

National Parks & Conservation Magazine

The Environmental Journal

March 1978



Moods of the Hills

JANUARY came to the Appalachians warmly this year, and rainily. Gray clouds lay across the sky all day and hid the stars at night. December had been cold and clear, with high, white cloud-banks against brilliant blue, and with boisterous winds.

But then, mid-January, the dry snow arrived; ice locked down on the world; the creek froze deeply from bank to bank. Winter stayed with us through February, blindingly bright on the clear days, sullen under overcast. And then the thaw, and the freshets pouring from every little glen, and Spring.

The old and dearly beloved cycle repeats. Shad-bush breathes white in the hills against the dun of the awakening forest. Trout lily and adder's tongue unfold their delicate blossoms in greening pastures, and the bluebells will follow. A fragrance as of Eden fills the valley, wild garlic, the smell of the earth itself, the redolence of the fields from the richness of the manure brought from the newly opened barns.

AT TIMES during the winter, the distant hills were a pale blue-gray. Mists would push themselves over the rocky crests from the south and pour down into the valley. On other days, when the westerly and northerly winds had cleared the curtains of the rain away, the mountains stood, out rocky against amethystine skies, showing the green of their pines and the earth-brown of their oak forests clearly, spread amply across their generous slopes.

The chickadees and juncos possessed the land during most of the wintry days. When we walked around the fields, they clamored in the branchy corridors, and the ring-necked pheasants as well, survivors of the autumn hunting. Cardinals, flashing scarlet and warm red-brown, stayed as always, faithfully, all winter. And the mockingbirds, too, though silent for a time.

NOW, IN a very few weeks, the red-wings will return, to post themselves on treetop and poletop, crying their exuberance to rival and mate across the April breezes. We shall hear the music

of the meadowlark again and glimpse his black-barred yellow breast. Orioles will be weaving their baskets in the sycamores, dropping their opulent melodies into a world of resurrection.

Mid-March should see the end of the deep frosts. The fields may soon be dry enough to plow. In these middle latitudes we shall be sowing clover into the winter wheat and barley for hay next year and getting ready to drill the oats. *Piers Plowman* sang once and forever, long centuries ago, of the joy of the plowman and the seedsman, walking their fragrant fields in springtime, singing of their good work and their new freedom.

THE HAY and the stored grain were running low as winter came to an end. Once the pastures are dry enough, and the new grass has gotten a start, we shall turn the cattle out again, taking care to limit their time against gluttony and the onions. The Holsteins will respond throughout May and most of June with a miraculous abundance of milk. We shall have readied the corn drill and bought the fertilizer for the corn fields by Mayday; and while others attest their bygone rebellions, we shall celebrate the oncoming revolution of the summer as custodians of the earth.

The miracle of the blossoming hardwood forests surpasses the city man's experience. The pastel tapestries of the flowering maples and oaks, the hickories and the locust-trees—golden and russet, rich pink and frosty white, set in the burgeoning yellow and green of the new leaves—display the profligate generosity of Nature for the acceptance and appreciation of men. One day, learning to care for the wealth of the forests as custodians, not ravishers, we shall share, with all the fullness of love, in that abundance.

OUR NEIGHBORS keep bees for their honey and their wisdom. Breeze-borne, the swarms are once again at work. The bumblebees and the honeybees intermingle; the newborn flowering world has room enough for all in Spring. The apple trees and the cherry trees attract them, white-

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FRONT COVER Salmon run at Katmai, by Rollie Ostermick, NPS

BACK COVER Alaskan brown bears fishing, by Leonard Rue, Jr.

Every summer salmon migrate from the sea up many of Katmai National Monument's rivers to spawn. Osprey, eagles, and the great Alaskan brown bear—the symbol of Alaskan wilderness—depend on this dramatic annual phenomenon. The salmon run also attracted prehistoric man; archeological excavations indicate a more or less continuous summer occupation on these river banks for the past 5,000 years. Current proposals would enlarge the monument and redesignate it as a national park. (See page 4.)

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Wild, remote, and spectacular Katmai National Monument
in Alaska is proposed for expansion and redesignation
as a national park

by OGDEN WILLIAMS

Katmai and Its Future

I HAD NEVER seen stones floating in water until I came to Naknek Lake in Katmai National Monument, Alaska. Nor had I ever watched a fisherman casting for rainbow trout while, a hundred yards upstream, a thousand-pound Alaskan brown bear also stood on its hind legs waist-deep in the water. The larger of the two fishermen occasionally pounced down to seize in its jaws a bright red sockeye salmon. As the days passed, I found that the bear, the salmon, the man, and the floating rocks all represented aspects of Katmai, but still only a small part of its total story.

Although Katmai is the second largest unit in the present National Park System, after Glacier Bay, it is among the least known to the public. Technically speaking, some ten thousand boating visits are made each year to the western end of Naknek Lake at the monument's boundary, but only about fifteen hundred people fly on in to Brooks Camp for fishing and sightseeing; of these not more than about two hundred actually penetrate the wild backcountry. Katmai's 4,361 square miles amount to an area a half-million acres larger than Yellowstone National Park; and when one considers that Yellowstone may receive two million visitors in a single season—most of them in automobiles—one reason for Katmai's special magic becomes clear. Here man is not only an occasional and temporary presence; he is all but nonexistent. Thus to people who wish to experience a primeval natural world with a reality not made by man nor affected by him,

Katmai is a wilderness sanctuary beyond compare.

Katmai's relative isolation derives, of course, from its geographical location and the cost of getting to it. The expense of air travel from Anchorage was about \$153 per person round trip in August 1977, and this price no doubt discourages people from visiting Katmai. Katmai is also simply off the beaten track, not on the road from Anchorage to anywhere else of any size, unlike McKinley National Park, which lies on the main highway between Alaska's two largest cities, Anchorage and Fairbanks. The monument lies at the neck of the Alaska Peninsula about three hundred miles southwest of Anchorage and is reached only by aircraft to King Salmon, a small community of some three hundred residents—mostly federal or state government civilian employees—plus an Air Force base complement of about five hundred. From King Salmon a road leads to Naknek Lake, seven miles away, where the monument can be entered by boat, an entry used by local residents and Air Force personnel. Incoming air passengers from Anchorage take another plane—a splendid 1937-vintage Grumman Goose amphibian—that flies them thirty-eight miles into the monument and taxis them to the pumice beach at Brooks Camp.

Katmai, in short, is for the man or woman who really wants to go there, not for the casual passerby. Some people are drawn to it by the excitement of fishing for rainbow trout of trophy size. Others want to

photograph birds or bears, wildflowers or volcanoes. Increasingly each year, still others want the wilderness experience itself, not so much for mere escape from the artificiality and alienation of city life, as for the invigoration of a return to what they perceive as a more fundamental and permanent reality, a sense of continuity behind natural time and space.

WHAT IS this Katmai reality? Actually three distinct geographic areas are included within the present boundaries of the monument, and a fourth is just outside to the west. The long mountain chain that enters Alaska from the Canadian Yukon curves southward toward the sea, first as the Alaska Range, which boasts Denali (Mount McKinley) as the highest peak on the continent. Then it becomes the Aleutian Range as it enters the Alaska Peninsula. These mountains cut through Katmai, separating the southern seacoast along the Shelikof Strait from the glacial lake district to the north. Thus seacoast, mountain, and lake-land are the principal topographic features of Katmai, with flat lowland tundra lying as a fourth distinct zone to the west.

The Shelikof coast is a land of unsurpassed narrow fjords, wide bays dotted with islands, steep cliffs rising vertically from the sea, and waterfalls cascading down to ocean beaches. Pale buff pumice slopes contrast with dark green alders and the dark blue water of Shelikof Strait. All of it is unspoiled and almost unvisited.



Katmai is the last great sanctuary for the largest carnivore on earth—the Alaskan brown bear, which attains weights of up to 1,500 pounds. This symbol of the Alaskan wilderness is heavily hunted elsewhere on the Alaska Peninsula; and nearby Kodiak Island no longer affords sanctuary, because native land selections have decimated Kodiak National Wildlife Refuge.

The mountainous center of Katmai has peaks rising more than seven thousand feet, active volcanoes, crater pools, and snowy glaciers. The great lakes that were scooped out during successive ice ages lie north of the mountains.

