the spicebush, misty yellow; the shadblow, misty white; the redbud, misty pink. Dogwood turns from inconspicuous green toward white, its bracts growing fast. Trailing arbutus releases its sweetness, and wild turkeys gobble.

Spring climbs moist hollows with the luminous leaves of the tulip tree. Tasty morels pop up miraculously and people hunt them, competing with deer now bored from long munching of twigs and last year's acorns. Spring climbs the ridges with pollen-dusty, dangling oak flowers. Hickory leaves form like praying hands, then spread. Birds are on the move, voices and plumage brilliantly varied. Soon mountain laurel adorns the park with uncountable pink-white clusters of intricately geometric design.

The tide of life flows irresistibly through one summer day after another—until in late September the green chlorophyl dwindles in deciduous leaves on the Blue Ridge crest, allowing warmer colors to show—reds of sumac, dogwood, and Virginia creeper, of gum and maple; yellows of birch, wild grape, and tulip; gold of hickory; buffs and vermilions and chocolates of oaks. Autumn spreads downward like flowing or splashing paints. October may bring the largest influx of admiring visitors to the park. By November the leaves are falling, soaring on the wind, decorating the ground. Views into the forest lengthen and spread again. Frost replaces dew. The tide of life recedes.

*Memory* My love affair with the Shenandoah Blue Ridge began when I "joined" one of the 465 mountain families facing eviction because of the coming establishment of the park. Much of the land was open then as

*Spring—Dangling blooms of Solomons seal delight the fortunate visitor.*

pasture, cornfields, gardens, orchards, berry patches. The 193,000 acres had been exploited for two centuries—hunted and trapped, timbered and tanbarked, mined, farmed, burned, eroded. During the nineteenth-century heyday of the mountain folk—before land abuse cut productivity—there had been nearly seven thousand residents. Older mountaineers spoke fondly of that era when no one cramped their independence; when rich new ground might still be found, cleared, and planted; when deer and bear, even panther, persisted; when chestnuts flourished; when "nary a revenooer dared" interfere with moonshining. They took me night-hunting for raccoon or opossum, and a youth near my own age showed me how to trap skunks for furs—and cash.

I learned also from George Freeman Pollock, who still operated the Skyland dude ranch–resort he had founded in the 1890s, preserving there around Stony Man an almost wild nucleus that encouraged dreams of a national park. Showman and naturalist more than businessman, Pollock entertained his guests with rattlesnake handling and innumerable stories and dramatizations of Blue Ridge life, human and nonhuman.

In December 1935 the park became official, and restrictions tightened. The mountaineers could no longer hunt or trap, and soon their children were prevented from picking wildflowers, nuts, and berries for sale to visitors who quickly thronged Skyline Drive. Removal of one population to furnish wildness for another was hard foresight, perhaps unprecedented. The mountain folk were rich in earth-knowledge and handcrafts, living in contentment with nature. Yet a large national park near eastern cities was a true need, and by 1939 all but an elderly few had been moved out. Pollock too was replaced—by a corporation that made Skyland less dramatic and developed other bland but efficient concessions.

Shenandoah expresses the American gamut—the beautiful land filled with resources, the Indians, the white frontier processing nature into wealth, the advance of industrialization and the effects of urbanization, the love of wild scenery, the growing respect for the environment. It is unique among large national parks in being almost entirely "recycled." Nature's re-creation of wilderness here, on land so long and so thoroughly exploited, has been one of the great educational experiences of my life. When the mountain folk and domestic animals were gone, the land promptly produced briers, cedar and pines, sumac, sassafras, persimmon, and locust. As early as the end of World War II, I had difficulty tracing the old paths I had known.

When R. Taylor Hoskins, the park's first chief ranger, returned in 1958 as superintendent, the "restoration and beautification" amazed him. The berry canes and pioneer trees had given place to maple, tulip, black birch, hemlock, white ash, hickories, and oaks—climax forests like those of long ago. Hoskins went "down on Hazel [River] where there'd been a lumber mill with a sawdust pile six feet deep, a tremendous big pile." But the sawdust had "melted back into the earth," and he could not find the mill site.

Following signing of the Wilderness Act in 1964, some of us who had long known the area, and some first-timers, went exploring. Nearly all agreed that wilderness had returned to Shenandoah, genuine wilderness comparable to that of the Far West and Alaska. Its mysteries and

marvels pervaded the park's three hundred square miles, except the thin line of Skyline Drive and a few tracts held "civilized" for administrative and visitor-service purposes. Blended in varying natural combinations were a hundred species of trees, some more than a hundred feet tall, a thousand kinds of wildflowers, shrubs, and vines; dozens of different ferns; uncounted fungi; a diversity of snakes, turtles, fish, frogs, and salamanders; thousands of kinds of insects; and sixty mammals ranging in size from bear and deer to the tiny shrew. Though the count of human visitors exceeded two million a year, secret places vast in acreage showed no sign of man, except maybe the ruins of a stone wall or chimney more than a century old, or a tannin-rich chestnut stump only now crumbling into soil.

*Forever* Creation of the Shenandoah Blue Ridge began more than a billion years ago in the hot furnace of earth and continued under a cool arm of the sea. Horizontal pressure wrinkled the mountains up, and eons of weather sculptured them, exposing old lava (now greenstone) as Stony Man, Crescent Rock, Franklin Cliffs, Hawksbill Head; exposing ancient granites as Hogback, Marys Rock, The Pinnacle, Old Rag; exposing sea-laid rock (now quartzites) as Knob Mountain, The Neighbor, Black Rock, and the slopes of Big Run.

Land and weather became the basic environment of life that spread up from the ocean—primitive algae perhaps, then more complex plants, feeding on the energy of the sun and the minerals of the rock, creating soil, producing food and atmosphere for animals, providing a productive and pleasant home for man. Twelve thousand years back we had red-brown skin here, and our bare or moccasined feet walked the granites and greenstone, the sandstones and shale, the ridges and hollows, walked the algae, the lichens, the moss, the soil, the ferns, the fallen needles of evergreens, the leaf-rug from hardwood trees, stalked the animals of many kinds for food and clothing, sought plants for food and shelter, lived on what we could kill and gather, process, transport, and store.

Today our skin is of many shades, and most of us ride more than we walk. Our technologies of food and clothing and shelter are more complex and confusing. But still we live on what we kill and gather, on the materials and processes of nature, complicated and disguised though we have supposed we prefer them.

We ride along Skyline Drive, enjoying the resurrected wilderness on either side and its interweaving in blue haze with the threads of history and the edges of civilization. We hike the trails of Shenandoah National Park that is to be kept unimpaired for the life and love of generations yet to come. With all five senses, and perhaps with a sixth that we use but do not know, we drink the wonders of forest and mountain. We relax in escape from urban stress, and we feel—whether or not the language enters our consciousness—the basic way of earth that feeds us physically and spiritually. Perhaps we see in the beautiful, awesome wild, as in a mirror of space and time, a reflection of our deep identity, a vision of who we have been and are and will be, a vague but glowing vision of where, as the growing tip of glorious nature, we are going. ■

**Darwin Lambert has been an authority on Shenandoah National Park since its beginnings. He was the first National Park Service employee at the new park in 1936. From 1936 to 1942 he edited a magazine featuring the region's natural and human history. He wrote the first guidebook to the park and its Skyline Drive, which, revised four times, was in print until 1960. Now a freelance writer, he lives just outside the park and concentrates on man-and-earth relationships. His work appears in various magazines including *National Parks & Conservation Magazine*, *Vista* (magazine of the United Nations Association), and *Reader's Digest*. Two of his books now in print focus on Shenandoah (*Herbert Hoover's Hideaway*, 1971, and *The Earth-Man Story*, 1972) and are available from Shenandoah Natural History Association, Luray, Virginia 22835, or at visitor centers in the park.**

*Forever—Where mountaineers once hunted and trapped, logged and farmed, now the forest grows and wild creatures roam unharmed and only remnants of stone chimneys and old stone walls remain to testify to man's past presence. Wilderness has reclaimed Shenandoah.*

# JACK HOPE

# SAFETY IN THE PARKS

Throughout the national park system visitors receive numerous warnings about the feeding of bears and other wild animals. On pamphlets handed out at park entrances, on roadside signs, on campground bulletin boards, and in discussions with rangers, the message is repeated:

"Do not feed the bears or other wildlife. All park animals are wild. Their actions and reactions with people nearby are unpredictable and can often prove fatal."

"Watch out for bears. They are dangerous—particularly when accompanied by young."

"It is reckless to approach bears closely; even though they may appear tame, bears and other wildlife may turn suddenly and inflict serious injury."

In Great Smoky Mountains National Park the first bear accident of the 1970 season occurred at noon, June 28. Mr. and Mrs. H. and family were stopped at a scenic overlook, roughly thirteen miles inside the park, eating lunch beside their automobile. A medium-sized black bear approached and joined the luncheon gathering. The family welcomed the visitor by tossing him a handful of cookies. The bear quickly downed the offering and stood waiting for more, about eight feet away from his hosts.

Mr. H. accidentally dropped his own cookie to the pavement and stooped to pick it up. But the bear felt that the cookie, an Oreo, was meant for him. In a revealing display of ill-breeding he dove for it, bumping bent-over Mr. H., knocking him to the ground, and opening a small cut in his scalp. Mr. H. and family rushed to a nearby ranger station, where the cut—fortunately superficial—was treated by a park employee. The bear picked up the cookie and ambled back into the forest.

Between four and five thousand accidental injuries occur each year within the twenty-nine million acres of the national park system. In light of the fact that 200 million annual visits are made to the parks, the accident figure is not overwhelming. But in recent years a great deal of public attention has focused upon park accidents. A few dramatic lawsuits have been leveled against the Park Service for injuries and fatalities that have occurred in the parks, and national news media have given broad coverage to some of these accidents. As a result the Park Service has acquired a certain notoriety for its apparent insensitivity to the safety of its visitors and has received thousands of letters from the public demanding that the national parks be made "safe."

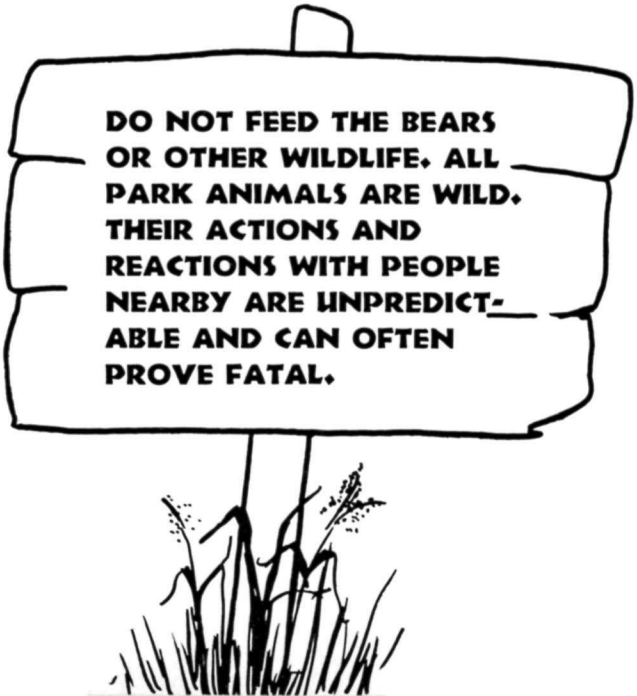
But how? Providing safety in a national park is not the same thing as providing safety in the home or at work or in any sort of more civilized setting. According to the organic park legislation of 1916 the Park Service is legally obligated to administer its natural environments (including all flora and fauna and other aspects of the park setting) "in such manner . . . as will leave them unimpaired for the enjoyment of future generations." The founding legislation indicates that the essential qualities of a park are its natural qualities and that it is from these that the public is expected to derive benefit. Thus, the provision of visitor safety must be balanced against the welfare of the park surroundings; in a roadside mishap involving a bear and a park visitor, for instance, the Park Service cannot afford to assume that the bear is "at fault" and must be killed.

Strictly interpreted, the national park philosophy dictates that the Park Service shall furnish visitors the opportunity to encounter nature on nature's terms; that all park users shall be given the freedom to hike, to camp, to view wildlife, to seek solitude—and to take any of the physical risks inherent in such activities without access to manmade comforts or safety measures that might exist in a less natural setting. An easy distortion of this philosophy—and the policies it dictates—casts the Park Service as being "insensitive" to the safety of its visitors.

As with most mishaps, many of those that occur in the national parks are the result of unheeded warnings. A few of these accidents border on the comic: the lady who sprains an ankle after setting off on a hiking trail in high heels; people who are nipped, nibbled, or pecked as they attempt to feed, pet, or capture wild birds and animals; the man who is pushed to the ground as he tries to persuade a black bear to sit inside an automobile for a picture.

But most accidents are not at all humorous. During the summer of 1971, for instance, five people from four different groups were killed at waterfalls bordering Yosemite Valley when they ignored warning signs, climbed over restraining guardrails, and were swept away by the force of rushing water. And at Yellowstone, where warnings about wild animals are printed on virtually every scrap of paper a visitor picks up, a young man was charged and killed by a bull bison after the man exited from his car, walked—with his wife and a companion—to within thirty feet of the animal, and spent several minutes taking movies and still photographs. An investigation of the incident revealed that several other visitors had walked dangerously close to the bison that day, and a park bus driver reported that on the previous day a carload of tourists from Ohio had surrounded the same animal, pelting him with rocks to make him stand up for a picture.

These are not isolated instances. Each year park rangers report hundreds of situations in which tourists jeopardize their own lives or the lives of others: standing atop a slippery, crevice-filled glacier to have their pictures taken; permitting young children to wander unattended among the steaming hot springs at Yellowstone or Mount Lassen;




tossing marshmallows to roadside bears, apparently unmindful of the fact that this causes the animals to lose their natural fear of human beings.

It is tempting, then, to say that many park mishaps could be prevented if visitors simply exercised a certain amount of "common sense."

But the scope of the average citizen's common sense has changed radically during the past several decades. At the turn of the century the typical American, living in a rural setting, had some firsthand familiarity with the natural world. Today, living in urban or suburban surroundings, he may be familiar with traffic hazards and power lawn mowers and electric ovens, but he does not have any "common" knowledge of the outdoors. He knows that hot water comes out of the left-hand faucet, that his chances of crossing the street alive are better if he crosses with the green light, and that it is not safe to venture alone into New York's Central Park after sunset. But he is not familiar with the mechanics of fording a fast-flowing stream or with the fact that it is dangerous to approach a bison if its tail is sweeping from side to side.

Then too, much of the contact Americans have with the outdoors is vicarious and may be highly distorted or romanticized. Contrary to what may be implied by Smoky Bear television ads or by certain of the Disney nature films, most black bears do *not* wear ranger hats, speak English, and fight forest fires; most mountain sheep do *not* butt their heads together to the tune of the Anvil Chorus; most wild animals do *not* prefer human friendships to associations with other wild creatures.

And in this sense, urban zoos—where we have most of our encounters with large animals—probably make a contribution to the park visitor's distorted notion of the habits of wildlife. Even though its animals are enclosed, a zoo fosters the unrealistic notion of a common accessibility between man and wildlife; there is an underlying, implicit assumption that the animals are there to entertain visitors. A modest extension of this notion on the part of a naïve urban dweller could lead to a dangerous encounter with a park animal that is not shielded from him by bars, moats, or other enclosures.

But the majority of park accidents cannot be attributed to animal attacks, rock slides, exposure, or other natural and specifically "parklike" phenomena. Most mishaps occur within the developed portions of the park system, and as elsewhere, the leading cause of injuries and fatalities in the national parks is the automobile. Of the 167 park fatalities during 1971, 78 were caused by auto crashes.

In contrast, only three park visitors died from exposure. (One was a retarded child who was separated from his father during a fishing trip; another was a young man from Chicago who apparently was on a forty-day religious quest—without food or water—in the desert of Death Valley.) Only one park visitor was killed by an animal (the bison incident at Yellowstone), and one was killed by an avalanche.

Drownings and falls, the second and third largest categories of park fatalities, accounted for forty-nine and twenty-eight deaths, respectively, during 1971. However, falls and drownings are also the second and third largest categories of accidental deaths nationwide. It does not seem, then, that there are special park conditions that increase the incidence of those accidents other than the


ALL PHOTOS COURTESY OF THE NATIONAL PARK SERVICE

*Automobiles are the leading cause of injuries and deaths in the national parks, just as they are the leading cause of accidental deaths nationwide. According to statistics, an individual is safer in wilderness than he is while engaged in many ordinary activities at home and work. Safety for visitors in national parks is threatened not by danger from natural phenomena but by pressures from other people—such as traffic on roads, crowds on slippery boardwalks, and garbage that lures animals to campsites.*

fact that people in the parks are on vacation and probably spend a larger proportion of their time swimming and climbing than they would at home.

Generally, these accident categories remain constant, not varying significantly from year to year. Of the 165 park deaths in 1970, for example, 75 were victims of auto crashes, 50 were drownings, 18 were falls. Six were "struck by objects," three of these being Yosemite pedestrians struck by a passing automobile. Three died from exposure (the same number that were killed in park plane crashes). Two died from burns, one in a hot spring and one in a campground as a man refueled his gas lantern. Five deaths were attributed to asphyxiation or suffocation, three of these five occurring within automobiles and mobile homes due to such factors as malfunctioning gas heaters. Three were struck by lightning. None were killed by animals.

Thus, the figures show that a visitor pursuing natural outdoor activities—walking a trail, setting up a wilderness camp, even hiking along the crest of a mountian range—is in less danger than he is while involved in more "civilized" pursuits. In fact, national statistics indicate that a man winding his way through park wilderness is safer than he would be commuting to work, painting a house, hunting, riding a motorcycle or snowmobile or other recreational vehicle, working on an assembly line or in a mine, or performing any one of a number of activities that are routine in the lives of most Americans.

Mountain climbers, among whom there is a fairly high accident rate (especially among inexperienced climbers), apparently contradict the general statement that a man in the wilds is safer than he is in civilization. But again, most climbers' accidents do not seem to make a statement about park safety. A climber, after all, is well aware of the risks he takes. And whatever motivations may induce a man to risk his life by dangling from the peak of a mountain probably have more to do with his everyday life than they do with the fact the mountain "is there," in a national park setting.

In the parks such activities as climbing and wilderness hiking are made safer than they would be in most other areas by the fact that the Park Service requires all users of backcountry to register with a ranger, filling out a form that lists the hiker's name, number of persons in party, vehicle number, destination, and expected time of travel. In severe weather backcountry users are also asked to display their gear to a ranger before starting out on a trip.

And if climbers or hikers or canoeists or other wilderness visitors are gone too long, rangers come looking. Each year, rescue parties retrieve many lost, injured, or stranded visitors, often at a risk to the rescuing rangers and a great cost to the Park Service. Several search and rescue missions have been conducted that cost over $10,000, a few in excess of $100,000. In most cases these funds are not recovered. In a few cases visitors are not recovered either, but search parties persist in their efforts long after all reasonable hope of finding a missing person has vanished.

The park accidents that have attracted the greatest public attention are those that are unusual, frightening, or spectacular. And generally the mishaps that meet these criteria are those in which a park visitor comes into conflict with a natural park phenomenon. A man injured by a bull moose makes headlines or provides material for a magazine article, whereas the more representative park accident, caused by an automobile or a motorboat or a malfunctioning

gas heater, generally goes unnoticed. Understandable enough. After all, what can be said about the 78 annual auto deaths within the national parks that cannot be said about the 55,000 annual auto-caused fatalities that occur elsewhere in the country? Unfortunately, we seem to have become inured to the common mishaps and the everyday accidents that are a part of the normal workings of an industrial society.

To the extent that the attention drawn to unusual park mishaps causes the Park Service to strengthen its safety measures without compromising the park environment, it is a positive force. For example, after the fatal encounters of two young women with grizzly bears in Glacier National Park (1967) the Park Service conducted a survey of the interaction between bears and park visitors and took several steps to naturalize the relationship between the two species. For several years concession employees at Glacier had been attracting bears with food for the nightly entertainment of tourists. This practice was stopped. The Park Service also stepped up its enforcement of the "no bear-feeding" regulations throughout the park system. Bear-proof trash cans were installed in campgrounds, garbage dumps were fenced and daily covered with a fresh layer of earth so that bears would be forced to hunt for their own natural food in the backcountry instead of hanging around the roads and campgrounds waiting for a handout.

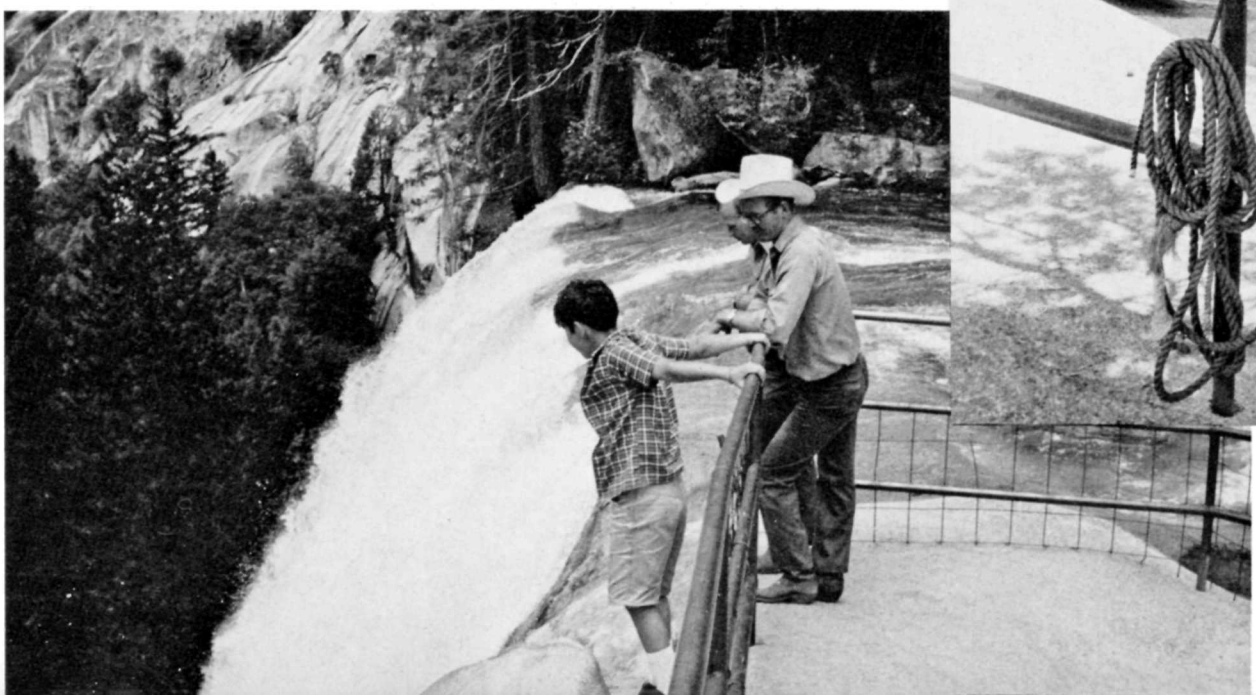
These measures are beginning to work. Today one sees far fewer begging bears at parks such as Yellowstone than three years ago, and the incidence of bear-visitor conflicts has dropped sharply. Interestingly, with the success of these policies the Park Service has begun to receive irate letters from visitors complaining that they are no longer able to see roadside bears.

Similarly, in response to the death of a nine-year-old boy in a Yellowstone hot spring (1970), an incident that was publicized by newspapers, in national magazines, and on television, the Park Service increased its already abundant warnings to visitors through the use of new warning signs posted near hot springs, new "Danger" pamphlets handed out at park gates, and by broadcasting warnings of potential dangers on the air. The tourist can pick up these broadcasts on his car radio.

At the same time, however, the disproportionate focus of public attention upon those unusual mishaps involving natural park phenomena has apparently conveyed a mistaken impression of the causes of typical park accidents. In response to media coverage of recent park accidents, the Park Service has received several bagsful of mail (often routed by way of congressional representatives) in which the writer typically conceptualizes park safety as a matter of "man versus nature" and demands that a set of safety measures be instituted, most of which would require an alteration or destruction of the park setting. Among the recent demands made of the Park Service are included the shooting and poisoning of grizzly bears, coyotes, snakes, and other wild animals; the paving of park trails to prevent hiker injuries and the widening of park roads to reduce traffic hazards; the "removal" of boulder slides and avalanches; the installation of nets below cliffs and around waterfalls; and the fencing of lakes, rivers, streams—even the Grand Canyon—in order to prevent tourists from falling in.

In almost all the protests received by the Park Service there is an underlying view of a national park as a place not far different from the protestor's home environment and in which the safety measures relevant to a suburban or urban setting can appropriately be applied. Commonly, the protests contain a paragraph that begins: "If this accident had occurred in my factory . . . ."


*The notoriety of some park accidents has influenced Park Service precautionary measures, but their effectiveness is hindered by naïve, careless individuals as well as by overcrowded conditions. Misreading the cause of park accidents, some critics have suggested large-scale alterations of the park environment, including installation of safety nets around waterfalls.*



While this aggressive and antienvironmental attitude toward park safety is partially a response to media coverage of selected park accidents, it also seems to reflect a certain predisposition on the part of the complainant, a vestige of the pioneer spirit, a readiness to believe that parks should be molded to suit any and all needs of urban-industrial man.

However, the Park Service itself has contributed to the common misconception of a national park through its historic over-accommodation of the visitor and his vehicles. The agency has *not* interpreted its organic legislation strictly, but, in order to accommodate the growing number and changing tastes of its visitors, has altered hundreds of thousands of acres of the park setting to build roads, parking lots, and drive-in campsites for the vehicular camper. Private park concessioners have been permitted to expand their services and facilities to include gas stations, beauty parlors, motels, expensive restaurants and filtered swimming pools, motorboat marinas, and snowmobile rentals. Easy auto access has been provided to the more popular park features such as Old Faithful and Yosemite Valley.

In addition to its effects upon the park environment and upon the nature of the park experience, this traditional policy of accommodation has had a direct and negative effect upon the park system's safety record. The most basic shortcoming of Park Service safety is that of drawing an uncontrollably large number of visitors into small areas in the parks and permitting them to flow through the park system, coping with the natural world with knowledge, objectives, and behavior patterns imported from an urban or suburban setting. Predictably, when two and one-half million annual visitors are brought to within thirty seconds walking distance of Yellowstone's hot springs and geysers, someone is going to slip, fall, or be crowded off the surrounding boardwalks. When seven million motorists annually drive the Great Smokies' transmountain road, dividing their attention between the highway and the surrounding scenery, someone will run into someone else or go over a cliff. With 20,000 tourists daily motoring past a napping bull buffalo, it is predictable that several people will leave their cars and walk dangerously close to the animal.

In this light the steps needed to improve park safety are quite clear. Under the present park set-up continuing educational efforts, in combination with an increase in park manpower, offer the greatest potential for reducing accidents. But in the long run the most conspicuous avenue of improving park safety is that of exercising control over private motor vehicles (including motorboats and snowmobiles, as well as the auto) and of thereby limiting park visitation in each area to a number of persons that can be properly patrolled, warned, and educated by the park staff.

Within the past four years, specific plans of this sort have been considered by the Park Service for the purposes of improving the quality of the park visit and limiting the pressures on park environments. Among these plans are included the regulation of park visitors by a system of queues and advance reservations, and the separation of the visitor from his vehicle immediately inside park boundaries, requiring that he continue his travel within the park either on foot or by some means of public transit (bus, cable car) supplied by the Park Service or by the park concessioners. But to date, and largely due to a lack of funding, the Park Service has put these plans into effect only on a small scale and an experimental basis within a handful of national parks.

Only steps of this sort, which depart from the historic policy of visitor accommodation and approach the problem of park accidents at its source, can be expected to make a fundamental improvement in safety in national parks. They may not be nearly as dramatic as waging war on park wildlife or lining the Grand Canyon with foam rubber pillows, but they would save many more lives. ■

**Jack Hope was the senior editor at *Natural History* magazine before turning to freelance writing. This article is adapted with permission from his new book *Parks in Peril*, copyright 1972 by the Sierra Club.**

*The typical American of the 1970s is a novice in the natural world who comes to the outdoors with expectations drawn from his experiences in urban settings. Visits to zoos encourage him not to fear wild animals, but in the parks his city-bred lack of caution may have tragic consequences.*

# ECOLOGICAL FORESTRY for the NORTHERN HARDWOOD FOREST

Leon S. Minckler & Peter A. Twight

Abridgment of a comprehensive report under the same title by Peter A. Twight and Leon S. Minckler, published by the National Parks and Conservation Association. The report is the second of 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.

SUGAR MAPLE, COURTESY OF U.S. FOREST SERVICE

THE OBJECTIVE of what we have called "ecological forestry" is timber production that maintains and enhances other social values of the forest and protects the environment for ourselves and future generations. It is the healthy interaction of the human personal and sociopolitical systems with the natural environment; i.e. the interrelated plant and animal ecosystems. This objective can be accomplished in northern hardwood forests by intensive forest improvement and by harvest cutting of single mature trees or small groups of trees, thus providing a flexible sustained yield of all values from a permanent and diversified forest.