Brooks Camp is located in the heart of this lake district where the short Brooks River connects Brooks Lake to the larger Naknek Lake. The camp was established in the early 1950s after the fame of the Brooks River rainbow trout had spread far and wide in angling circles. The river is also famous for its salmon, which leap eight feet into the air to clear Brooks Falls as they fight their way upstream to spawn and die, and even more so for the bears that flock here to feed on this protein bonanza.

It is fortunate that the tourist concession at Brooks Camp closes early in September, for the bears become most concentrated at this

season. Some wildlife biologists regret that Brooks Camp was ever built in the very heart of bear country, and all agree that a tragic bear-human confrontation is someday almost certain to occur. To date it mercifully has not.

THE VEGETATION and land forms of Katmai obviously vary with altitude. Along the lakeshores alder, willows, birch, and white spruce are intermingled with stately balsam poplars several feet thick. Fireweed and cotton grass are common; and you find a profusion of berries from delicious highbush cranberries and nagoonberries to poisonous baneberries. As you climb higher, willows predominate; and purple Jacob's ladder and arnica may vie in beauty with white Labrador tea. Still higher is open tundra with blueberries to satisfy bears not gorged with salmon and a myriad of tundra flowers—yellow poppies,

Kamchatka rhododendron, rose-root, and alpine azalea.

In any introduction to Katmai one must mention briefly the subject of volcanoes, even though Katmai's other features are far more important today. The great volcanic event that literally put Katmai on the map took place on June 6, 1912, when one of the greatest eruptions of all time took place. Enormous forces under Mount Katmai spewed forth, apparently not from Mount Katmai itself but from Novarupta Volcano and other fissures. As the gases, pumice, and ash poured down into the Ukak River Valley at a hundred miles an hour, the vacuum left within Mount Katmai caused its top to collapse inward to form the water-filled caldera one sees today. The Ukak Valley floor disappeared almost instantly under three hundred feet of ash and pumice, and all life was of course obliterated in a

flash. People heard the explosion in Juneau, 750 miles to the east; and sulphuric acid dissolved linens on clotheslines in far-off Vancouver. The rain of ash was so dense in Kodiak, one hundred miles distant, that day became like night, and people fled out to sea in boats to escape the nightmare. In the valley below Mount Katmai—thereafter to be called the Valley of Ten Thousand Smokes—heat trapped in the deposits issued from a myriad fumaroles. Even today lightweight pumice stones are washed down the Ukak and Lethe rivers into the Iliuk Arm of Naknek Lake, whence they are windblown to the shores of Brooks Camp as floating reminders of the 1912 cataclysm.

This great volcanic spectacular was brought to the world's attention primarily through the efforts of the National Geographic Society, which sent five expeditions to Katmai between 1912 and 1918. By 1917 men like Robert F. Griggs and Gilbert H. Grosvenor were urging that Congress create a new national park there. The Secretary of the Interior was reluctant to take the issue of park status to Congress at that time, noting that McKinley National Park had just been established after nine years of exhaustive efforts by conservationists and sympathetic congressmen. All concerned needed to lean on their spears for a time. As the next best solution, Katmai was established as a national monument by presidential proclamation on September 24, 1918. Local Alaskan interests fought Katmai as they had fought Mount McKinley, crying that "their" resources were being "locked up." The old refrain is still heard today, with hardly a changed note.

In the beginning, the monument encompassed only the immediate volcanic area around Mount Katmai; but in 1931 President Herbert Hoover more than doubled its size from 1,700 to 4,214 square miles, responding to a growing recognition that wildlife, scenery, and other values in the monument are even more important. At this time most of the present lake district

came under Park Service protection, except the western end of Naknek Lake. In 1942 President Roosevelt added the offshore islands in Shelikof Strait within five miles of the coast, largely to counter their use as bases for poaching. Finally in 1969, during the last hours of his administration, President Lyndon Johnson, at the urging of Secretary of the Interior Stewart Udall, extended the monument boundaries to include the unprotected west end of Naknek Lake, including streams that flow into it. This action was necessary to prevent future pollution of the lake by commercial development of its western shoreline, but it was done abruptly and without local consultation, taking the residents of King Salmon and Naknek by surprise. The resultant bitterness has not yet



DARRELL L. COE

During a cataclysmic eruption at Katmai in 1912 a white-hot mass of ash and pumice flowed at an incredible speed like a giant river into an adjacent valley, instantly killing everything in its path and burying fifty square miles of trees and meadows as much as three hundred feet deep. Heat from this flow combined with surface water to form a myriad steaming fumaroles. Today the ash has cooled and the fumaroles are gone, but the Valley of Ten Thousand Smokes remains a desolate but beautiful expanse of pink and yellow debris cleaved, after only sixty-five years of stream erosion, by crevasse-like canyons.

disappeared and will affect future plans for the area.

ALTHOUGH Katmai is today an unspoiled wilderness, it has a long history of human occupation. The coastline along Shelikof Strait was the home of nomadic hunters and fishermen six thousand years ago. Similarly, the angler who in 1978 casts his line into the Brooks River probably does not realize that earlier anglers had fished in the same place five thousand years before him! By the 1780s Russians arrived at Katmai from nearby Kodiak Island. They virtually enslaved the Koniag Eskimos who then occupied the Shelikof seashore; they put them to work catching sea otters for their priceless fur and tied the Eskimos firmly to the white man's company store.

NPS PROPOSALS IN ALASKA

1. Bering Land Bridge National Preserve
2. Cape Krusenstern National Monument
3. Noatak National Preserve
4. Kobuk Valley National Park
5. Gates of the Arctic National Park
6. Yukon-Charley National Preserve
7. Glacier Bay National Park
8. Wrangell-St. Elias National Park
9. Mount McKinley National Park
10. Kenai Fjords National Park
11. Lake Clark National Park
12. Katmai National Park
13. Aniakchak National Monument



Russians also established Fort Suvaroff on Bristol Bay near the present village of Naknek about 1850. By the time of the 1867 purchase of Alaska by the United States the sea otters were almost extinct, and American traders became more interested in salmon, setting up canneries in Bristol Bay and along the Shelikof coast. Then in 1898, when gold was struck in Nome, gold diggers used the ancient Katmai Trail across the peninsula from Katmai Bay to Bristol Bay as a shortcut to avoid the dangerous sea voyage around the Alaska Peninsula. By 1906 the gold in Nome had largely run out, and the old trail was abandoned. Today it is overgrown with alders and made perilous by quicksands in the river bottoms and by gale winds funneling through the mountain passes.

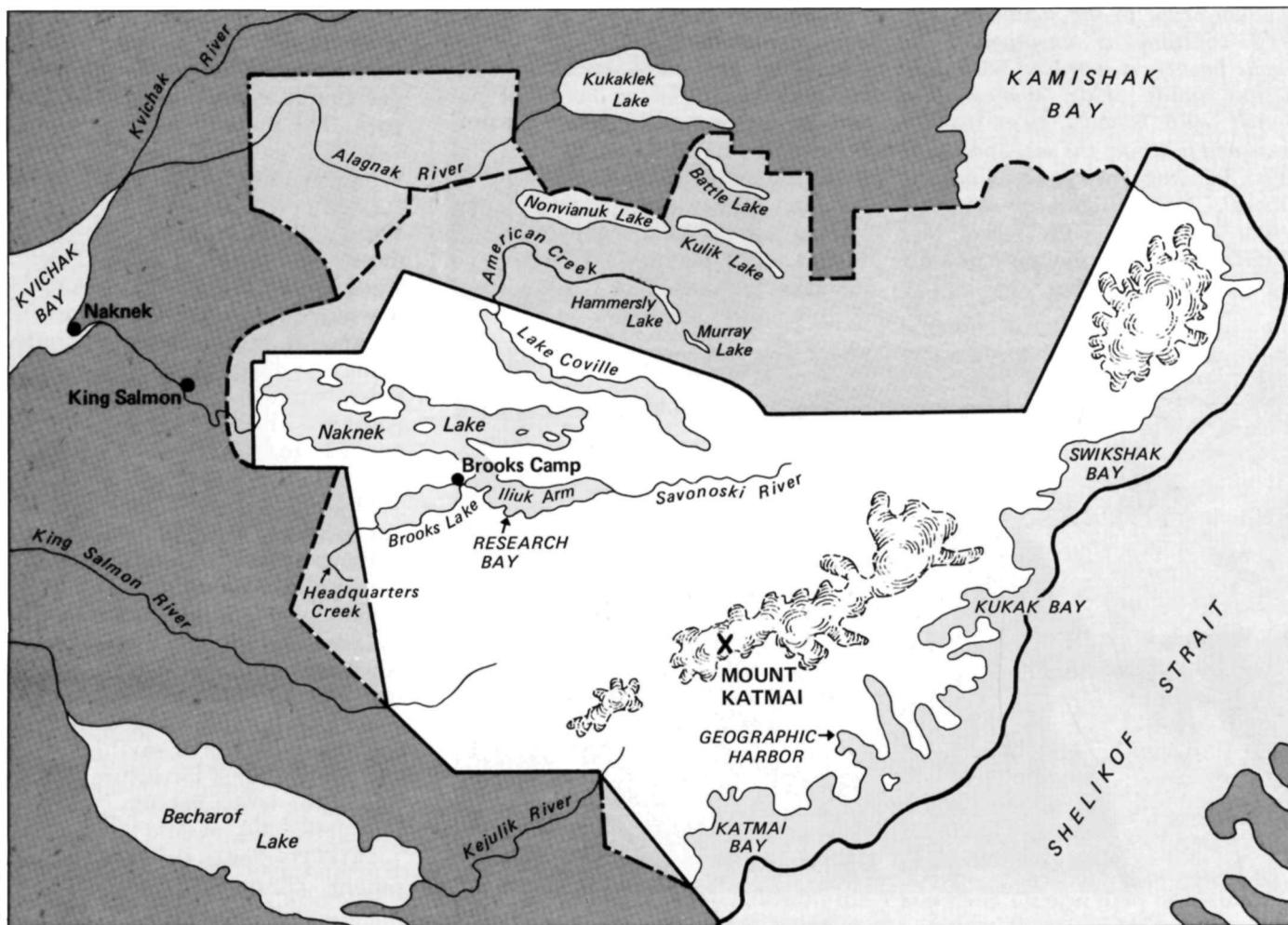
Our ancestors must have been a very hardy breed.