We will describe a case where such ecological forestry is an alternative to even-aged forest management by means of clearcutting in our northern hardwood forests. This alternative proposal has been prompted by the recent wave of clearcutting on both public and industrial forests and the seemingly undue emphasis on timber values and neglect of other social values. It was given impetus by our concern for the desires of the small woodland owner, who controls most of the forests. The official cooperative programs to help him have made little headway, possibly because the small owner is more interested in the values from his standing forest than in timber products. The public outcry against clearcutting, as well as protests from some professional foresters, have generated arguments in response to those who claim that clearcutting of northern hardwoods is administratively and economically necessary. (Except in areas of heavy deer overpopulation or very sandy soils few now claim that it is biologically necessary.) We believe these claims are valid only if the unstated economic value assumptions are valid, and those assumptions should be matters for public decision.

In simplest terms the issue has resolved itself into an emphasis on commodity values versus all social and environmental values, or, in another sense, financial profit versus economic values in their broad definition. We use the term "economic" in the literal sense of "household management," which includes material, social, and esthetic values. A social-economic analysis of forestry outputs should be evaluated much more liberally than merely according to a financial yardstick. Ecological forestry accomplished through intensive silviculture need not be constrained only by the market value system. The public subsidy of clearcutting, in the form of tolerance of second-best environmental forestry, is certainly not justified. At long last forestry must become more humanistic and must reflect the desires and values of society.

The viability of ecological forestry for integrated values in northern hardwoods is demonstrated by the Goodman Lumber Company forest of seventy thousand acres in northern Wisconsin (now the Goodman-Staniforth Division of Universal Oil Products Company). A management plan calling for sustained yield selection cutting was developed in 1927 by a firm of consulting foresters. With some remissions and revisions this plan has been in effect for forty-five years up to the present. Some records were lost in a fire, and other data were not complete; but we pieced together data from sample plots, records of the company, publications, knowledge of the present foresters, and our own extensive observations in the present forest. The evidence is clear that for the Goodman Lumber Company over this forty-five-year period the financial constraints on selection forestry were not prohibitive; and the present forest is healthy, diversified, well stocked, high quality, and beautiful.

This is in marked contrast to the general history of Lake States forests, where timber liquidation followed by fire regressed forest types to even-aged aspen and paper birch. The Goodman property had never been clearcut and burned, and the upland sites had good soils for hardwoods.

The Goodman forest in northern Wisconsin is about half uplands and half swamplands. The upland forest was, and is, a relatively stable forest climax tending toward the more shade-tolerant species. Natural disturbances, as well as timber cutting, keep the forest dynamic and with considerable species diversity. But major disturbances may convert the forest to aspen and paper birch, and clearcutting on some areas can raise the water table and result in vegetation change.

The upland forest (thirty-seven thousand acres) is composed of sugar maple, yellow birch, elm, basswood, and hemlock, with a scattering of black cherry, white ash, paper birch, and aspen. Beech is not present in this area of Wisconsin. Sugar maple is the most common species and develops well in the shade and in both small and large openings. The proportion of other species could be in-

creased by appropriate silvicultural practices. The swampland forest is composed of northern white cedar, balsam fir, larch, black spruce, and black ash. On the swamp-upland margins yellow birch, elm, and hemlock are common. The swamp forests, except for cedar, have a low timber value but a high value for wildlife and esthetics. The interspersed swamps add greatly to the richness and diversity of the forest habitat.

In 1927, as today, the upland forest was uneven aged and was composed of trees of all sizes. The stands were well stocked with at least ten thousand board feet per acre. But there were many mature and poor and defective trees. The first selection cut, designed to harvest some of these trees, removed 50 percent of the board feet volume and 20 percent of the trees. Reevaluation showed that a rigid diameter limit harvest cut of twenty inches in diameter had to be modified to leave some larger good trees and to cut some smaller poor trees. In the second cycle of cutting 15 percent of the volume was taken. Starting in 1952 a third cycle lasted six years and removed 15 percent of the volume. Since 1952 no cull trees were killed or felled, and at no time were openings deliberately made for regeneration. Since the third planned cycle there has been some disruption of control due to change of personnel and ownership and loss of records. Better control of the forest is now being sought.

The present silviculture is minimal but in harmony with the forest environment. It is mostly single tree selection with some effort made to avoid openings of more than fifty or sixty feet in diameter. Mature trees and smaller trees of low quality are cut, but no cull trees are eliminated. Perhaps 15 percent of the growing space is occupied by cull and poor trees. There are no thinnings, cleanings, or special treatments to regenerate species like yellow birch, basswood, or cherry. Four factors make this minimal silviculture produce quality wood and beauty: (1) large mature trees are cut, (2) the smaller low-quality trees are cut, (3) logging is done carefully with a minimum of damage, and (4) the marvelous growing qualities of the northern hardwood forest is harmonious with the selection system.

According to the permanent plots 5,800 board feet per acre have been cut over the last twenty-three-year period, and the present forest has 10,800 board feet per acre. Growth has been about 250 board feet per year. The trees are of all sizes from saplings to large sawtimber. There is now a larger proportion of saplings and pole sizes than formerly, and the proportion of sugar maple has increased. More intensive silviculture is required for a better species diversity, but the age and size structure of the forest is good.

Because of the skill and motivation of the logging crews, the light equipment, the gentle terrain, and the excellent permanent road system, logging damage has been *nil to the environment* and *slight to the remaining forest.* The roads make possible intensive management including harvesting, salvage, improvement cuts, fire protection, recreation, and even esthetics. Logging and roads are an integral part of silviculture, and Goodman has done the job well. These practices could go on for a thousand years without damage to the environment.

The predominately single tree selection cutting is not particularly favorable for wildlife, especially deer and grouse. This type of cutting does not favor edge between vegetation types, and wildlife habitat would have been improved by more cutting of small openings and patches and more groups of hemlock. Yet dozens of species of wildlife are present in abundance, and grouse and deer hunting on the Goodman property is locally highly regarded. Goodman gives free use for hunting, fishing, and hiking. The intermixed swamplands, the streams and ponds, and the occasional unplanned larger logged openings all contribute to wildlife habitat. But wildlife habitat could be greatly improved by a conscious plan of forest manipulation to provide better wildlife habitat while at the same time extracting timber. For this plan to be successful, habitat management must be combined with control of the deer population.

In a subtle and intimate way the present Goodman forest is esthetically appealing, not only for its visual beauty but also for the sounds, smells, and feelings of solitude and quiet when walking or slowly driving on the canopied logging roads. These woods experiences are a part of man's deepest levels of relationship with the earth. In this kind of forestry the crop includes the esthetic and ethical values that promote a healthy civilization. Not cosmetic forestry, but the harmonizing of form and function should be the main goal.

The Goodman land is not primeval forest; it has been partially cut probably five times. But there is no sense of violence or disharmony. With some modification of practice this kind of management could satisfy some of the need for wild areas in the eastern United States. Diversity could be deliberately created with a minimum of disruption. Permanent and stabilized roads could sample all the forest types including the swamps, creeks, lakes, and upland forests. All in all the observer would experience a great diversity of forms and spatial relations, a variety of scale, and a constant sense of anticipation.

WHAT ARE THE SECRETS of the Goodman success? First, the company began with a good timber management plan. Second, fire protection and a favorable tax structure, both in the public interest, were assured. Third, the selection system of silviculture harvested the mature and low-quality trees, saved the growing stock trees for future growth, and provided space for regeneration and growth of the northern hardwood species.

Some have said that clearcutting is a functional program of multiple use. But multiple use is not a functional concept. It depends on economic definitions of resources but becomes mystic in assigning values to intangibles. As pointed out by Carl Reidel, "multiple use may be a *result* of environmentally integrated forest policy; it cannot be the guide." What is needed—and this is not a new idea—is an intensive holistic and ecological approach to forestry to secure all the social values available. ■

**Dr. Leon S. Minckler, for many years a silviculture and hardwood research forester with the U.S. Forest Service, presently is adjunct professor of silviculture at the College of Environmental Science and Forestry, State University of New York. Peter A. Twight, also formerly of the Forest Service in timber and recreation management, is NPCA's administrative assistant, forestry.**

# OUR NATIVE PLANTS a look to the future


F. R. Fosberg

ENDANGERED SPECIES has suddenly become a familiar term. It is also an ominous term. What species are endangered? Why are they endangered? What are the dangers? Why the sudden looming of a concept previously unfamiliar? What is the significance of endangered species in human terms?

Some people ask, "Why worry about any species except man and a few dozen of his domestic animals and plants?" Relatively few people could name more than a few score species even by common name, let alone say why endangered species make any difference, or why one should worry about them. At least this was so until very recently. The sudden general awakening to the seriousness of human pollution and population problems has frightened many people, and some are beginning to listen to what the science of ecology has been trying to tell them for many years. The idea of the oneness of nature, of the wholeness of the ecosystem of which we are a part, is beginning to accumulate believers. It is dawning on people that if one part of an ecosystem is in trouble, the system as a whole possibly may be in trouble. People are grasping this idea and are developing a deep concern about their relation with the rest of the natural world.

Before the coming of man America was endowed with an environmental diversity and biological richness difficult for even a biologist to fully grasp and appreciate. Physiographic and geologic patterns, with resulting diversity of local climate and soil types, provided a setting for the development, by evolution and migration, of an incredible assortment of faunas and floras. These, each with its own physical environment, formed a wonderful array of local *ecosystems*, no two of which were quite identical.

An ecosystem is an intricate assemblage of physical environmental components—rocks, soil, air, water, sunlight—in various configurations, occupying a portion of the earth's surface with its plants and animals. These components are associated in a state of dynamic equilibrium that constantly changes, but usually so slowly as to give an impression of stability and changelessness. Another way of defining the same concept is to say that an ecosystem is a community of organisms plus its physical environment.

The nature of an ecosystem perhaps may be expressed best by mentioning some of the processes that take place among its plants and animals, and which are essential to its continued existence. These, reduced to their simplest terms, must include the inflow of energy, virtually all from the sun, the movement of energy through the system, and its eventual escape; the various changes in physical and chemical states of the matter involved—the metabolic process in plants and animals—and the flow of the matter through the system; and the activities, life histories, and interactions of the many organisms that are essential parts of it. Most important are the roles played by these organisms. Essentially, each species and each individual is engaged in utilizing a share of the total resources supplied by the system and is in competition with the others for this share. The development of the system (ecological succession) is a process of continual addition, by immigration or evolution, of organisms that can make fuller and fuller use of these resources with a greater and greater degree of recycling. At the same time there is a disappearance of some species not adapted to the new conditions that develop. The most mature, or climax, ecosystem is that exhibiting the most complete utilization of the total potential resources of the system. It is also the most stable.

Ecosystems are unique among classes of natural systems, terrestrial ones, at least, in that they are able to increase their total potential energy and thus prolong their existence and survive disturbances of various sorts.

During the "life history" of an ecosystem, the period during which it develops and changes from a bare, raw piece of new physical environment with no biota to speak of—be it a lava flow, a newly exposed sand or gravel bar, an area of mobile dunes, or an area of open water—to a rich climax system, a great assortment of habitats exist for varying periods of time. These, along with the great spatial diversity of habitats due to physical diversity, provide homes for an enormous assortment of kinds of plants and animals. In North America alone the plant species number in the tens of thousands, depending on which botanist is asked.

Even before man came on the scene, some of these species were rare, others common, still others abundant. Each species has a different combination of ecological requirements and tolerances. These differences affect the abundance of the species by restricting them to certain habitats, by influencing their success in competition for resources, by determining their susceptibility to diseases or to occasional or rare extreme conditions, and by controlling their responses to successional changes in communities and ecosystems. Thus there are naturally rare plants and even naturally endangered species of plants.

As frequently has been pointed out, extinction is a natural phenomenon. Great numbers of species have become extinct in the several billions of years before man's appearance. Then why, it is sometimes asked, are we so

disturbed about the species that have become extinct in the past few hundred years and those that seem about to join their ranks? Is it not a natural process? One must reply, so is soil erosion. Yet Americans became upset enough about soil erosion to set up a federal Soil Conservation Service.

The answer in the cases of both erosion and extinction is that the natural manifestations of these phenomena are slow enough that new soil is formed and new species evolve fast enough to replace the losses. When the processes are influenced by man, they are so speeded up that the net result is a serious loss of both resources and diversity in our world ecosystem.

SO MUCH FOR THE BACKGROUND of the problem of endangered species of plants. What is the situation in the United States? What is being done about it? And what more must we do about it?

Beginning with the arrival of the first human immigrants from Asia, somewhere between twelve thousand and thirty thousand years ago, man has been engaged in modifying the North American landscape and the ecosystems comprising it. Primitive hunting and gathering man exerted some pressure on the natural scene, especially on the larger animals and on plants producing edible parts. However, as far as we know this pressure did not have a particularly marked effect, at least on plants—not much greater, probably, than that exerted by any other large, omnivorous species of animal.

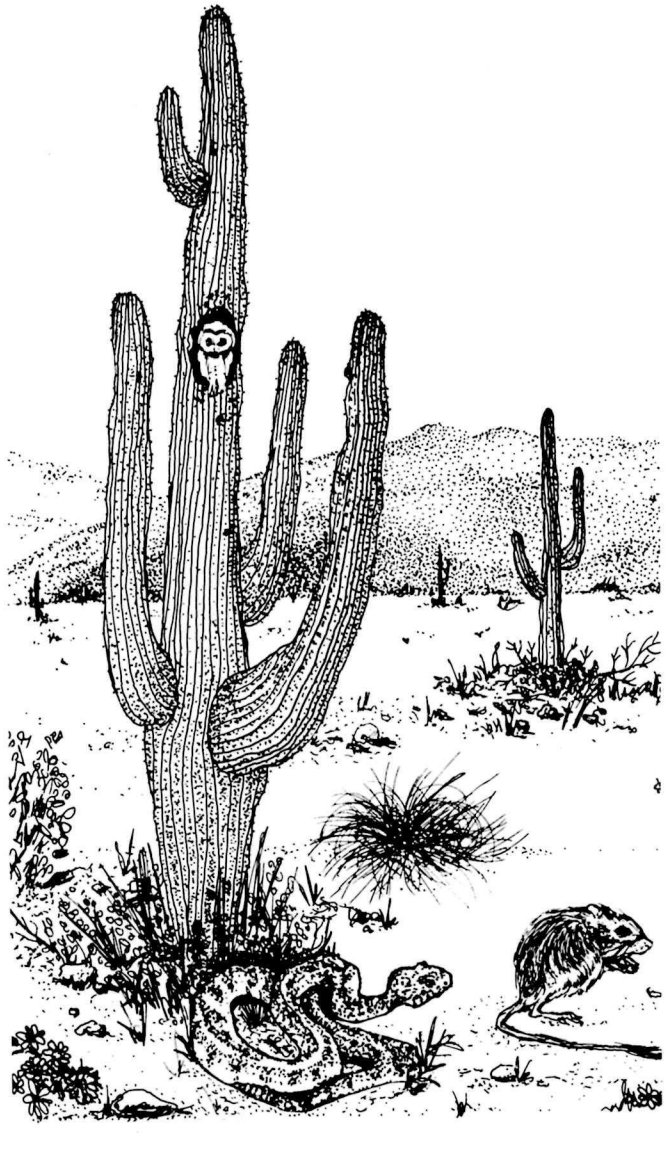
When aboriginal agriculture developed, the landscape was more notably modified; and species of plants living in habitats favorable to agriculture likely suffered important reductions in abundance. Extensive use of fire by some cultures may have put the future of some species in jeopardy. In the southwestern United States and parts of tropical America, where sedentary cultures grew up, and especially where human populations reached high figures, serious alterations in landscapes took place. Some species may well have vanished if they were ecologically restricted to the habitats man needed for agriculture or for building cities.