IF THE UNSPOILED beauty of seacoast, mountain, and lake is one reason for Katmai's value to the nation, another is its wildlife. Katmai is the last great sanctuary for the Alaskan brown bear, which is heavily hunted elsewhere on the peninsula. Moose and wolf are relatively abundant and keep each other in balance. Fox, lynx, and wolverine pursue the hare and the ground squirrel; and otter, mink, marten, and beaver abound in the forests and ponds of the lake region. A few caribou from the peninsula herd occasionally visit Katmai. Aloft, the bald eagle is the dominant bird, with some fifty nesting sites already identified along the Shelikof coast and the shores of the

inland lakes. Ospreys, goshawks, rough-legged hawks, and great horned owls also nest in the monument. Great numbers of waterfowl, sea birds, and songbirds come to Katmai in summer to nest. Coastal waters shelter hair seals, sea lions, and sea otters.

The very profusion of Katmai's wildlife made it for many years a prime target for poachers. The Park Service had neither the budget, manpower, nor equipment to police the vast area for which it had responsibility. Unscrupulous guides flew clients into the monument, killed trophy moose and bears at will, and flew out again with impunity. By contrast, the monument officials had no patrol aircraft of their own and had to charter commercial planes, a procedure that the poachers could moni-

Proposed Katmai National Park Expansion



- - - - - Andrus Proposal
 - · - · - · Udall/Metcalf Proposal
 ——— Present Monument
 (HR 39 as revised, Oct. 1977)

FEDERAL GRAPHICS



ROBERT BELOUS, NATIONAL PARK SERVICE

In addition to the pristine beauty of its mountains, lakes, and seacoast, Katmai National Monument is renowned for its treasury of wildlife. This immature bald eagle was found at Naknek Lake in the beautiful lake district in the northern part of Katmai. Eagles also abound along the coast of Shelikof Strait to the southeast. This wild coastline is unsurpassed for scenic beauty; it is graced with deep, narrow fjords; wide, shallow bays dotted with islands; cliffs rising a thousand feet from the sea; and waterfalls cascading down to ocean beaches (above). As thousands of sea birds wheel above the cliffs where they nest, the sea below shelters hair seals, sea lions, and sea otters.

tor with ease. Even when caught, offenders received no more than a slap on the hand from local courts. In spite of grossly inadequate penalties and a U.S. District Court too overloaded to give adequate emphasis to poaching cases, progress seems to have been made in recent years. The Park Service now has its own aircraft and can patrol with some measure of secrecy. Stakeout teams are now installed at undisclosed locations, and the local guides and poachers know it. Also important, cooperation with state wildlife protection officers has improved under Governor Jay Hammond's administration, and the general climate of public opinion is slowly changing for the better.

THE PROBLEMS of poaching and how best to assure protection for the brown bear are central to some of the important issues facing Katmai today. Alaska and the nation are involved at this moment in some of the greatest land decisions since the Louisiana Purchase. At issue are the federal lands in Alaska identified as being of national interest and eligible for protection as national parks, national wildlife refuges, wild and scenic rivers, and national forests—all being usually referred to as "d-2" lands, after Section 17(d)(2) of the Alaska Native Claims Settlement

Act of 1971, which specified that such lands be set aside.

In Katmai we now have a chance to extend protection to watersheds that support the red salmon, bear, moose, and all the other wildlife treasures of the area. This protection is urgently needed because the Kodiak National Wildlife Refuge has been decimated by native land selections under the Alaska Native Claims Settlement Act and may therefore no longer fill its former role as sanctuary for the brown bear. West of Katmai the bears are subjected to enormous hunting pressure, but fortunately in the Katmai region—from Kamishak Bay in the northeast to the southern end of Lake Becharof in the southwest—a population of some one thousand brown bears still exists—enough, if given suitable protection, to assure the permanent survival of this magnificent species.

THREE PROPOSALS are now being considered for the future of Katmai. Under any of them the present monument would be redesignated as a full-fledged national park. The State of Alaska proposal—which actually represents the views of Republicans Senator Ted Stevens, Representative Don Young, and Governor Jay Hammond—is the most restrictive. It would add only 400,000 acres to the new park, with adjoining areas to be known as "federal cooperative lands" and controlled by a joint federal-state commission based in Alaska. These lands could be opened to commercial development.

The other two proposals—one put forward by Morris Udall of Arizona in the House and by the late Lee Metcalf of Montana in the Senate, and the other announced by Secretary of the Interior Cecil Andrus as an Administration comment upon the Udall/Metcalf bills—are much more progressive and realistic in terms of saving Katmai and its treasures for future generations. The latest version of Udall's bill (HR 39) would add some 1,340,000 acres to the present monument, compared with 1,100,000



ROBERT BELOUS, NATIONAL PARK SERVICE

acres in the Administration approach. The boundaries of both proposals are virtually identical except in the northwest corner, where HR 39 originally would have included some 260,000 acres to protect the Alagnak River. This was amended in subcommittee to delete the lower and middle Alagnak but administer it as a wild and scenic river, and a "preserve" was added in the Kukaklek and Battle lakes area. (Sport hunting is permitted in "preserves.") Thus at press time HR 39 is the same as the Andrus proposal plus the new preserve, but it provides immediate wilderness protection to the newly added area.

If the Udall/Metcalf legislation is in fact enacted into law before the December 1978 deadline specified by the Alaska Native Claims Settlement Act, an enormous contribution will have been made to the patrimony of the American people. Beautiful Murray and Hammersly lakes and the superb alpine country east of them will be protected, as will American Creek, which flows westward from Hammersly into Lake Coville, some twenty miles away. (Will Troyer, Park Service wildlife biologist and expert on the Katmai, recalls counting seventy-five brown bears on American Creek during a single day last August!) To the west, pristine Headquarters Creek would be saved, assuring that Brooks Lake would never be polluted.

The Udall bill is still moving through the House, but little forward motion has yet occurred in the Senate. The State of Alaska traditionally has resisted all federal attempts to provide greater protection to federal lands there. Great pressure is being exerted to water down the Udall/Metcalf proposals and to delay any legislative action beyond the December 1978 deadline, at which time the land would revert to virtually unprotected status under the Bureau of Land Management. Concerned citizens in Alaska and throughout the nation do not want that to happen. NPCA members who agree may ask their senators and congressmen to support strong d-2 legislation.

THE FUTURE of the new Katmai National Park will be affected not only by the acreage Congress finally allots to the park but also by the policies of the Park Service regarding its use. NPS thinking can probably be inferred from the 1972 wilderness proposal it has already submitted to Congress. In that proposal, which recommended 93 percent of the monument for wilderness status, exceptions were made for, in summary, construction of a new reception facility at the west end of Naknek Lake; new visitors camps at Research Bay on the Iliuk Arm and at Geographic Harbor on Shelikof Strait; and twelve overnight shelters throughout the monument. Of these latter, seven would be located along the seacoast, two in Katmai Pass, and the rest along a line stretching from Naknek Lake and the Savonoski River eastward to Swikshak Bay.

Some of those who know and love the Katmai best shudder at the implications of the 1972 plan, let alone the extension of comparable plans for the new lands to the north. They see the reception facility as encouraging the increase of power boats on Naknek Lake. They point out that Research Bay is the precise location of a concentrated bear population and foresee hard times for both bears and people if that proposal is not dropped. New shore facilities at Kukak Bay and Geographic Harbor would, they believe, contribute to the degradation of the magnificent Shelikof seacoast and might also revive pressure to build a road across the park connecting the coast with King Salmon. Wilderness status, if approved, would, of course, preclude construction of a road. The proposed shelters would be inconsistent with the aim of preserving true wilderness, which, they feel, is Katmai's highest value to the nation. They are not disturbed by the fact that only about two hundred people a year now venture into the backcountry wilderness, believing that Katmai's potential contribution to American civilization (like that of Walden Pond) lies not in

quantity visitation but in preserving its quality environment, even if experienced at firsthand only by that smaller number of people who would have enough genuine interest to make the effort necessary to go there.

Regarding the overnight shelters, Park Service planners point out the danger to hikers from the high winds that not infrequently strike the mountain passes and demolish tents, and they add that only luck has saved some campers to date from mauling or death by bears. The ranger stations on the Shelikof Strait would, in their view, provide a presence on the coast needed to discourage poaching. Signs now are that the Park Service is reconsidering plans for a facility at Research Bay.

My own personal view is that installations on the *fringes* of the new park might be desirable but that new construction in the interior should be forbidden. The essence of Katmai is its wilderness; it should not be tamed.

One prediction can probably safely be made: Katmai's greatest protection in the near future as in the past will be its remoteness and the difficulty of getting to it. Its real problem will come only when—and if—the State of Alaska connects the Alaska Peninsula by road and ferry to Anchorage and, by extension, to Seattle, Chicago, and New York. Safeguards of law and regulation must clearly be erected now against that entirely possible future contingency so that the magnificence of Katmai will always remain—not just physically on the Alaska Peninsula, but also in the minds of millions who may never see it except on film but will derive solace from knowing that it is there. ■

Free-lance writer Ogden Williams has spent much of the past four years in Alaska, particularly in the wilderness country of the central Brooks Range and the Noatak Valley, as well as in south-central Alaska. Formerly Mr. Williams practiced law in New York City and served in the U.S. Foreign Service in Europe, Asia, and Africa.

THE BURRO PROBLEM AT GRAND CANYON

Feral burros in Grand Canyon National Park are destroying habitat and competing with native species for space and food

by GERRY BLAIR

GRAND CANYON National Park, in Arizona, has become the scene of a controversy over the fate of some three hundred feral burros that live within the park boundaries. Burros were first introduced into North America during the sixteenth century by Spanish explorers, who used them as beasts of burden. The animals later played a role in the colorful history of the Southwest during the days of heavy mineral exploration, and the lonely old prospector with his heavily laden burro is now a familiar, sentimentalized image. During the early twentieth century, mining activities diminished, and unneeded burros were set free. Today, descendants of these burros are reproducing in Grand Canyon at an estimated annual rate of twenty percent.

Jim Walters, resource management specialist for the park, is convinced the feral burros are changing the fragile park ecology.

Dr. Steven Carothers, Curator of Biology for the Museum of Northern Arizona at Flagstaff, conducted a year-long study of the effects of burro overpopulation within the Grand Canyon National Park. When the study was completed, the research data revealed that the wild burro is dramatically changing some riparian and desert habitats

in Grand Canyon. The study areas, two almost identical 5.3-acre plots on either side of the Colorado River, were located deep within the inner canyon and were accessible only by river boat or by helicopter. These plots were chosen because historically burros are found on only one side of the river. The impact area was on the west side and was visited by eight to fifteen feral burros. The control plot, across the river to the east, was essentially the same in vegetational structure but showed no evidence of burro infestation.

The study began in March 1974 and ended on January 31, 1975. Both of the study plots received identical quantitative and qualitative vegetational and mammalian analyses. The study produced convincing evidence that the control plot contained almost four times more vegetational cover and small mammal species than the impact plot.

A 1976 study was conducted to determine the relative condition and diets of burro herds from different areas of the park. Autopsies of sixty-three different animals revealed that all the animals were in very good condition and that the burros eat a variety of plant species. The conclusion of the study was that the burros in Grand Canyon

had adapted and were faring rather well. Unfortunately, this situation was occurring at the expense of the ecological make-up of the park.

In November 1976, as a result of the Carothers study and other data, the National Park Service prepared the Burro Management Plan and Environmental Assessment, outlining the problem and exploring possible alternative solutions. The plan stated that the ruggedness of the canyon terrain made it infeasible to drive the burros from the canyon in roundup fashion. It would be possible to live-trap burros, but once trapped, the animals would have to be transported from the canyon depths by helicopter. The Park Service rejected this option as expensive and ineffective. Finally, reluctantly, the Park Service decided that the burros would have to be shot with high-powered rifles; once eradicated from the park boundaries, other burros from adjacent lands would be denied reentry by a system of fences.

PUBLIC REACTION to the plan was immediate, vocal, and outraged. Two Washington, D.C.-based organizations—The Humane Society of the United States and the American Horse Protection Association—and the Committee to Save the Grand Canyon Burros,



GERRY BLAIR

Arizona burros are probably descended from pack animals used by early-day prospectors. The broken catclaw acacia (below) is an example of the damage these seemingly harmless animals are doing to vegetation in the Grand Canyon.



JOHN RUNNING

headquartered in Tucson, Arizona, filed suits in federal court asking that the court issue an injunction delaying the program.

A letter-writing campaign similar to the campaign supporting the Wild and Free-Roaming Horse and Burro Act of 1971 also began. Legislators, Park Service officials, and the Secretary of the Interior received an avalanche of letters protesting the killing of the burros. Many of the letters demonstrated a lack of knowledge of the burro, the problem, and the options available. One man enclosed a clipping from a Chicago newspaper that reported on the shooting of the "friendly burros." "Some jackass brought the buffalo into the Grand Canyon," said another, "and now the burros have to leave." No buffalo are found in Grand Canyon National Park. A small herd, owned and maintained by the state of Arizona, resides north of the park in House Rock Valley.

Many of the writers accused the Park Service of "murdering the burros" to satisfy the greed of sheepraisers, apparently believing that references to sheep in the park referred to domestic sheep. The only species of sheep in the park is the native desert bighorn sheep. An Illinois woman suggested that the burros be given food containing a birth control agent. "I deny myself clothing to buy food for two hundred ducks," she stated. Park rangers know of no birth control agent that would affect only the burros and not the entire animal community that might ingest it. Too, the immensity and ruggedness of the park would present an insurmountable obstacle to such a program.

Increasing support from conservation groups surfaced in favor of the NPS plan. The Arizona Wildlife Federation passed a resolution stating that the feral burro is an "environmental Frankenstein" that

destroys habitat and threatens the continued existence of the desert bighorn sheep and other native species. The Arizona Game and Fish Commission, which has no authority over the feral burros, also passed a resolution supporting the Park Service plan. The Grand Canyon Chapter of the Sierra Club also voiced support for the eradication of the burro from Grand Canyon National Park.

National Parks & Conservation Association has long urged the elimination of feral animals from units of the National Park System where they compete with native species. The Association supported the Park Service plan to shoot the Grand Canyon burros as the most practical and humane way to accomplish the goal of preserving the habitat there for *native* species.

On March 25, 1977, Secretary of the Interior Cecil Andrus announced that the National Park Service would not implement the

eradication plan until a Draft Environmental Statement (DES) had been prepared, citing "strong public reaction" as the reason for the pigeonholing of the Park Service plan. The Humane Society of the United States considered the Andrus announcement to be a victory. Although the Park Service eradication plan was temporarily halted, however, further study of the problem resulted in even more justification for the original Park Service conclusion.