However, it was only with the arrival of European man that change on a catastrophic scale began to spread across the American continent. The forest was attacked as though it were an enemy. The prairie was put to the plow at an ever accelerating rate. Certain of the natural habitats were eliminated, and the organisms inhabiting them were wiped out. Almost all habitats were drastically reduced or modified. With this reduction and change almost all plants except some pioneers were left with little or unsuitable living space.

One of the characteristics of a pioneer, actively growing human culture seems to be an inability or a disinclination to consider any environmental consequences of its activities. Only things that yield an immediate, tangible benefit are regarded as important, with certain exceptions. Trees, for example, were greatly valued on the high plains by the same people who had destroyed them ruthlessly farther east. On the plains they provide shade and protection from wind, as well as a relief from the flatness and monotony of the landscape. Edible animals (game) were always valued and given some protection, at least after they began to

*Our planet is an ecosystem composed of many different kinds of local ecosystems, or communities of plants and animals interlinked with each other and with their physical environment—rocks, soil, air, water—in a complex system in which the basic chemicals of life are constantly recycled. Although the cast and set vary, the scenario is ever the same: Wind, water, frost, and plants slowly erode rocks and gradually change them into soil. With the basic energy of all life—sunlight—plants convert simple substances from air, water, and soil into food, storing the energy in a form usable in the life processes of plants and animals. Primary consumers eat some of the plants, and the food energy is passed up the food chain by predation to higher order consumers. Eventually all plants and animals die, and scavengers and decomposers convert the dead tissue to simple organic and inorganic substances. The cycle is complete. Each element in a given ecosystem depends on its associated elements; no living thing can fail to be affected by a change in its ecosystem, nor can it exist for long outside its own natural community.*

DRAWINGS BY HARVEST COOPERATIVE



get scarce. Predators, on the other hand, were destroyed, because their role in controlling other species was not easy to see.

From the time a few small groups of Europeans formed scattered settlements along the eastern seaboard until now, the natural landscape of America has been subjected to unceasing attack and constant, drastic alteration. No moderation has been evident outside of specially reserved areas like national parks, and the rate of change has increased exponentially. Many habitats have been wiped out or modified, sometimes beyond recognition. Completely unchanged or "virgin" habitats are almost nonexistent today in the United States and rare anywhere else.

Vast areas of cultivation, where even the common weedy plants are absent because of use of herbicides; other large areas of highly disturbed land with nothing but weedy species; areas of planted forest, floristically impoverished and monotonous; and vast areas of second-, third-, and fourth-growth forest, from which many of the most sensitive species have disappeared, characterize our country. Climax forest is becoming a rarity. The special, extreme habitats—bogs, swamps, vernal pools, and other wetlands; mineralized areas; and even deserts—where highly adapted and specialized plants grow are disappearing with distressing rapidity. Too many people regard the "reclaiming" of such areas as a great civic virtue.

The results of these sweeping changes are that, although a few species of plants have been given an enormous ecological opportunity and have become common, the great majority of species find their habitats disappearing, and they have no place to live.

The number of rare species of plants is increasing rapidly. While a few of the formerly rare ones have become common, many more have disappeared completely. Rarity is relative, of course. Almost all species except those with pioneer tendencies are rare compared with their abundance a hundred or so years ago. Some may have passed the point of no return. Others have had their numbers so reduced as to severely restrict their genetic variability. This may mean danger in the future when there are alterations in habitat.

Perhaps the person in the best position to realize this change in relative abundance of plant species and the increasing rarity of many of them is the teacher of field botany. He has over the years located good places to which he can take his students to see certain of the more interesting wild plants. When he finds his favorite forest razed and a field of boxlike houses sprouting in its place, when

he has to search for a pink ladyslipper in an area where there were hundreds several years ago, and when he finds the marsh where he was able to point out dozens of kinds of aquatic and semiaquatic plants converted to a sanitary landfill, he knows something is wrong. When he has to drive fifty miles to find plants formerly common at the edges of town, he knows the situation is serious. It may be hoped that he can transmit his concern to his students so their greater numbers may increase the pressures for doing something about it.

The recent upsurge of interest in ecology and the concern for the creatures who share the world with us have been strong enough to cause Congress to pass laws and international organizations to formulate treaties and conventions to protect species regarded by specialists as endangered. That this movement is only in its rudimentary stages is indicated by the fact that, nationally and internationally at least, only birds, mammals, and a few large reptiles are afforded protection. A few plants are given local protection, but usually they are not the ones that need it most. The flowering dogwood, for example, is protected in Virginia, although it is one of the plants least endangered there. Such protection is a beginning, however.

The important question is where do we go from here? At the present rate of conversion of habitats to nonhabitats the problem will disappear all too soon. The rare plants will all go, and a monotonous flora of weeds and extremely hardy and tolerant species will replace them. The study of most species of plants will have become a part of a vastly expanded science of paleobotany. The plant fossils studied then will be the herbarium specimens we are preserving today.

To avoid this dismal eventuality several measures seem essential. It should be clearly understood that no plant or animal is likely to survive long unless sufficient suitable habitat is preserved to support a substantial specific population. If at all possible a number of such protected areas in different locations, each with its population of the species of plant to be protected, should be established. This means protecting a great diversity of habitats. Of course, the same area might well be the habitat of many rare species.

Inasmuch as all the rare and endangered species of plants and their habitats are not known, at the same time that efforts are directed toward protecting the known ones a program of determining the present location and status of natural populations of all but the commonest native plant species should be initiated.

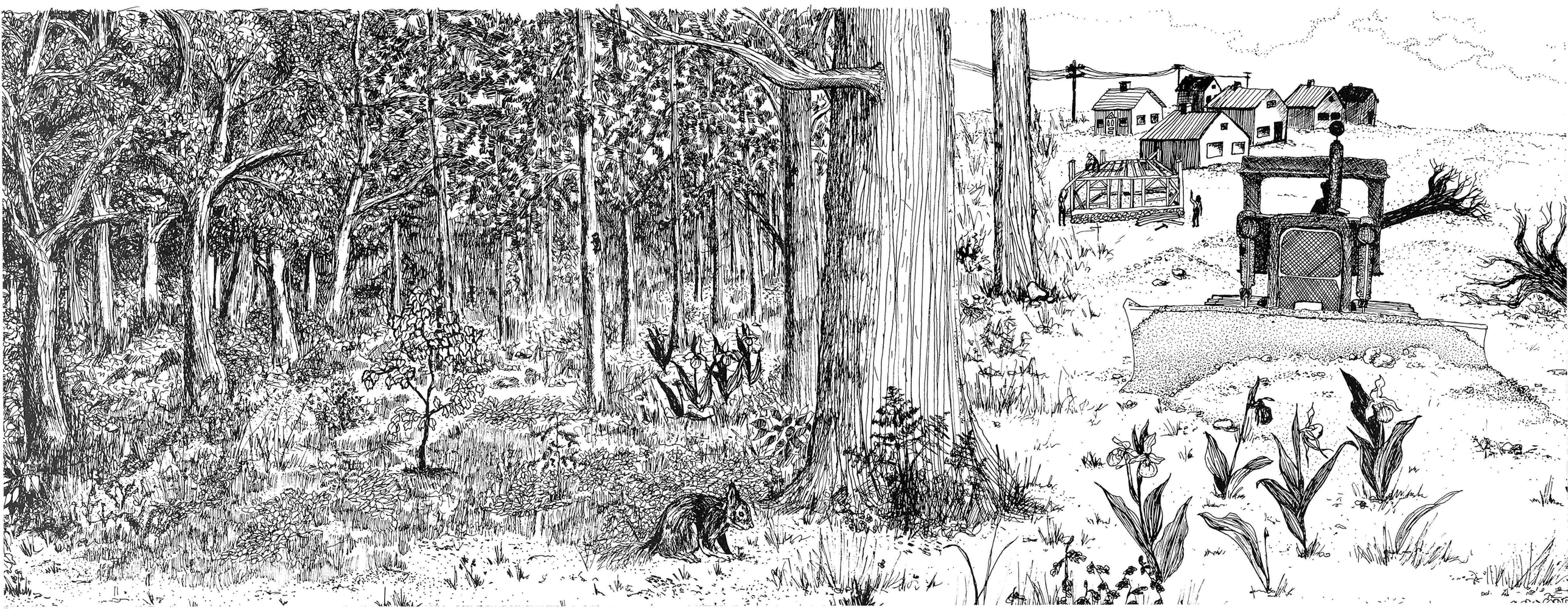
A list of all rare or endangered species of plants should be compiled, with sufficient information to guide efforts to protect them. The status of possibly extinct species should be determined. Such an effort is already being made in California by a committee of the California Native Plant Society, for Hawaii by a committee of the Pacific Science Association, and for Texas by the University of Texas at Austin. No list exists, however, for the United States as a whole.

That these matters are becoming more and more of concern to the American public is evidenced by the increasing number of requests for lists of endangered plant species and information on the reasons for the problem and what can be done about it. That many of those making such requests are young people obviously worried about the quality of the environment they must live in is perhaps the most encouraging trend that I have observed. It is a pity there is so little available information on which to base positive action. This is a measure of our slowness in getting people who know the plants to work on problems of this sort. However, laymen who write national scientific institutions and the botany departments of colleges and universities urging activity on the matter may prove to have furnished the drive to get some of the information down on paper and published. Actually, what seems to be required is a strong, active, and determined person or organization to act as a leader and catalyst. The knowledge, or some of it, at least, exists; but it must be tapped and used as soon as possible. ■

**A distinguished and widely published botanist and ecologist, Dr. F. Raymond Fosberg is curator of botany at the Smithsonian Institution's National Museum of Natural History. He has been chairman of the Pacific Science Association's Standing Committee on Botany and is actively working with that organization to compile a list of rare and endangered species of plants in the Pacific basin. He has served several terms as vice president of the Nature Conservancy.**

### *WHAT WE ARE DOING*

*National Parks & Conservation Association currently has an active program under way aimed at identifying and providing information on rare or endangered species of American plants. The information gathered in the course of this program will be made available to all interested organizations and individuals at both national and international levels.*



MAURICE STRONG

# The Environmental Challenge to Men and Institutions

*Maurice Strong is Under Secretary-General for Environmental Affairs for the United Nations. He served also as Secretary-General of the United Nations Conference on the Human Environment held in Stockholm, Sweden, in June 1972. This text was presented as the keynote address at the Eleventh General Assembly of the International Union for the Conservation of Nature and Natural Resources in Banff, Canada, in September 1972.*

IT IS A PARTICULAR PLEASURE to find myself again in Canada, and my pleasure is all the greater in that I am here to speak before this General Assembly of the International Union for the Conservation of Nature and Natural Resources.

In its twenty-four-year history IUCN has established itself as one of the principal pioneers of the international movement to improve man's understanding and his management of his relationship to the rest of the natural world. Your membership—drawn from more than seventy countries, including governments themselves—clearly bears testimony to your broad international character and your growing vitality. This was evidenced particularly in the extremely valuable and effective contribution which IUCN made to the United Nations Conference on the Human Environment both during the preparatory period and at the Conference itself, where your very able Director-General, Mr. Gerardo Budowski, made such a compelling statement to the Plenary.

I want to take this opportunity to express the official thanks of the United Nations and of the Conference Secretariat for your support and assistance. It meant a great deal to us. Any thanks expressed on Canadian soil would be incomplete if I did not reiterate the great debt the Conference owes to Canada for the important role it played in the results achieved at Stockholm.

It would be difficult for me to avoid noting, incidentally, that the mix of elements so well blended in IUCN is reflected in its appropriate choice of Banff for this Assembly. This is "home country" for me, and my own life owes much to the memorable and instructive experiences I have had in this area in which nature displays its treasure with such generosity and magnificence.

But I have come here today not to proselytize, nor to preach the principles of conservation and environment to an audience that pioneered in evolving them. I will avoid dwelling on the background of the Stockholm Conference, nor will I report to you in great detail on its results. Many of you, I know, were there, and even those who were not are well acquainted with them by this time.

Indeed, none know better than you that if Stockholm did not mark the beginning of a new age of environment, it did witness the establishment of environmental concern as a major public issue on a global basis.

The immediate importance of the Stockholm Conference, therefore, may well be that it marked the first time that the nations of the world collectively acknowledged that something had gone wrong with the way in which man had been managing his own development, that this was already creating serious problems in many areas, and that it pointed up doubts and risks which could affect the fate of the entire human species. But the long-range importance of Stockholm, I believe, will be found in the kinds of actions to which it gave rise in changing the perceptions, the attitudes, and the practices which are responsible for the present dilemma.

In saying this I must add that Stockholm did not produce—it could not have produced—final or complete answers to the basic

questions posed by the environmental challenge. We are, after all, only at the beginning of the environmental age. But Stockholm, nevertheless, did reveal a high degree of consensus on several major premises:

1. That man's activities are now being carried out on a scale and with an intensity that are significantly affecting many of the elements and relationships in the natural systems on which his life and well-being depend.

2. That this is creating imbalances which could be decisive to the future of the human species.

3. That these imbalances result both from lack of knowledge of the complex cause-and-effect relationships involved and from gross inadequacies in our present methods of applying existing knowledge to society's decisionmaking processes.

4. That these inadequacies have their root in our attitudes and values as reflected in the narrow concepts of economic and national interests which continue to dominate our decisionmaking process.