One study included in the Draft Environmental Statement expanded the work done earlier on the impact and control plots along the river. These later studies analyzed not only small mammal and plant communities but also soil characteristics such as moisture and compaction. These newer studies supported the previous research data, proving that burros are indeed changing the ecosystem of the Inner Grand Canyon.

Results of analyses of burro diet indicated that burros feed on a great variety of plant substances found within the Inner Canyon and that the diets of desert bighorn sheep and burros overlap considerably; thus they are competitors.

After the DES is made public this month, citizens and environmental groups will have an opportunity to comment on it before the Final Environmental Statement is submitted in September 1978. [See p. 15, this issue, on public participation in park planning.]

Other park managers with burro problems are watching the Grand Canyon struggle with interest. Death Valley National Park in California also has an overabundance of feral burros and, like Grand Canyon National Park, has announced its intention to shoot off the burros. [See September 1977 issue of this Magazine, pages 10-14.]

Unfortunately, because of the

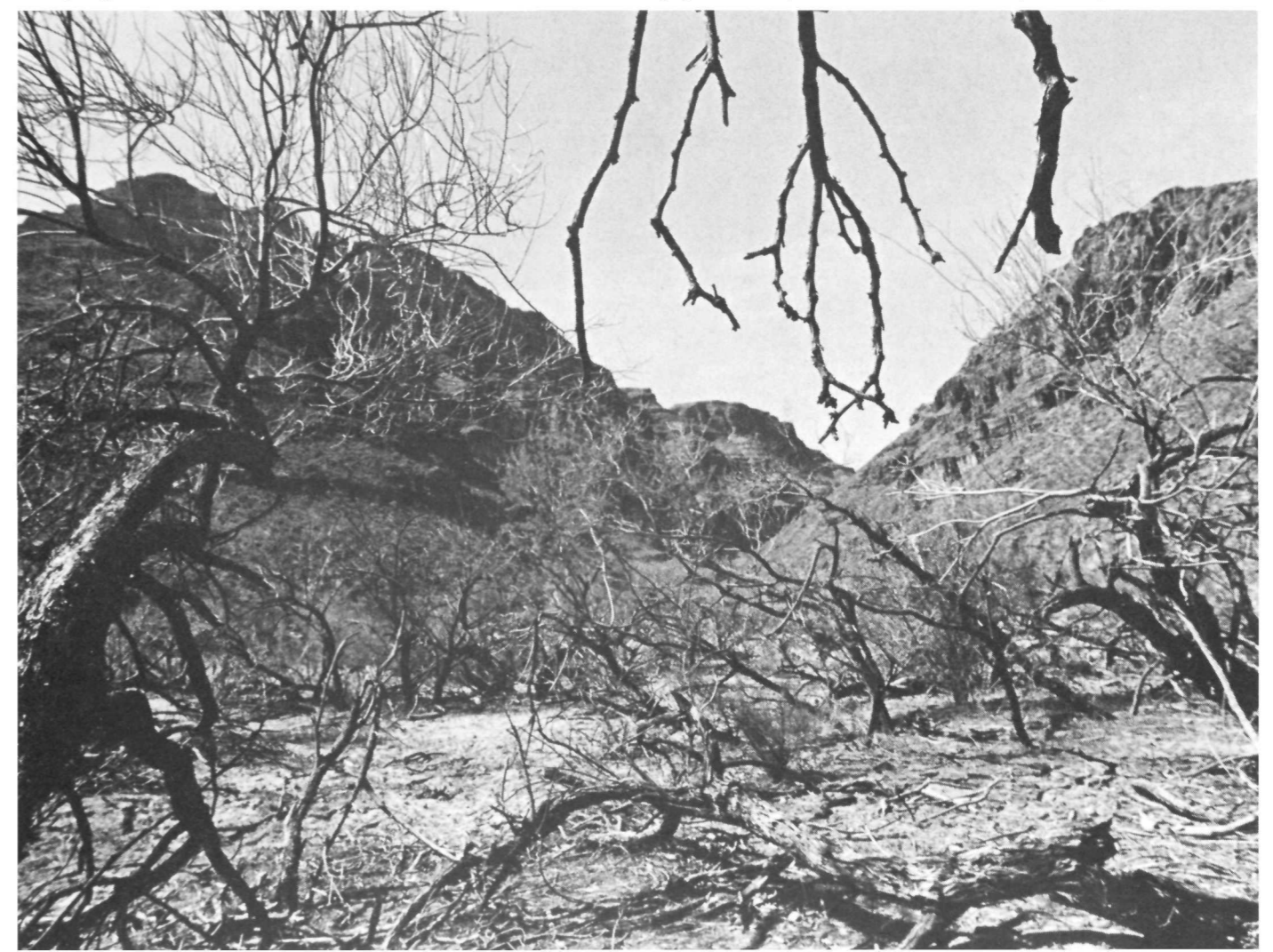
suits by the Humane Society of the United States, the American Horse Protection Association, and the Committee to Save the Grand Canyon Burros, this controversy has split the conservation community. The Wild Free-Roaming Horse and Burro Act of 1971—a hard-won victory of humane groups—outlaws the atrocities that had been committed on these animals and protects them on all public land other than national park lands. (Protecting nonnative animals in the National Park System would conflict with its mandate to protect native species.) Thus, the outcome of the Grand Canyon burro controversy *will not affect* the protection of some seven thousand wild horses and burros on public lands outside the National Park System.

STUDIES HAVE conclusively shown that the feral burro in the Grand Canyon is a destructive force to vegetation and other mam-

Detailed studies of the impact of burro visitation on habitat were conducted on two similar plots along the Colorado River. After the studies were concluded, the control area (below left), which received no use by burros, contained almost four times



more vegetation than the impact plot (below right). The impact plot received heavy burro use and showed obvious signs of trampling. The studies also revealed that the burros reduce the population of small mammals to a fourth of normal levels.



PHOTOGRAPHS BY JOHN RUNNING

mals. More than this, however, the burro is an exotic species that has no place within a national park. The time has come to decide whether the lives of three hundred animals are more important than the ecosystem of the Inner Grand Canyon and the purpose of the National Park System. Most conservationists think they are not. ■

Free-lance writer and photographer Gerry Blair has published in a number of gem, mineral, and jewelry magazines, as well as *Field and Stream*, *Fur, Fish, and Game*, and other outdoor sports magazines. Forty years in Arizona combined with his interest in wildlife photography have given Gerry a keen insight into the geography of the Arizona backcountry.