5. It follows that we cannot, in the long run, deal effectively with the physical imbalances in man's relationship with his natural environment separate and apart from the economic and social imbalances which dominate the relationship between man and man.

Inevitably this means the need for all of us—environmentalist and industrialist, government official and private citizen—to develop a new view of the relationship of human action in every sphere. It calls, in sum, for a renaissance in human thought and values—a renaissance that the Stockholm Conference may have helped to generate.

For as Stockholm made clear, the greatest imbalance of all is the great and growing disparity between the condition of life enjoyed by the privileged minority who monopolize the benefits of our technological civilization and the grinding poverty which afflicts the environment of the majority of the world's people. It represents the greatest single affront to the conscience of our generation and the greatest challenge to our moral will and wisdom as well as our skill as societal managers on a global scale.

Without question the dominant theme of the environmental era is interdependence—the interdependence of each of the myriad elements of the physical systems which sustain our life with other elements in the system and with the health of the whole system—the interdependence of man with the entire physical system which comprises the natural world—and the interdependence of their physical systems with man's own economic, social, and value systems.

Today the scale of these interdependencies is global. For now that man's intervention in the natural world can—and has—become a principal determinant of his own condition, his interdependence with his fellow man must assume the global dimensions which accord with the reality that the physical world is a single, unitary system embracing the entire earth and whose life-supporting systems are threatened as at no time since man began to reconstruct and reshape his planetary home.

You need no recitation of these threats. You know all too well that the signs we now see of deterioration of our natural environment are only the beginning, the portent of what we will face if we continue on our present course. This is not to embrace the view of the prophets of doom whose voices are increasingly heard today. It is not necessary to accept the inevitability of doomsday to acknowledge its possibility. But the promise of Stockholm is that it is also possible not only to avoid catastrophe but to build the kind of future in which all people will have access to the ingredients of a better, richer, more satisfying life. And the ultimate test of the success or failure of the Conference will be in the extent to which it helps bring about this kind of world.

We have taken the first few steps. To go forward from here will require a greater degree of collective wisdom, self-discipline, and cooperative action than man has ever before demonstrated. It will require, too, revolutions in attitudes, in values, in social and economic behavior with corresponding revolutions in the political process and the structures and institutions through which we govern our societies. Above all, perhaps, it will require a much higher degree of management and control of the activities by which we are shaping our own future than anything we have yet experienced.

We hear a great deal today about the dangers and constraints we face from exhaustion of the earth's physical resources. I don't propose to go into this important question in detail here, except to say that I believe man's future development is far more likely to be constrained by his ability to cope with problems arising from the distribution of natural resources and management of common resources such as the oceans than by the finite nature of the earth's supplies of such resources.

I am convinced that man's success in the environmental era will depend principally on his ability to develop the forms of cooperative behavior required for the management of a complex technological society and to provide himself with the kinds of structures and institutions required to reflect this in his political and social processes. It is on this aspect of the environmental challenge, i.e. the need for societal management, that I would like to concentrate my remarks today.

MY BASIC PREMISE is that traditional concepts of management and the institutions through which man manages his affairs are not equal to the formidable task of management that now confronts us. Up to now man's perceptions and his institutions have been vertically oriented around particular tasks, interests, or disciplines.

Business and industry have been able to define their objectives and measure their accomplishments in terms of return on investment; universities and professional associations have been organized around particular disciplines and fields of study; governments have largely been organized around functional ministries and agencies, and their counterparts in the intergovernmental organizations have been similarly structured.

Very much the same has been true of nongovernmental organizations, most of which are organized around a relatively narrow field of interests and concerns. And in most cases the characteristic form of organization is hierarchical, the power flowing from the top down.

This form of organization has served us well and facilitated the rapid and indeed spectacular progress that we have made in so many fields of human endeavor. But it also makes it difficult for us to perceive—and even more difficult for us to deal with—complex environmental cause-and-effect relationships that transcend traditional disciplinary and institutional boundaries.

Management in the environmental age will require prime emphasis on the management of the whole system of relationships by which the activities that man carries out in a multitude of individual spheres combine to affect his own development and well-being. This will assume even more importance than the management of any individual activity within the system.

It means that our lines of communication and decisionmaking

must be given much greater horizontal dimensions than are provided for in existing structures—that the impacts of actions formerly taken to serve particular and much narrower interests and purposes must be seen in their relation to the interests and purposes of all who will be materially affected by them.

It means development of linkages between decision and action centers through which the kind of information that will be needed to make important decisions can flow.

It means a much broader and more extensive participation in decisionmaking by those who will be directly affected by decisions being made.

It means evaluation of important activities in terms of their social and environmental consequences as well as their economic consequences.

It means better techniques of allocating the real costs of activities to those who benefit from them, of assigning real value to such traditionally free goods as water and air, and of radically revising our concepts and methods of valuing the future. If we continue to value the future using present methods by discounting future values at current interest rates, it wouldn't be good economics to preserve the oceans, the atmosphere, or the other precious resources of our "only one earth" for the next generation.

In short, what is required is an ecological approach to management of those activities and processes by which man is shaping his own future. The world of ecology and the world of economics must come together if society is to develop the new techniques, new tools, and new institutional mechanisms it needs to fulfill the promise which science now makes possible of a better, richer life for all mankind. I believe that the Stockholm Conference provided the basis on which we can begin to bring about this revolution in *societal management.*

As you know, it brought together 113 nations representing the majority of governments and peoples of the world—but regrettably, for reasons unrelated to the environment, it did not include the participation of the Soviet Union and many other socialist countries which made important contributions to preparations for the Conference.

One of the hallmarks of the Conference—even as of the United Nations itself—was the diversity of the participants and the interests they represented. But it exhibited a remarkable degree of unanimity in agreeing on the establishment of a basis for a concerted international approach to meeting our common environmental concerns.

It agreed on a Declaration on the Human Environment which constitutes the first acknowledgment by the community of nations of the new principles of behavior and responsibility which must govern their relationship in the environmental area. It also provides an important—an indispensable—basis for the establishment and elaboration of the new codes of international law and conduct which will be required to give effect to these principles.

Agreement was reached, too, on a far-ranging Action Plan for the Human Environment consisting of 109 recommendations for specific kinds of actions to be taken principally by governments and international organizations, many of them depending on extensive participation and complementary supporting action from nongovernmental organizations, scientists, and citizens groups.

And, finally, the Conference agreed to recommend to the United Nations General Assembly the establishment of a new mechanism within the United Nations to enable the Action Plan to be carried out. It provides a permanent means through which governments can continue the progress begun at Stockholm of identifying the needs for common international action, deciding on priorities, and agreeing on the allocation of responsibility and of resources to carry out agreed measures. The organization recommended would consist of a fifty-four-member governing council, a secretariat, and a world environmental fund. If the General Assembly approves the recommendations at its forthcoming session which opens in a few days, the new organization could be established early in 1973.

I BELIEVE the United Nations has a rare opportunity here to exemplify in the organizational machinery it establishes to deal with environmental matters both the kind of structure and the kind of techniques of management that will be required for the environmental age.

First of all, it should be small and should see its role as one of providing at the international level the framework or system within which a multitude of other activities that bear on the health of the environment can be seen, evaluated, and dealt with.

It follows that it should not itself carry out any of the specific operational activities which can best be performed by other institutions—both national and international. It should provide the means of enabling governments to develop common policies and agree on programs of action. It should see itself as the hub of a network of institutions, most of which are national, in which its role is to provide the essential services and linkages which enable the components to function together as part of a system.

It should see itself as operating on the interface between the scientific and technological world and the political decisionmaking process and should, therefore, have close links with both worlds. It should be based on the reality that most actions and most of the institutions required to support agreed action are national in character—that the prime role at the international level is to complement, support, and facilitate national efforts in those areas where cooperation amongst nations is needed. Its links with national governments will be direct through its governing body.

It must have equally close links with the scientific and technological community, primarily through established institutions, particularly international organizations of science. The preparations for Stockholm have provided a hopeful basis for a new approach to these relationships. But they have also disclosed some significant weaknesses, both in the organization of the scientific and technological community itself and in the means by which it communicates and works with governmental bodies.

But even in the wider community, the environmental crisis points out many failures of existing patterns of organizational and cooperative behavior. Governments everywhere are feeling the constraints of size and the limitations on their ability to exercise power effectively within a highly centralized hierarchical system.

New patterns of organization must be based on a multitude of centers of information and of energy and of power all linked together within a system in which they can interact with each other. The systems—or ecological—concept of management is not simply a new gimmick, but a necessary accommodation of our traditional linear concepts of management to the realities of a world in which the cause-and-effect relationships on which our welfare depends—and with which we must deal—take place within a system framework.

And such an approach need not lead to a deadening and dehumanizing uniformity. Indeed, we can be encouraged by what

". . . what is required is an ecological approach to management of those activities and processes by which man is shaping his own future."

"We can fear the future
only if we fear ourselves."

we learn from the physical world in which the healthy ecological systems are those which are based on variety and diversity.

The individual institutions that form part of our network of ecological management can and should take a great variety of forms and permit a great diversity in their size and in their orientation. But just as in the physical world the preservation of diversity within an ecological system requires confrmity with certain basic principles and norms on which the system depends for its equilibrium, any system for societal management must also require of its components an adherence to certain principles which are basic to the health and equilibrium and indeed the functioning of the whole system. To identify these principles and agree on them will be one of the main tasks of societal management.

Thus, here we are entering territory which is largely unexplored, and there will be much need for experimentation. I do not pretend to have all the answers, but I am convinced that this is the direction in which we must head.

And it is my hope that in development of the new organizational machinery to deal with environmental matters within the United Nations, we may help the task of pioneering this concept of ecological management. This means that we must learn to identify the centers of knowledge and competence both within the United Nations family, within national jurisdictions, and within the nongovernmental community, and help to link them together as part of a functioning network through which information required for decisionmaking flows to those who need it in the forms in which they can use it and in which particular tasks are carried out by those most able to do them.

Such an approach is designed to maximize the effectiveness of the whole system rather than build up the power of one part of it vis-à-vis the others. It is based on an overriding commitment to the common goals and tasks which provide the raison d'être for the system and out of which its basic organizing principles are developed.

The United Nations—with all its well known limitations—is clearly the only organization able to perform such functions at the global level. And it is important to note that the proposed new environmental organization within the United Nations would be oriented around the need to help governments develop new policies and programs requiring international cooperation. It would not be principally a fund-dispensing organization responding to requests for financial assistance. The proposed environmental fund would be designed to support the policy and program objectives established by governments through the Governing Council. It would help provide the international funding required to enable agreed program activities to proceed with the greatest possible participation by national and other relevant institutions. By using wisely the relatively small resources of the fund as a stimulant, catalyst, and supplement to other sources of funding, the new organization would be in a position to influence and facilitate the effective utilization of the vastly larger sums that will be spent on environmental activities by national governments and other intergovernmental and nongovernmental bodies.

To do so, it will need to work in the closest possible cooperation not only with governmental and intergovernmental organizations but with the nongovernmental community, particularly those organizations which operate in the field of science and technology. In all cases there must be basic agreement on the particular roles which can best be performed by each component, and each organization will have to recognize that it cannot do everything. In fact, those organizations wishing to lay claims to large blocks of jurisdictional territory and to spread their resources thinly over it are not likely to have prominent places within any set system.

What we will need are strong institutions in the sense of excellence in particular areas recognized by other members of the system and a continuing sense of the relationships between their particular tasks and the goals of the system as a whole.

In developing the program within the United Nations in the environmental field and in administration of the new environmental fund, I would like to see high priority given to the development of this kind of a network of institutions and to the support of individual institutions which are best designed to play important roles within the system as a whole.

Here the role of IUCN can be absolutely crucial. Not only have you established your leading position in the environmental field, but you have demonstrated the capacity to work with the scientific community, with governments, and with the nongovernmental community. You have broadened your orientation beyond the more limited concepts of conservation without yet succumbing to the temptation of trying to be all things to all people.

Permit me a word of caution, however. One of the real problems that all organizations like yours will face in the future is the difficulty of confining yourselves to particular functions in which you can develop high standards of capability and excellence, while developing your awareness of the larger context in which your activities are carried out. There is always a temptation to widen your activities as your vision widens. Dealing with such temptation will require much wisdom and self-discipline on behalf of energetic and enthusiastic organizations like yours.

With this one caveat, I emphasize again the extent to which any successful environmental effort must depend upon private citizens and the nongovernmental groups and organizations through which they operate. Only with their help—your help—and participation will we make any real and sustained progress towards environmental sanity.

IF NOTHING ELSE, the environmental crisis makes clear that contemporary man must choose and that the choices he makes will determine—perhaps decisively—the future of his children and indeed the whole human species. For if man's activities are now the principal determinant of his future—and they are—there is no escaping the necessity of choice.

Man has the power to shape his destiny, and how he now uses that power depends directly on his faith in himself—on his wisdom—and his will. We can fear the future only if we fear ourselves.

But if doubt persists, there is also new-found hope that man has the imagination and the will to transcend it. For the promise of Stockholm is that it is possible not only to avoid environmental catastrophe but to build the kind of future in which all people will have access to the ingredients of a better, richer, more satisfying life.

Stockholm was perhaps most important for demonstrating that the unity of purpose to advance the larger concerns and interests which override the narrow barriers that divide men can be a powerful creative and effective force in the affairs of nations. Those of you who were at the Conference will understand when I speak of the "spirit of Stockholm." You share with me the unforgettable memory of this spirit and the dynamism behind it.

All of us—those who were there and those who were not—must now build on it for the future. If we lapse into old, outworn habits of thought, narrow organizational loyalties, and petty prejudices, we will not be equal to the vital tasks which lie before us.

This is the challenge now before you as environmental pioneers and as citizens of Planet Earth. ■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# THE SKAGIT Will it be sold down the river?

The Skagit River and its tributaries in western Washington State are the threads that tie together the "Wild Cascades." From the Skagit, the Cascade, the Sauk, and the Suiattle, valley roads and trails lead to the mountain wilderness in North Cascades National Park and the Glacier Peak Wilderness Area in Mount Baker National Forest. These access corridors have worried conservationists since the park was established in 1968. Since that date human traffic in the Glacier Peak area has increased, and a new road recently was constructed across the North Cascades.

The Wild and Scenic Rivers Act of 1968 called for a study of portions of the Skagit and its tributaries as possible additions to the national wild and scenic rivers system. The study was begun last year as a joint effort of the U.S. Forest Service and Washington State's Interagency Committee on Outdoor Recreation and now is nearing completion. The issues surrounding classification of the Skagit River system under the Wild and Scenic Rivers Act give conservationists a good look at the way the new law is working and the kind of obstacles they will face in seeking protection of rivers under the terms of the act.