GERRY BLAIR

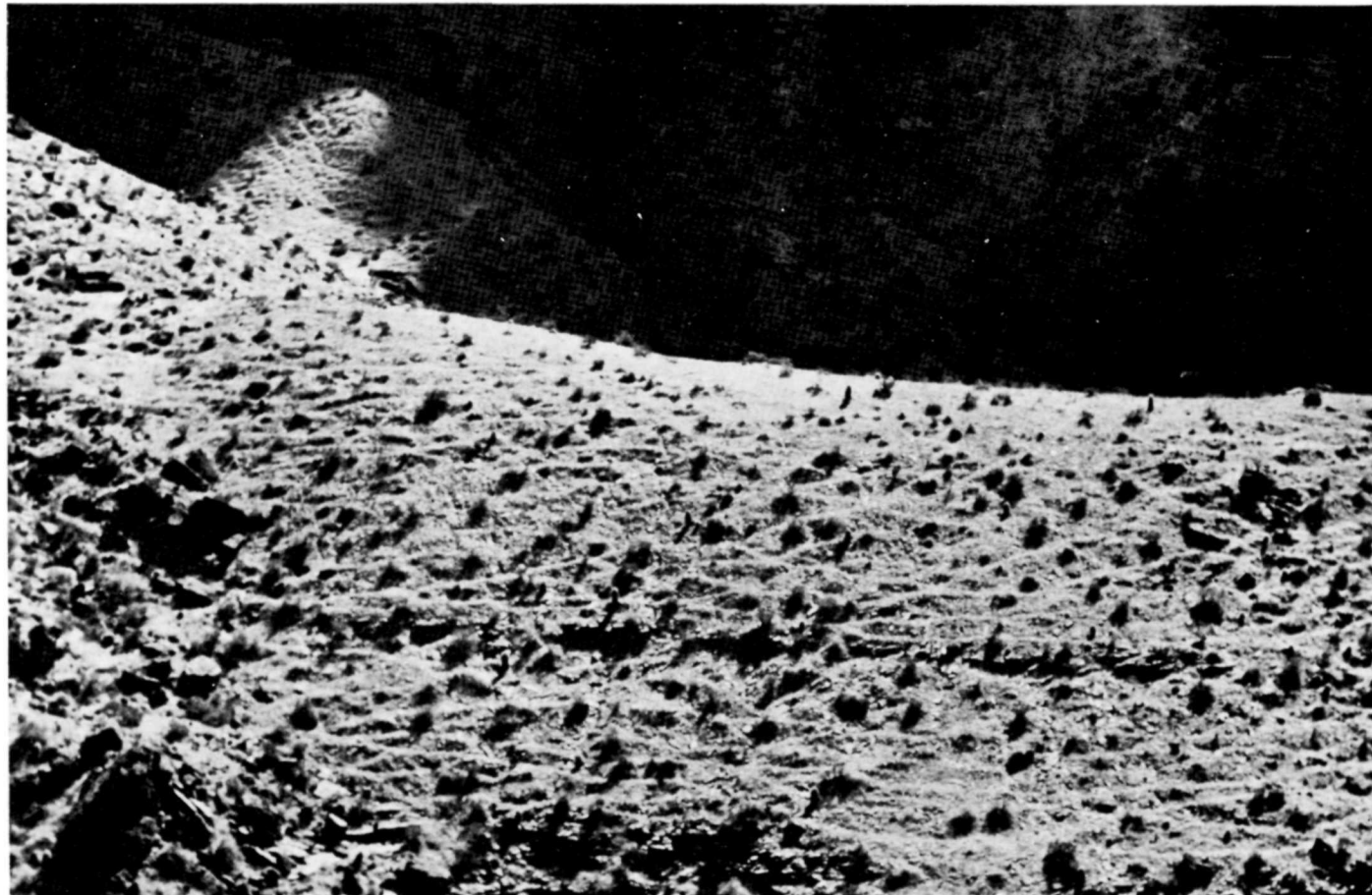
The talus slopes in Grand Canyon show a well-defined burro trail system (below). The native desert bighorn sheep (above) are being threatened by competition from the nonnative feral burro in one of their last strongholds.

Message to Members

Help Protect the Grand Canyon

NPCA members should write the Superintendent of Grand Canyon National Park to request a copy of the Draft Environmental Statement on the burro problem. Then send him your written comments and, if possible, attend hearings to support the National Park Service plan to eradicate the burros in order to preserve the natural environment of the Grand Canyon for native species of animals.

Supt. Merle E. Stitt
Grand Canyon National Park
P.O. Box 129
Grand Canyon AZ 86023



JIM REICHMAN

How to Help Plan Parks

IN 1975 the National Park Service established its Planning Process for all existing areas of the National Park System. This procedure identifies problems, defines goals, accumulates information regarding all the resources of each unit, and develops strategies to achieve goals and to assess possible alternatives.

In NPCA's judgment the Park Service Planning Process is better than that of

any other federal or state agency because it offers, at least on paper, more opportunity for public participation. It emphasizes participation by individuals and public interest groups at nearly every level of park management.

We outline here the National Park Service Planning Process so that concerned NPCA members can familiarize themselves with the steps involved and can participate in the planning.

STATEMENT FOR MANAGEMENT. The first step in the planning process for each new Park System unit is preparation of a Statement for Management (SFM); it is prepared by the park superintendent in consultation with the regional director. This document includes sections discussing the purpose of the park, the significance of park resources, influences on management (adjacent land uses), existing land classification of areas within the park, and management objectives pertaining to preservation of resources and visitor use. A guide for short-term and long-term management, the SFM defines the extent and nature of planning required to meet the park's management objectives.

Once its content has been cleared by the regional director and the director, the SFM is made available to the public for a thirty-day comment period.

During public comment periods at various stages of planning, the Park Service may seek citizens' views by holding one or more public workshops or meetings. Usually these public meetings are held in a local area near the park, and one or two meetings may be held in large population centers where many park visitors live. Rarely, the NPS holds meetings at scattered sites around the country. The NPS generally mails copies of planning documents and notices of meetings to people who have shown interest in the park. It places notices of availability of planning documents in local newspapers and in the *Federal Register*. It solicits written comments from as many people as possible.

The Statement for Management is subject to annual review and may be revised following the same procedure as originally followed, including the period for public comment.

Even with an approved SFM, no significant changes in the park environment may be undertaken by the superintendent without more advanced planning. Only such activities as rehabilitation of existing facilities, maintenance of roads and trails, and minor improvements to fulfill health, safety, and preservation requirements may be undertaken.

Comment. A generally concise statement, the SFM is perhaps the best single document from which a citizen conservationist can gain a quick overview of the Park Service's perspective on a particular unit of the National Park System. A conservationist who is actively concerned with the management practices in a unit of the Park System should be thoroughly familiar with the Statement for Management of that park.

The section in the SFM entitled "Influences on Management" is especially important for many units of the Park System, because there, for the first and sometimes the only time in the planning process, outside influences on adjacent lands beyond the boundaries of the park unit are articulated. One of NPCA's frequent complaints regarding park management is that the Park Service fails to identify and react to incompatible uses on lands adjacent to Park System units.

2 OUTLINE OF PLANNING REQUIREMENTS. Next, the superintendent prepares an Outline of Planning Requirements (OPR). This document specifies the rationale for planning, special studies, and research needed for later planning within the park and describes the various tasks in the planning process required to achieve the management objectives for the park. The completed OPR is submitted to the regional director, who reviews the OPRs for all units within the region, places them in order of priority, and submits them to headquarters in Washington as a regional planning program.

Comment. Inasmuch as the OPR deals with planning needs only and does not address design and construction requirements or other specific projects, it is not routinely made available to the public, although it would undoubtedly be available upon request. Before this step occurs, therefore, citizen conservationists should have established communication directly with the superintendent of the park with which they are concerned, so that in filing planning requirements the superintendent will be aware of public concerns and areas of potential controversy.

NPCA's principal objection to the current Park Service planning process is that at this stage, while the OPR is being prepared, the park superintendent and staff prepare a Development Package Proposal (NPS form 10-238), the principal document used by the NPS Washington office in formulating and justifying its budget requests to Congress. Preparation of the Development Package Proposal before the Assessment of Alternatives—a later step—is prepared implies that the Park Service has already chosen a particular course of action before it has considered other alternatives and sought public reaction to them. In fact, appropriation of funds by Congress for a particular development plan often results in Park Service commitment to a project that it might regard later as unnecessary or unwise.

The Development Package Proposal should not be prepared until an Assessment of Alternatives (step 5) has been reviewed and commented on by the public. Better yet, the Development Package Proposal should be prepared only after a Final General Management Plan (step 8) has been approved by the director of the Park Service.

3 **TASK DIRECTIVE.** Largely an internal NPS document, the Task Directive is an agreement between the regional director and the superintendent on the requirements of a planning task for funds, personnel, information to be gathered, documents to be produced, and the schedule for completing them. The Task Directive also identifies the opportunities for public participation, which can vary widely depending upon the extent of contemplated changes, the environmental impact, and the degree of controversy the proposals may engender.

Comment. At this stage decisions are made regarding the extent of public comment that will be solicited and the manner in which it will be obtained—whether by formal public meetings, informal workshops, or solicitation of written comments. Therefore, citizens should be involved in planning before this stage so the superintendent will be aware of the necessity to consider their views.

4 **INFORMATION BASE.** The fourth step in the planning process is also largely internal. It entails gathering information about the ecological and cultural resources, the esthetic and socioeconomic environment, the facilities of the park, the capability of those facilities to support the park's existing and projected uses, and visitor characteristics and their influence on park use. Compilation and utilization of this information are essential if the planning team and park managers are to develop a clear picture of existing park conditions; it forms the basis on which decisions are made regarding management zones, the capability of park lands to support planned uses without damage to resources, the quality of visitor experiences, or excessive expense.

Comment. The Park Service has been accused of making its management decisions without enough scientific data upon which to base a wise decision.

The Service also has been accused of ignoring scientific findings in cases when they are available. Moreover, the present planning procedure does not allow sufficient flexibility to permit delays in the process when additional scientific information is deemed necessary. In a recent reorganization of NPS headquarters, the chief scientist was elevated to the level of associate director, reporting directly to the NPS director. We hope this reorganization will be accompanied by a policy of allowing adequate time to accumulate and evaluate scientific information *before* management decisions are made.