The Skagit was one of several rivers studied in 1963 and 1964 by a federal interagency task force prior to passage of the Wild and Scenic Rivers Act. The river was being considered at that time to become an "instant" river—one of the eight rivers that were included in the system immediately upon approval of the act in 1968.

Herb Barth, Forest Service study leader, speculated that the river did not immediately become part of the system because 70 percent of the land adjacent to the river is privately owned, making the issue complex and controversial. So the 1968 act declared the Skagit a "study" river instead, and because of budgeting and programming priorities that study did not get underway until 1971. Now the government in a slow and deliberative way is moving toward a final report on the future of the Skagit River system.

Primary purpose of the study is to determine if the Skagit system qualifies under any of the three classifications—wild, scenic, or recreational—established by the act, and if portions of the river system should be classified by law.

Under guidelines established by the secretaries of Agriculture and Interior for evaluating additions to the system, "wild" river areas are "free of impoundments," "generally inaccessible except by trail," have "watersheds or shorelines essentially primitive," and possess "waters unpolluted." It is important to note that "wildness" in this classification is not the same as the "wildness" of the Wilderness Act of 1964. A major difference is that one or two "inconspicuous roads" leading to the river will not necessarily bar "wild" river classification.

"Scenic" river areas must also be free of impoundments, but they differ from the "wild" category in that "roads may occasionally bridge the river area," and "in places, lands may be developed for agricultural purposes." One of the management objectives would be to "maintain and provide outdoor recreation opportunities in a near natural setting."

The "recreational" classification would be assigned to portions of the system having roads or railroads along or near both banks. Development along the banks could include a full range of agricultural uses as well as small communities and recreational subdivisions. The primary management objective would be provision of recreational opportunities enhanced by or dependent on the free-flowing nature of the river.

The Skagit has its source in British Columbia. After crossing the international border the river flows south and southwest through a series of reservoirs created by the Seattle Department of Lighting to provide kilowatts for Seattle. Ross, Diablo, and Gorge reservoirs lie in Ross Lake National Recreation Area, which splits the north and south sections of North Cascades National Park. From the company town of Newhalem the Skagit flows free through a deep canyon to its confluence with the Cascade River near Marblemount. Here the valley begins to become progressively wider, eventually to form a broad, U-shaped valley.

From Marblemount on, the main stem of the Skagit is hardly in wilderness. The broad valley, and especially the flat delta that fans out below the community of Sedro-Woolley, has become one of the most significant agricultural areas in western Washington. Several small communities contain the homes of the men who work for the logging companies and numerous small shake mills that dot the valley. Fruits and vegetables for the canneries of the lower valley are also grown here.

Roads parallel both sides of the Skagit along most of its main stem, at times coming down to the river's edge. One of these roads is the new North Cascades Highway, which in the fall of 1972 brought vehicles into the midst of the mountains for the first time and will provide one of the main avenues of approach to the national park.

Within recent years the development of recreational subdivisions has triggered a scramble to acquire and subdivide the property along the river's banks. Billboards

advertising forested lots for sale sing the wonders of owning your own little piece of the Skagit Valley. The economic problems of the Puget Sound region have resulted in a slowdown in lot sales, but the eventual comeback of a prosperous economy may prove a mixed blessing to those concerned with preservation of the lands adjacent to the river.

The hydropower dams on the Skagit, as well as two dams on the Baker River, a major tributary of the Skagit, have made the Skagit the most highly developed basin for hydroelectric power in the Puget Sound region.

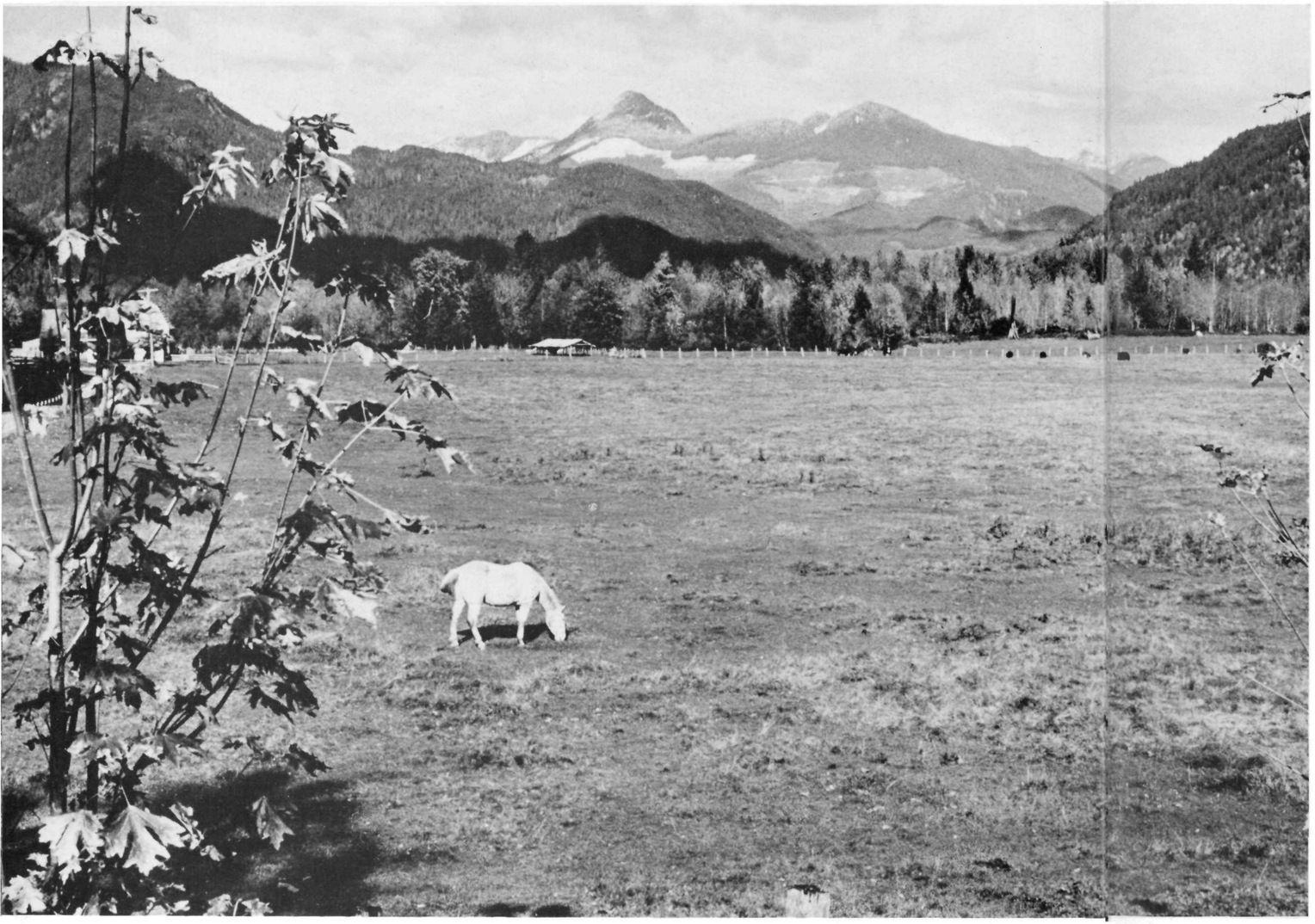
Despite this degree of development, manmade works do not dominate the valley, especially in its upper reaches. About two-thirds of the bottom land in the valley above Sedro-Woolley is uncleared. Here the dripping moss-covered rain forests of the west Cascades occupy most of the land. The wide, cold, jade-colored Skagit meanders in serpentine fashion, changing course over time and limiting by its own acts the development possible along its banks.

When the clouded and misty horizon clears, the surrounding mountains put on a special snow-draped show. To the north is the proud, perpetually white eminence known to Indians as Koma Kulshan and called Mount Baker by the white newcomers. The dinosaur-humped peak of Sauk Mountain towers above the river near the town of Concrete, named for a now happily defunct pair of cement plants. To the east are the Eldorado Peaks in North Cascades National Park. Other mountains large enough to dominate most American landscapes are dwarfed by their western Washington neighbors.

The extent to which the valley is still in a natural condition is indicated by the fact that here probably is one of the easiest places in the country to see bald eagles—even from your car. Where the Sauk and Skagit join is a traditional wintering ground for the great birds. One day in December 1971 an ornithologist counted over ninety eagles along a thirty-seven-mile stretch of road leading north up the valley from Concrete. The eagles are there for the same reason that fishermen line the banks and crowd the water with boats on even what seem uncomfortably cold winter days. The Skagit offers some of the best steelhead fishing in the world. The river and its tributaries support no less than eight species of anadromous fish: five species of salmon, steelhead, sea run cutthroat trout, and Dolly Varden. Here is an excellent opportunity to study the freshwater cycle of these fish and develop management techniques that could be applied to other streams. The protection of the fisheries resource from further dam building and more polluted water would be one of the most important results of establishing the Skagit and its tributaries in the wild and scenic rivers system.

The Skagit can support its significant population of anadromous fish primarily because of the undammed and relatively undeveloped nature of its Cascade and Sauk tributaries and the Suiattle, a tributary of the Sauk. These streams are themselves significant rivers originating in North Cascades Park and the Glacier Peak Wilderness Area. Large portions of the land along these streams is in public ownership as part of the Mount Baker National Forest and is paralleled by Forest Service recreation roads.

The Skagit study area is specifically defined by the Wild and Scenic Rivers Act to include the main stem of the Skagit between the town of Mount Vernon and Bacon Creek above Marblemount, and most of the Cascade, Sauk, and Suiattle rivers not included in the park or the wilderness area. The area amounts to about 170 river miles. The Federation of Western Outdoor Clubs in 1970 urged the



*Federal wilderness, forest, and park lands frame the valley of the Skagit River and its tributaries. The snow-covered mountains behind the river below are the Eldorado Peaks in North Cascades National Park. Agricultural lands in the valley would be protected from development if the Skagit is classified in the national wild and scenic rivers system.*

PHOTOGRAPHS BY PENNY LONNECKER ZOBEL

*The meanderings of the Skagit create small but unstable peninsulas that are bad risks for development.*

addition of the Whitechuck, a tributary of the Sauk that is similar in size and development to the Suiattle. The choice of the Suiattle and not the Whitechuck appears arbitrary.

The study team has already concluded that the entire Skagit study area qualifies as a part of the national wild and scenic rivers system, and in a preliminary report the study team has recommended "recreational" classification for the Skagit above Sedro-Woolley and "scenic" for the Sauk, Suiattle, and Cascade.

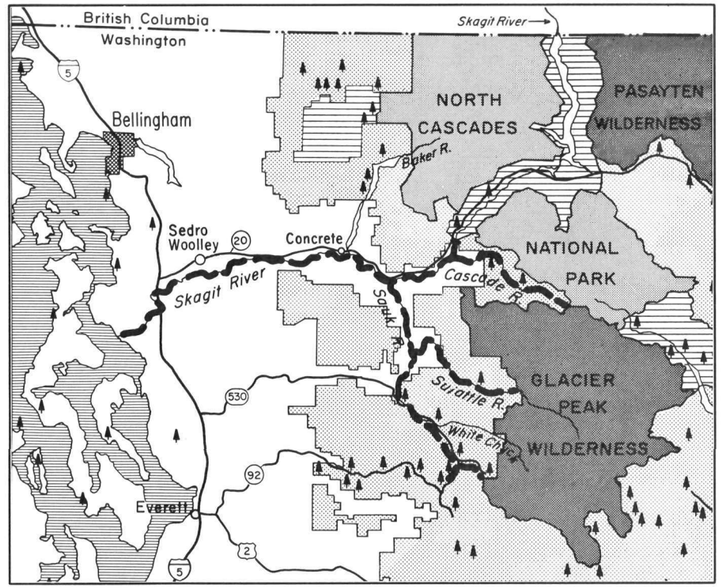
Classification of the river system would prevent construction of a dam on the Sauk River that appears in long range (1980 to 2000) plans of the Army Corps of Engineers. Classification also would control development along the river, depending on how much money the administering agency is given to purchase scenic easements.

A "river area" would be delineated that could not exceed an average of 320 acres per river mile. Within this "river area" the agency entrusted with protection of the river (which in the case of the Skagit most probably would be the Forest Service) could control land uses only by purchasing land or scenic easements on the land. The public now owns 30 percent of the land adjacent to the 170 miles of river proposed for protection. The act allows acquisition of up to 50 percent of the land along any system component. But it is unlikely, according to study leader Herb Barth, that land would be purchased except in cases of uses that are grossly incompatible with the river's natural values.

The primary instrument for controlling development would be the easement. Before the Wild and Scenic Rivers Act was passed, Edward C. Crafts, who at the time was director of the Bureau of Outdoor Recreation, testified before the House Interior Committee that "existing farm and ranch operations normally would be consistent with the scenic river concept. Likewise, existing well managed timber operations would be compatible, except that clear-cutting of trees on the river edge may be in some instances too disruptive to the natural scene. Existing mineral activities would be compatible except where they tend to destroy esthetic qualities or pollute the river. Existing cabins, summer homes, and other recreation oriented developments may be compatible with scenic river objectives if they do not seriously detract from the esthetic features and qualities of the river." Most if not all existing uses would be tolerated, but future development would be carefully controlled through purchase of easements. Local zoning ordinances, on the other hand, do not require payment to limit use.

The spectre of federal purchase of land and easements has prompted strong opposition from valley residents and their political spokesmen to designation of the Skagit as part of the wild and scenic rivers system. The same people






fought against the North Cascades National Park proposal, and their failure in that effort may have stirred the backlash against the scenic river movement.

Another factor adding fuel to the fires of opposition is Washington's antiquated tax system. The property tax burden has become scandalously high, especially for property owners in rural areas such as Skagit County. Efforts to reform the tax system have met resistance from the large resource-oriented industrial interests that would be required to assume more of the tax load. Property taxes and the push for development feed each other as development inflates land values and brings need for more services, which in turn necessitates higher property taxes that force landowners to sell to developers—thus inflating land values and so forth ad infinitum.

The cruel irony is that many valley residents blame high taxes on proposals like the Skagit River plan, which actually would be one of the most effective ways to end the whole mad development spiral. A further irony is that many of the same people who call the river plan a federal land grab are advocating a flood control dam for the Lower Sauk. This dam would necessitate elimination of land from the tax rolls that would be inundated by a 134,000-acre-foot permanent flood. The *Puget Sound and Adjacent Waters* study, a federal-state water resources planning project that advocates the dam as an alternative to classification of the river, admits that the dam would "eliminate this river's anadromous fish runs." All this at a cost of $128 million.

In the Skagit controversy, as in others, conservationists are accused of being land grabbers who want to keep the whole country wilderness. This accusation is discredited by the fact that if every one of the twenty-seven "study" rivers named in the Wild and Scenic Rivers Act eventually become a part of the system along with the original eight system units, this country will have managed to pass to the children of the next century only thirty-five rivers from a once virgin continent that are spared from dams, pollution, and back-to-back subdivisions.

The land-grabber charge better fits those who wish to lock every possible river and acre of land into the commercial and industrial madness we call our economy.

Emotion, they will charge.

But somehow I embrace the emotion that commands us to preserve rivers like the Skagit rather than the allegedly cold logic that will cause these rivers someday to be known only in words and photographs. ■

**Ron Zobel and his wife, Penny Lonnecker Zobel, live in the Skagit Valley. Ron is a freelance writer and has worked as a seasonal ranger in Olympic and North Cascades national parks. Penny, who took the photographs accompanying this article, is a freelance photographer and a graduate of the University of Iowa School of Journalism.**

# NPCA at work

**Trouble on Redwood Creek** In spite of the broad authority given the National Park Service for protection of Redwood National Park—essentially meaning ecological management of the redwood forests in drainages leading into the park—little has been done to forestall such destruction of protected redwood groves as occurred some years ago on Bull Creek, in Bull Creek Redwoods State Park, after clearcutting in the watershed above the park.

Several studies of the Redwood Park protection matter have been made either by or for the Interior Department, but nothing has come of them to date. NPCA's administrative assistant, forestry, Peter A. Twight, has stated after a recent inspection of the coast redwood region that it now may be very late to protect the park. He noted that there are almost twenty miles of Redwood Creek watershed upstream from the park where already there are enormous areas of clearcutting, and that the resulting potential mudflows from both this practice and poor logging road design will move downstream to be deposited along the Redwood Creek stream bottom. This will raise the level of the stream until it overflows and carries mud and debris into the monumental groves of the park, including the world-famed "emerald mile," as happened at Bull Creek earlier.

Needed immediately, says Mr. Twight, is establishment and enforcement of good forestry practices in the redwoods. "If cities can be zoned and regulated in the interests of the general public," he said, "so can rural lands be zoned and uses regulated."

**Seashore airport** NPCA has received a copy of the Cape Cod National Seashore management position on a proposed expansion of the Provincetown, Massachusetts, airport—first by 500 feet, and "ultimately" by another 600 feet—which would intrude into seashore lands as well as increase noise levels and pollution in the vicinity through use of bigger planes. Runway extension is said to be necessary because of a projected increase in air traffic to the outer Cape over the coming years. NPCA has opposed both phases of the extension as inappropriate to a national seashore, among other objections.

At a public hearing in Provincetown during August, the Park Service presented its position on the matter in a commendable statement. Briefly, seashore superintendent Leslie Arnberger indicated the Service would like to see the Provincetown airport continue at about its present level of operation, "with modest upgrading of existing facilities for improved safety and service." The superintendent noted the Service's preference for restrictions on the landing weight of aircraft over extension of the runway, pointing out that encouragement of the use of short takeoff and landing type aircraft (STOL) may be anticipated at this particular airport, with the obvious implication that the need for runway extension thus would become moot. "Airport noise is already a distracting element [in the vicinity], and should not be permitted to increase," the superintendent testified. In regard to the "ultimate" additional extension of 600 feet, Superintendent Arnberger said that "the Service would strongly oppose such an extension, which would further encroach upon significant resources and attract jet aircraft with resultant increased noise and air pollution. We would urge instead that every effort be made to incorporate new technologies in the design of the airport facilities . . . ."

**In Great Smokies** Twice in recent issues (July 1972; September 1972) the Magazine has reported on exchanges between NPCA and the Interior Department over maneuvers by the military in Great Smoky Mountains National Park. NPCA has had occasion to take up the matter once again after another unsatisfactory response from Interior's E. U. Curtis Bohlen, deputy assistant secretary for fish and wildlife and parks.

Since protests with Interior were commenced, a semantic change in the nature of military activity in the park seems to have occurred. The hikes into the park by thirty soldiers from Fort Campbell, Kentucky, first were said to be a combination of training and adventure—adventure training, to use Interior's phrase. Most recently the adventure training seems to have become a "soldier's outing" and a "recreational experience." (Somewhat more candidly the Army has called the maneuvers "special training.")

In his latest letter to the Association Secretary Bohlen has announced that, among other things, "we [Interior] do not intend to treat soldiers on *recreational visits* as second-class citizens" (italics supplied). On this point it only can be said that to NPCA's knowledge no one ever has suggested such a policy; at least it is good to learn that it is not being contemplated, though it seems to have no bearing on the matter at hand.

The Association has stated its intention of taking whatever action may be necessary to insure that military maneuvers within the national park system are stopped.

**On predator control** NPCA has testified on invitation on the Federal Animal Damage Control Act of 1972 (HR 13152), recently being considered in Washington public hearings by the Senate's Subcommittee on the Environment. The Association expressed its pleasure that the bill would prohibit use of chemical toxicants in predatory animal control except in emergencies, but expressed distress over the bill's apparent provision for killing of predatory birds by poison, birds being omitted from coverage on the grounds that they are dealt with under other statutes. NPCA recommended that the legislation should be revised to eliminate this weakness.

NPCA noted in addition that the measure seems to endorse the concept of predatory animal killing, albeit without the use of poisons, and said that such a national policy should be avoided, with the usual stipulation regarding emergency situations. It urged that the bill be clearly worded on this point. "Animals in general, and predators in particular, have a high public value," the Association said. "Those who would use public lands for raising sheep or cattle should normally be required to bear

the cost of losses to predatory animals, particularly since such users are normally receiving a subsidy in the form of reduced grazing fees. Public lands should continue to serve *all* public values, NPCA testified, "and normal losses to predatory animals must be considered a legitimate business expense."

**Oceans as dumps** NPCA recently has submitted comment on a Corps of Engineers draft environmental impact statement on the American Cyanamid Company's proposal for dumping 6,000 tons of sulphuric acid waste into the Atlantic every three or four days for ten years off the coast of Georgia (October Magazine, page 30). The acid waste, containing certain heavy and other metals, is generated at the company's Savannah titanium plant, and heretofore has been dumped in the Savannah River. The company was given until July of this year to work out alternative waste disposal plans, but was unable to develop anything better than ocean dumping, and has applied to the Corps for a permit to construct a dock for barging wastes to sea.

NPCA has termed the Corps' draft statement inadequate, saying that the construction application poses substantial issues of pollution control on state, federal, and international levels that either are ignored or analyzed inadequately.

In particular, NPCA said, the impact on marine ecology of the proposed dumping is inadequately discussed; as, for example, the probability of heavy metals entering oceanic food chains, which the statement admits is unknown. Alternatives to barging and dumping also are inadequately canvassed. The Corps has concluded that there *is no practical technology for alternatives* to dumping within the prescribed time frame; but NPCA pointed out that this determination seems to have been made by the Corps on the basis of the company's own economic practicability criteria, a highly objectionable procedure. "There is considerable literature which contradicts the determination by the Corps that alternative technologies are not available to dispose of industrial wastes," the Association commented. Also objectionable is a suggested alternative of closing the plant, characterized by the Association as a thinly veiled form of economic blackmail.

From an international point of view also, and particularly in respect to at least two of the recently declared principles of the United Nations Conference on the Human Environment at Stockholm, waste dumping in the sea—in this case the Gulf Stream—is not acceptable, NPCA said. The Corps has admitted that the sulphuric acid and heavy metal dumping will cause damage to sea organisms and photosynthetic activity in the dumping area, but has not consulted with any potentially affected nations on the environmental impacts of the proposed operation.

"The subject of this impact statement raises grave policy issues," the Association said. "Water pollution control standards represent a determination that it is possible to comply with the standards *while maintaining the public interest* and not upon the prospect that an individual polluter may avoid compliance and internalization of the social cost of pollution by compelling permission to pollute the environment elsewhere . . . ."

**Owls as nuisances?** A recent Interior Department notice in the *Federal Register* indicated a change in departmental policy that will allow taking of blackbirds, cowbirds, grackles, crows, magpies, and horned owls as "nuisance" birds, such change clearly being "in the public interest" and thus not subject to general comment.

NPCA immediately wrote Nathaniel P. Reed, assistant secretary for fish and wildlife and parks, urging reconsideration of the order. The Association was particularly critical of the killing of horned owls as permitted by the new policy, the more so since the ink had barely dried on favorable NPCA testimony, on invitation, in regard to Congressman Dingell's measure (HR 5821) to extend to hawks and owls the

federal protection now accorded both species of American eagles.

"Although horned owls occasionally cause some damage," said NPCA in its protest, "such damage certainly does not justify effectively declaring an open season in those states in which the owls are not protected." The Association urged Secretary Reed to order republication of the notice, this time allowing ninety days for the public to make its own interpretation of its interests in the matter.

**Park roadbuilding** In the October Magazine there was a full page map in conjunction with a general article on the current drift of events in the still primitive canyon country of southeastern Utah, showing, among other things, possible roadbuilding plans in Canyonlands National Park. Since preparation of that article and map the National Park Service has issued a draft environmental impact statement on construction of a ten-mile section of new road between Squaw Flat, on the Needles park entrance road, and the Confluence Overlook. Proposed alignment of the road is shown on the map in the October issue by a dashed line.

NPCA has written the Park Service strongly objecting to issuance of a draft statement on park road construction before completion and publication of a new master plan and wilderness and transportation studies, made necessary by a considerable addition of land to the park during late 1971. "In view of this," NPCA has written the acting assistant director of the NPS Midwest Region, "the decision to begin development of a new road in the park is, to say the least, premature." The Association pointed out that the region traversed by the proposed road is wild and striking, fully qualified for wilderness designation.

Furthermore, NPCA said, "the road would have a considerable impact on the environment—more, we believe, than is acknowledged in the draft impact statement. By proposing such [roadbuilding] action at this time, the Park Service is making a decision which the law requires be made by the Congress after due consideration of the views of both the agency concerned and the public."

NPCA requested an explanation of the Park Service action in the roadbuilding matter, and an assurance that public meetings on wilderness proposal, master plan, and transportation study for the park will be held before final decisions are made on park development.

**Smokies tramway** The Park Service has produced a draft environmental impact statement on a proposed action in another park—Great Smokies, where it contemplates issuing a special use permit for an aerial tramway that would pass over park lands on its way to a ski development near Gatlinburg, Tennessee. In its statement the Service says that the major beneficiary of the proposal is the economy of the Gatlinburg area.

In this matter also NPCA has found it necessary to take issue with the Service, saying that the proposed tramway would have a significant adverse impact on the park. Both the tramway and its cable cars would be visible from numerous points in the park—including several backcountry hiking trails—most particularly during winter months. "Such an intrusion is intolerable in a natural area of the park system," NPCA wrote the Service, pointing out that Gatlinburg presently is a thriving community deriving much revenue from park-associated tourist trade, and that further efforts to stimulate the town's tourist-oriented economy are not needed at the expense of park values. Alternatives to the proposed action seem scanty, NPCA noted, adding that, while the Service properly should not ignore the interests of the community, the adverse impact of a ski tramway on the park would seem to far outweigh purely economic considerations.

**Dredging and filling** NPCA recently has filed a formal objection with the Jacksonville, Florida, district of the Corps of Engineers on the matter of a Florida developer's application for a permit to dredge some 1⅓ million cubic yards of fill from Biscayne Bay in the vicinity of Coral Gables. The fill would be used to create land extending 1,000 feet into the bay for

construction by commercial interests of apartments and other dwellings, and the whole operation would have a vastly destructive effect both on the shore and the bay in and adjacent to the area involved. NPCA has requested that the Corps deny the permit on the grounds that, as matters stand presently, it has no jurisdiction to consider the developer's application; or, if the application is not dismissed, that the Corps hold a public hearing in Miami and prepare an environmental impact statement on the huge dredge-and-fill project.

In regard to its first objection, NPCA pointed out that the permit application is defective in that it fails to meet the certification requirements of the federal Water Quality Act of 1970. The Florida Department of Pollution Control has issued the developers a state certification, but only on the order of a state circuit judge and with the comment that it has not analyzed the project and actually does not know whether it would violate state water quality standards. For these reasons alone, NPCA said, the Corps should reject the application.

In its communication to the Corps NPCA cited the conclusions of the Florida state marine biologist, who has said that "this massive dredge and fill project will have definite and permanent adverse effects on marine biological resources of [Biscayne Bay]." Some of these effects would be destruction of at least 1,500 feet of natural mangrove shoreline, a breeding ground for all manner of aquatic organisms, including the important Florida shrimp; obliteration of 120 acres of submerged littoral area and mangrove swamp; destruction of 240 acres of publicly owned Biscayne Bay bottom, and great damage to shoreside wildlife habitat of prime importance. The project also would degrade the human environment of the area, said NPCA, through destruction of fishing, skin diving, boating, nature study, and other outdoor recreational opportunities of a natural shoreline.

Concerning the alternative to outright rejection of the permit application—public hearing and preparation of an environmental impact statement—Corps policy provides for hearings on matters that, among other things, generate general public opposition. Such opposition to this project exists among homeowners, conservationists, fishermen, recreational users of the area, and others, the Association pointed out, and barring summary rejection of the application by the Corps, there should be a public hearing and an environmental impact statement.

# conservation news

**CEC lectures** The fall and winter lecture series of NPCA's Conservation Education Center continues with two widely known personalities of the conservation world presenting topics on which both are eminently qualified to speak. On November 10, environmentalist writer Darwin Lambert, of Luray, Virginia, who many years ago first began to query in the public print the validity of the time-honored American concept of "perpetual growth," will go into the natural and human history and the beauty of a fascinating national park—Shenandoah, in the Virginia Blue Ridge—with the visual assistance of eighty or more color slides, to look at the park's wilderness flavor and its man-nature relationships.

Then, on January 19, 1973, Scott McVay, administrator at Princeton University and chairman of the Committee on Whales for the Environmental Defense Fund, will discuss a topic that has been much on the minds of environmentalists, scientists, and thoughtful lay people all over the world for some years past—the eventual fate of the world's greatest living mammal, the whale, all species of which now are listed as endangered. Numerous slides will accompany this lecture also.

Both lectures will be held as usual at the Smithsonian Institution's Museum of Natural History Auditorium at Tenth Street and Constitution Avenue in the nation's capital beginning at 8 p.m., and all NPCA members in a position to attend, and members of the public generally, are cordially invited to be present. There is no admission charge.