5 **ASSESSMENT OF ALTERNATIVES.** This step evaluates management objectives to determine their validity and timeliness. It may include formulation of new objectives; the identification and quantification of the impacts of each alternative on natural and cultural resources of the park; an analysis of the socioeconomic and visitor impact of each alternative; and the effects on park management—including cost, manpower requirement, and schedules—of implementing each aspect of each alternative.

An assessment of alternatives not only is the basic purpose of planning, but also is the first phase in the planning procedure in which the Park Service emphasizes public participation. Theoretically, the assessment of alternatives will assure that all reasonable ways of achieving the management objectives for that park have been considered, as well as the beneficial and adverse consequences of implementing each alternative.

The end product of this step is the Environmental Assessment, a document made available for public review for at least thirty days, but often for sixty or ninety days.

Comment. The intensity of citizen conservation activities should be focused at this step in the NPS planning process.

Unfortunately, the Environmental Assessment generally discusses only extreme alternatives. These choices usually include a no-action alternative, an alternative in which the Park Service would designate most of the area as wilderness or a primitive zone, and an alternative at the opposite extreme that would call for overdevelopment of the

park. Many citizens are unaware that the Park Service will consider suggestions of other alternatives that combine provisions of these NPS alternatives. Although the Park Service need not thoroughly discuss every conceivable combination of alternate proposals, the Environmental Assessment should discuss in some detail at least *one* combination of strategies that provides the necessary balance between preservation of park resources and compatible use.

6 **ENVIRONMENTAL REVIEW.** The regional director in consultation with the superintendent and the planning team prepares an Environmental Review, which concisely presents the preliminary draft decision for each aspect of the plan, based partly on the public comments on the Environmental Assessment. At this point the regional director determines whether the strategies selected constitute a major federal action significantly affecting the quality of the human environment. If they do, compliance with the National Environmental Policy Act (NEPA) is required and a draft and final Environmental Statement (DES and FES) must be prepared. If the selected strategies do not require compliance with NEPA, documentation must be prepared to justify the negative declaration. The Environmental Review is routinely made public, and comments are solicited.

Comment. If citizen conservationists have failed to participate in the planning process before this time, the Park Service could assume that they are not concerned or that none of the proposals would be controversial, a decision that could significantly affect the decision on preparation of a DES. Citizen participation in the planning process *before* the decisionmaking accompanying the Environmental Review is therefore essential.

7 **DRAFT GENERAL MANAGEMENT PLAN AND DRAFT ENVIRONMENTAL STATEMENT.** A Draft General Management Plan serves as a management tool and a public statement of NPS management intentions. The GMP describes short-term and long-term strategies for resource management, visitor use, development, historic preservation, transportation circulation, and research within the

Park System unit. In most instances the GMP contains four parts, which may be prepared as separate documents before or after approval of the General Management Plan or may be presented for the first time in the general plan. The four parts are (1) the Statement for Management; (2) a Resources Management Plan, which offers the strategy for protection, preservation, and perpetuation of natural and cultural resources; (3) a Visitor Use Plan, which discusses interpretation, visitor safety and use, and a means of supplying visitor information; and finally (4) the General Development Plan, which outlines the development necessary to accomplish the Resources Management and Visitor Use plans. If NEPA compliance is required, a Draft Environmental Statement will accompany the Draft General Management Plan (DGMP).

In certain parks subsequent site-specific implementation plans may be needed for particular aspects of the general plan, such as a river use plan, a backcountry management plan, or a transportation plan. Any of these plans could be accompanied by a separate Environmental Statement if needed. The particular combination of documents prepared for various parks may vary widely, but all the elements exist for every park, whether as separate documents or as portions of the General Management Plan document itself.

After a comment period of thirty to ninety days, the NPS undertakes an extensive period of internal review and either reiterates or modifies its determination of the selected alternatives for each aspect of the park plan.

Comment. The Park Service places heavy emphasis on public participation solicited at this stage of the planning procedure. Traditionally, citizen groups have been most active at this stage in commenting on plan alternatives because they usually learn then of the Park Service's intentions. Although it is imperative that citizens be involved at this stage with very carefully considered recommendations, public participation ought to begin earlier and be a continuing process.

8 FINAL GENERAL MANAGEMENT PLAN AND FINAL ENVIRONMENTAL STATEMENT. The eighth step in the planning process results in preparation of a Final General

Management Plan and Final Environmental Statement. These final documents present the intended course of action for each aspect of the park's plan and, except in rare cases, serve as the basis for all phases of park management, new legislative initiatives, and appropriation requests for that park for approximately ten years. The FGMP is reviewed for policy by the Washington office and by the regional director. The final plans are normally made available for a public comment period of thirty days.

Comment. By this time the plan is usually backed solidly by the Park Service, Department of the Interior, and the Administration. Nonetheless, decisions contained in the final GMP can be modified by the director of the National Park Service when enough pressure is brought to bear. This pressure can take the form of protests from conservationists or from landowners in the adjacent area, for example; but nearly always it involves members of Congress, either from the Interior committees, exercising their jurisdictional authority, or from an individual member of Congress in whose district a park may be located.

CITIZEN PARTICIPATION. Although the National Park Service planning procedure has some inadequacies, we urge NPCA members—whether your concern is for one park, for several parks within a given region, or for the entire National Park System—to become actively involved in the planning process. We cannot overemphasize the importance of becoming involved from the very beginning—before the Statement for Management is prepared for a new Park System unit or at the earliest opportunity if the park is already established and has a SFM—so you can exert influence early in the process and so NPS planners will be aware of public concerns and areas of potential controversy at every stage of planning. You should pay especial attention to the Environmental Assessment (a large number of responses is effective then) and to the Draft General Management Plan and Environmental Statement, at which time your recommendations should be detailed and well refined.

The accompanying table lists the

9 DEVELOPMENT CONCEPT PLAN. After the General Management Plan is completed, the planning process can be expanded further if the GMP has called for major development. This expansion of the process takes the form of a Development Concept Plan (DCP), which may also be accompanied by draft and final Environment Statements if the scope and magnitude of the development are sufficient to require NEPA compliance. For each specific project or development site, a DCP provides greater detail, such as the exact size and location of the facilities, their design, use capacity and costs, along with a more precise determination of impacts on resources resulting from the development.

Comment. Although whenever NEPA compliance is required, ample opportunity for public participation is provided, by the time the Park Service has arrived at the DCP stage in its planning, it is extremely difficult, although not impossible, to head off undesirable projects. Although changes may be made in design or perhaps in the size of facilities, their existence and location are usually well established by this time.

planning documents that the National Park Service intends to prepare and release during 1978. If you are not already on NPCA's Contact List and have an interest in or knowledge about a particular Park System unit, let us know about your concern as soon as possible so that you can help us to ensure that the wisest planning decisions are made for those units of the National Park System. Write:

T. Destry Jarvis
Administrative Assistant, Parks
& Conservation
National Parks & Conservation
Association
1701 Eighteenth Street, NW
Washington, D.C. 20009

Also write the superintendent of the park with which you are concerned and ask to be sent copies of the various planning documents as they are completed and to be informed about public comment periods and public hearings.