**Historic site** Latest addition to the national park system is the Puukohola Heiau National Historic Site on the Island of Hawaii, a hundred acres that will preserve one of the state's most famous *heiaus*, or temples, built in the late 1700s by King Kamehameha the Great and closely associated with the founding of the Kingdom of Hawaii. The new historic site, authorized by Congress during the past summer, is located at Kawaihae Bay on the Big Island and eventually will encompass another temple, Mailekini Heiau, and the submerged site of still another, Haleokapuni Heiau, as well as the homesite of John Young, English advisor to King Kamehameha.

**To Advisory Board** Dr. A. Starker Leopold, of Berkeley, California, and Dr. Douglas W. Schwartz, of Santa Fe, New Mexico, have been named by Secretary of the Interior Rogers C. B. Morton to fill vacancies on his Advisory Board on National Parks, Historic Sites, Buildings, and Monuments. The vacancies occurred with expiration of the terms of Dr. Loren C. Eiseley, of the University of Pennsylvania, and Dr. Durward L. Allen, of Purdue University, on the advisory board of eleven, which recommends to the Secretary both on additions to the national park system and the Park Service's cooperative systems of natural, historic, and environmental education landmarks.

Drs. Leopold and Schwartz both are widely known in their fields, Dr. Leopold as a specialist in zoology and forestry at the University of California, and Dr. Schwartz as a researcher on the archeology and anthropology of the American Indian in Santa Fe.

**Tenth milepost** The tenth anniversary of the publication of biologist Rachel Carson's *Silent Spring* was celebrated September 27 with a commemorative event in Washington, D.C., attended by scientists, environmentalists, government officials, and former colleagues of the late author. Cosponsored by the Rachel Carson Trust for the Living Enivronment and the Audubon Naturalist Society, the gathering heard how the book had such an impact on the highest levels of government that decision-makers began to seriously consider its warning.

In the decade that has passed since publication of *Silent Spring*, the National Environmental Policy Act and the Council on Environmental Quality have come into being, and the Environmental Protection Agency has been created. The book also inspired review and evaluation of certain chemicals and restrictions on their use, including an almost complete ban on the use of DDT in the United States, effective next month. The review of new chemicals and their effects upon ecosystems also are directly traceable to *Silent Spring*.

The anniversary gathering also was marked by a warning on the current subtle counterattack on the achievements of the environmental movement.

**Sawtooth area** A question of many years' standing as to the nature of a federal reserve in the Sawtooth Range of south-central Idaho has been settled for the time being with Presidential signature on an act creating a 754,000-acre Sawtooth National Recreation Area, to be administered by the Secretary of Agriculture. Included in the recreation area is a new Sawtooth Wilderness Area, designated from the older Sawtooth Primitive Area of the Sawtooth National Forest. The act also provides for a review by the Secretary of Agriculture of the undeveloped portions of the recreation area for possible further wilderness designations "as soon as practicable," with public hearings on findings. All federal lands in the recreation area are withdrawn by the act from location, entry, and patent under mineral laws but are subject to valid existing claims.

On the matter of a possible national park in the Sawtooth region, long advocated by conservationists, the new public law requires the Secretary of the Interior to consult with the Secretary of Agriculture and state agencies on the potential of portions of the recreation area and the adjacent Pioneer Mountains for national park purposes, the study to be submitted to Congress by the end of December 1974. In thinking about a national park "or other unit of the national park system," the Interior Secretary is directed to pay special attention to the peaks and upland terrain of the Sawtooth and Pioneer ranges, leaving lower elevations for multiple-use purposes.

# conservation docket

AFTER A BILL IS INTRODUCED INTO Congress, it is referred to a standing committee of House or Senate, which may then refer it for initial consideration to an appropriate subcommittee. Public hearings on a measure may be called by the subcommittee, and later by the full committee. NPCA members, as citizens, are free to write committee and subcommittee chairmen asking that they be placed on a list for notification in the event of hearings. Members not able to attend hearings may submit a statement for the hearing record, which will be taken into consideration during committee deliberations. Copies of bills may be obtained from the House Docu-

ments Room, Washington, D.C. 20515, or from the Senate Documents Room, Washington, D.C. 20510. The abbreviations HR and S, below, indicate House and Senate bills respectively. The best source of information for names and addresses of committee and subcommittee chairmen, as well as members of the various committees, is the official *Congressional Directory*, which may be purchased through the Government Printing Office, Washington, D.C. 20420, in hard cover at $5.50 or paper cover at $3.00, both editions postpaid. These volumes also contain much valuable information on the personnel of the various executive bureaus of the government with whom members may be in touch concerning administrative programs and policies.

New bills bearing on national park system matters, or bills on which congressional action has been taken since the appearance of the Conservation Docket for October, have been:

BADLANDS: HR 16384, to amend Public Law 90-468 to provide for reservation of certain areas in Badlands National Monument in South Dakota for park purposes. To House Interior and Insular Affairs Committee.

BICENTENNIAL PARKS: HR 16337, HR 16379, and HR 16506, to authorize the Secretary of the Interior to establish national parks or national recreation areas in states presently not having such federal reserves. To House Interior and Insular Affairs Committee.

PARK WILDERNESS: HR 15026 and S 3618, to designate certain lands in national parks and monuments in California as wilderness. To House and Senate Interior and Insular Affairs committees, respectively.

CLARA BARTON HOUSE: HR 16463, to provide for establishment of the Clara Barton National Historic Site in Maryland. To House Interior and Insular Affairs Committee.

FOSSIL BUTTE: The Senate has disagreed with a House amendment to S 141, establishing a Fossil Butte National Monument in Wyoming, and requested a conference with the House.

ROCKEFELLER PARKWAY: S 3159, authorizing establishment of the John D. Rockefeller, Jr., Memorial Parkway between Yellowstone and Grand Teton national parks; signed by the President August 25 as Public Law 92-404.

LONGFELLOW HOME: HR 3986, authorizing establishment of the Longfellow National Historic Site in Cambridge, Massachusetts; ordered reported favorably, as amended, by House Interior and Insular Affairs Committee.

PARKLAND ACQUISITION: S 2806, authorizing appropriations for additional costs of land acquisition for the national park system; passed the Senate as amended and cleared for House consideration.

BIG SOUTH FORK: S 3349, authorizing establishment of the Big South Fork National River and Recreation Area in Kentucky and Tennessee; ordered reported favorably by Senate Committee on Public Works.

GOLDEN GATE: HR 16444, HR 16445, and HR 16479, to establish the Golden Gate National Recreation Area in San Francisco and Marin counties, California; all three bills to House Interior and Insular Affairs Committee.

INDIANA DUNES: S 2811, amending the act establishing the Indiana Dunes National Lakeshore to increase the authorization for land acquisition; passed the Senate as amended and sent to the House.

LAKE BERRYESSA: S 3931, establishing the Lake Berryessa National Recreation Area in California. To Senate Interior and Insular Affairs Committee.

SAWTOOTH AREA: HR 6947, establishing the Sawtooth National Recreation Area in Idaho, to temporarily withdraw certain national forest lands from operation of mining laws, and for other purposes; signed by the President as Public Law 92-400 August 22.

GREAT DISMAL SWAMP: HR 11369, authorizing the Secretary of the Interior to study and determine the best means of protecting and preserving the Great Dismal Swamp and Dismal Swamp Canal in Virginia; passed the Senate with an amendment and was sent to the House.

NEW RIVER: HR 16692, to amend the Wild

and Scenic Rivers Act to prevent construction of a dam on the New River in North Carolina and Virginia. To House Interstate and Foreign Commerce Committee.

WILD RIVER: S 3976, amending the Wild and Scenic Rivers Act by designating a segment of the New River as a potential component in the National Wild and Scenic Rivers System. To Senate Interior and Insular Affairs Committee.

WILD RIVERS: HR 3958, to amend the Wild and Scenic Rivers Act to extend the five-year moratorium for an additional five-year period to allow completion of studies on all twenty-seven areas listed for study under the act. To House Interior and Insular Affairs Committee.

New legislation affecting the national forest system, or actions taken on measures already introduced on forest matters, have been:

CACHE FOREST: S 2762, to authorize and direct the Secretary of Agriculture to acquire certain lands and interests in lands in the Cache National Forest in Utah; ordered favorably reported as amended by the Senate Interior and Insular Affairs Committee.

KLAMATH FOREST: S 3594, providing for federal purchase of the remaining Klamath Indian Forest; passed by the Senate as amended and cleared for House consideration.

LONE PEAK: S 3466, establishing the Lone Peak Wilderness Area in the Wasatch and Uinta national forests in Utah; ordered reported favorably by the Senate Interior and Insular Affairs Committee.

MONTANA WILDERNESS: S 484, directing the Secretary of Agriculture to classify as wilderness national forest lands known as the Lincoln Back Country and parts of the Lewis and Clark and Lolo national forests in Montana; signed by the President as Public Law 92-395 August 20.

NEW MEXICO WILDERNESS: S 3256, to designate the Aldo Leopold Wilderness in the Gila National Forest of New Mexico; ordered reported favorably by the Senate Interior and Insular Affairs Committee.

VERMEJO RANCH: S 2699, to authorize acquisition of lands within the Vermejo Ranch, New Mexico and Colorado, for addition to the national forest system; passed by the Senate as amended and sent to the House.

WASATCH FOREST: S 1144, to authorize and direct the acquisition of certain lands within the boundaries of the Wasatch National Forest in Utah by the Secretary of Agriculture; ordered reported favorably by the Senate Interior and Insular Affairs Committee.

WHITE MOUNTAINS: HR 16685 and S 3967, to authorize and direct the Secretary of Agriculture to acquire certain lands and interests in lands adjacent to the exterior boundaries of the White Mountain National Forest in New Hampshire for addition to the national forest system. To House Committee on Agriculture and Senate Committee on Agriculture and Forestry, respectively.

Legislation or legislative actions touching on fish and wildlife matters have been:

WILDLIFE CONSERVATION: HR 13025, amending the Act of May 1948 with respect to the use of real property for wildlife conservation purposes; ordered reported favorably by the Senate Committee on Interior and Insular Affairs.

HOOSIER PRAIRIE: HR 16611, authorizing establishment of the Hoosier Prairie National Nature Preserve. To House Interior and Insular Affairs Committee.

SEAL BEACH: HR 10310, to establish the Seal Beach National Wildlife Refuge; signed by the President as Public Law 92-408 August 29.

*Continued from page 2*
authors. The Kaskaskia report shows the feasibility of group selection in the central hardwoods from a silvicultural point of view, with supporting economic data. The Goodman report shows the silvicultural and economic feasibility of individual tree selection in the northern hardwoods. We plan to proceed with similar studies in Ponderosa pine, Douglas-fir, and coast redwoods, and with a series of additional economic analyses.

THE NPCA has recommended, on invitation, that federal regulation of timber harvesting be instituted with respect to the larger private holdings; that economic incentives, technical assistance, and perpetual covenants be employed with respect to the smaller private holdings; and that the operations of American timber corporations abroad be regulated by the Government of the United States. If this places American nationals at a disadvantage, the agencies of the United Nations should be employed, or multilateral treaties should be signed.

The forests of the undeveloped world are coming under attack by powerful timber corporations of the United States. Even more ruthless methods are being used abroad than are employed at home. The fragile soils of the tropics from which virgin forests are being stripped, disintegrate easily after clear-cutting, and lateritic soils may often harden into rock. Entire ecosystems of national or continental extent are in jeopardy, with all their burden of rich plant and animal life, thousands of species close to extinction, and all their potentials for human habitation. From Indonesia to the Amazon a wealth of ancient, verdant, virgin forests stands before the march of destruction. Both national and international action needs to be taken to protect them.

There is much that can and should be done by the use of the existing powers of the Executive Branch. The President could, and in our opinion should, issue an Executive Order tomorrow, addressed to the Forest Service, the Bureau of Land Management, and other agencies managing timber, directing that ecological methods be employed wherever feasible on public land holdings for which they are responsible.

IN DARK DAYS it may be helpful to envisage a better future. Science and technology have given men the power to free themselves from drudgery and want and to create a true Community of Life on sound economic foundations; essential will be the stabilization and ultimate reduction of population, and a basic change in our attitude toward Nature. With more space for living, and a renewed interest in a natural setting for life, people can be expected to abandon the sterile environment they have succumbed to in the supercities and return to the smaller towns and the villages where life leads out naturally into field and forest.

A relocation of industrial plants, and a reduction in their size, must precede the relocation of settlements, because work and residence should be side by side. The changes in attitude and the economic trends which will lead to these results are already in evidence to those who can read the signs of the times. Within this perspective, the forest becomes part of the permanent and customary life-environment of people. Field and forest, countryside and wilderness, not the marching deserts of the megalopolis, are the true home of men, from which they emerged into disaster, to which they will fight their way back in time once again.

THE WEIGHT of the institutions of death in modern society sometimes seems to be overwhelming. All the power of the federal government agencies, the professional establishment, and the economic might of huge corporations has been thrown on the side of timber mining, as against silviculture, increasingly, for at least two generations. What fool says that this blind sequence of causation can be changed? And yet we have begun to see such a reversal in coping with air and water pollution, and a considerable acceleration of cure in those matters, during the decade just past. The thing to do is to take up arms, to test the issue in action.

Solzhenitsyn, concerned with the survival of literature against inexorable repression, has written, in accepting the Nobel prize:

> One word of truth shall outweigh the whole world.
>
> And it is here, on an imaginary fantasy, a breach of the principle of the conservation of mass and energy, that I base both my own activity and my appeal to the writers of the whole world.

The issue before us is survival. The survival of literature is part of the struggle. The survival of the forests is another. The reestablishment of silviculture, of the science of environmental and ecological forestry, as the basic methodology of timber management in this country and abroad, is a task to which environmentalists and humanitarians should now address themselves with devotion as part of the great modern effort toward Survival, and the ultimate establishment of the Community of Life.

—*Anthony Wayne Smith*

BLOODROOT

BLUE FLAG

LADYSLIPPER

**ENDANGERED SPECIES . . .**

When we hear these words, most of us think almost automatically of grizzly bears and whooping cranes; but many species of American plant life are endangered too. Interstate highways, shopping malls, and housing developments take their toll of our once-abundant wild plants. One of NPCA's programs looks toward the compilation of a comprehensive and much-needed listing of rare and endangered species of America's native plants. Your support of the Association in its environmental protection work is vital.

DO A FRIEND A FAVOR . . . Send a gift membership. We will send an attractive announcement card, and your friend will be reminded of your thoughtfulness every month of the coming year with each issue of the *National Parks & Conservation Magazine.*

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