Please pull out of the magazine these four pages and save them for reference later, when the plan with which you are concerned is released. ■

**NATIONAL PARK SERVICE PLANS
TO BE RELEASED FOR PUBLIC COMMENT IN 1978**

<i>National Park System Unit</i>	<i>Planning Document</i>	<i>National Park System Unit</i>	<i>Planning Document</i>
Acadia National Park , Route 1, Box 1, Bar Harbor, ME 04609 (207) 288-3338, -9	FGMP	Gateway National Recreation Area , Floyd Bennett Field, Bldg. 69, Brooklyn, NY 11234 (212) 252-9150	DGMP
Arches National Park , 446 South Main Street, Moab, UT 84532 (801) 259-7165	FWP	Glen Canyon National Recreation Area Box 1507, Page, AZ 86040 (602) 645-2471	FGMP
Assateague Island National Seashore , Route 2, Box 294, Berlin, MD 21811 (301) 641-1441	EA	Golden Gate National Recreation Area Fort Mason, San Francisco, CA 94123 (415) 556-2920	DGMP
Big Cypress National Preserve , P.O. Box 1247, Naples, FL 33940 (813) 262-1066	EA	Grant-Kohrs Ranch National Historic Site P.O. Box 799, Deer Lodge, MT 59722 (406) 846-2070	FGMP
Bighorn Canyon National Recreation Area P.O. Box 458, Fort Smith, MT 59035 (406) 666-2412	DGMP	Great Smoky Mountains National Park Gatlinburg, TN 37738 (615) 436-5615	DGMP
Big Thicket National Preserve , P.O. Box 7408, Beaumont, TX 77706 (713) 838-0271, xt. 373	DGMP	Indiana Dunes National Lakeshore , R.R. 2, Box 139-A, Chesterton, IN 46304 (219) 386-3625, -6	EA
Biscayne National Monument , P.O. Box 1369, Homestead, FL 33030 (305) 247-2044	FGMP	John D. Rockefeller, Jr., Memorial Parkway c/o Grand Teton National Park, P.O. Box 67, Moose, WY 83012 (307) 733-2880	FGMP
Boston National Historical Park , Charlestown Navy Yard, Boston, MA 02129 (617) 242-3250	EA	Lake Mead National Recreation Area 601 Nevada Highway, Boulder City, NV 89005 (702) 293-4041	EA
Buffalo National River , P.O. Box 1173, Harrison, AR 72601 (501) 741-5443	FWP	Lassen Volcanic National Park , Mineral, CA 96063 (916) 595-4444, -5	FGMP
Canaveral National Seashore , P.O. Box 2583, Titusville, FL 32780 (305) 867-4675	DGMP	Obed Wild and Scenic River , P.O. Box 477, Oneida, TN 37841 (615) 569-6389	EA
Canyonlands National Park , 446 South Main Street, Moab, UT 84532 (801) 259-7164	FWP	Ozark National Scenic Riverways P.O. Box 490, Van Buren, MO 63965 (314) 323-4236, -7, -8	DGMP
Cape Hatteras National Seashore , Route 1, Box 675, Manteo, NC 27954 (919) 473-2117	DCPP	Pictured Rocks National Lakeshore , P.O. Box 40, Munising, MI 49862 (906) 387-2607	EA
Cape Lookout National Seashore , P.O. Box 690, Beaufort, NC 28516 (919) 728-2121	EA	Redwood National Park , Drawer N, Crescent City, CA 95531 (707) 464-6101	EA
Capitol Reef National Park , Torrey, UT 84775 (801) 425-3871	FWP	Shadow Mountain National Recreation Area P.O. Box 100, Grand Lake, CO 80447 (303) 627-3471	FGMP
Channel Islands National Monument 1699 Anchors Way Drive, Ventura, CA 93003 (805) 644-8157	EA	Shenandoah National Park , Route 4, Box 292, Luray, VA 22835 (703) 999-2242	EA
Coulee Dam National Recreation Area Box 37, Coulee Dam, WA 99116 (509) 633-1360, xt. 441	EA	Sleeping Bear Dunes National Lakeshore 400½ Main Street, Frankfort, MI 49635 (616) 352-9611	EA
Cumberland Island National Seashore Box 806, St. Marys, GA 31558 (912) 882-4335, -6	FGMP	Valley Forge National Historical Park , Valley Forge, PA 19481 (215) 783-7700	EA
Cuyahoga Valley National Recreation Area P.O. Box 158, Peninsula, OH 44264 (216) 653-9036	FGMP	Voyageurs National Park , P.O. Drawer 50, International Falls, MN 56649 (218) 283-4492	EA
Delaware Water Gap National Recreation Area , Bushkill, PA 18324 (717) 588-6637	FGMP	Yosemite National Park , P.O. Box 577, Yosemite National Park, CA 95389 (209) 372-4461	DGMP
Fire Island National Seashore , 120 Laurel Street, Patchogue, NY 11772 (516) 289-4810	FGMP		
Fossil Butte National Monument , P.O. Box 527, Kemmerer, WY 83101 (307) 877-3450	FGMP		

Key to Abbreviations: EA—Environmental Assessment; DCPP—Draft Coastal Protection Plan; DGMP—Draft General Management Plan; FGMP—Final General Management Plan; FWP—Final Wilderness Plan

A proliferation of environmental disputes on both sides of the U.S.—Canadian border challenges diplomats

by JOHN E. CARROLL

When Pollution Knows No Boundaries

THE WORLD'S longest friendly border is far from being an exception to the rule that pollution respects no boundaries. Each day winds and streams carry tons of environmental poisons across the so famously unguarded border between the United States and Canada. In fact, in the 1970s people in both nations have been alarmed by a proliferation of environmental disputes along the border. For instance, a large power project planned in Saskatchewan has sparked a heated battle over pollution and water rights in Montana. Drainage from the Garrison Diversion Project in North Dakota would seriously endanger Canadian fisheries. Even parks and wildernesses are threatened: a proposed mine in British Columbia would pollute waters in Glacier National Park, Montana; and a power plant in Ontario would reduce air quality in an international sanctuary that includes Minnesota's Boundary Waters Canoe Area. U.S. oil tanker traffic poses dangers from oil spills for wild Canadian areas along both coasts.

Meanwhile, international negotiators often must resolve a complex tangle of conflicts involving not only the laws of two nations and of the states and provinces but also powerful economic interests and the rights of sovereign Indian tribes and private citizens.

Historically, the United States has exerted a greater impact on the resources of Canada than Canada has exerted on this nation. Today, however, as Canadian border regions are being more extensively

developed, an increasing number of U.S. areas are being adversely affected. This trend is likely to continue. Even as Canada comes into her own in terms of increased economic opportunities, the frontier ethic persists somewhat because she still holds vast wilderness areas. Accordingly, developers often are subject to less restrictive pollution control laws than those in the United States.

More important than the ever-popular attempts of some people to keep score on which nation has polluted or will pollute the other more is the fact that we will find ourselves in greater difficulties than the present ones if we do not foster a better understanding of the nature of the decisionmaking process and of the circumstances under which these problems arise. (This article and accompanying map cover only some of the problems.)

MOST of the international environmental incidents fall into one of four categories: water apportionment, air quality, water quality, and marine pollution. Water apportionment is the environmental issue of longest standing between the United States and Canada. Debate over numerous water rights problems that arose along the border in the late nineteenth century resulted in the historic Boundary Waters Treaty of 1909, which created the institution known as the International Joint Commission (IJC).

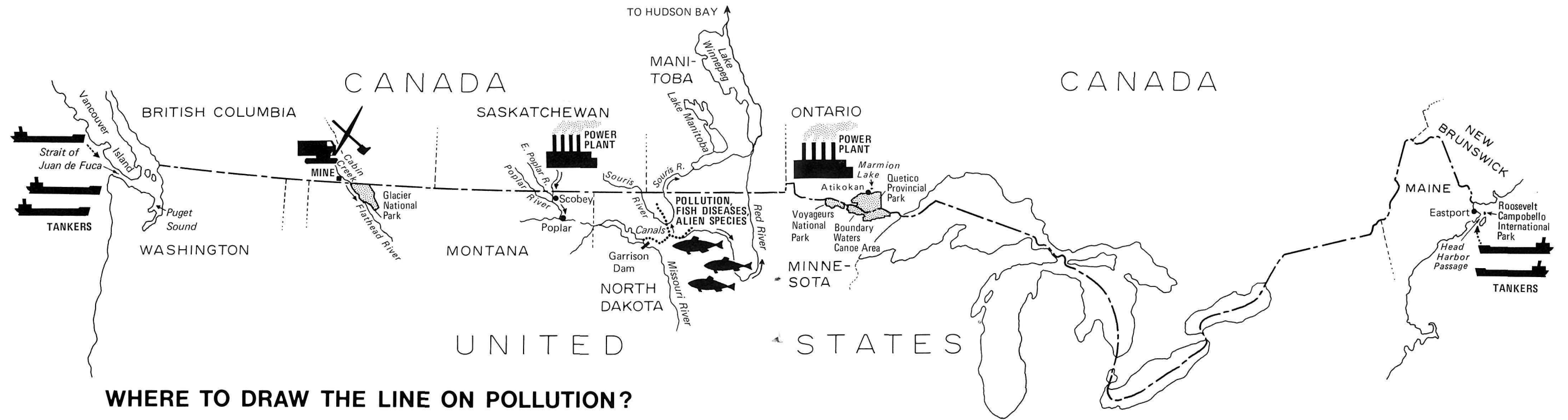
This tribunal consists of six members—three appointed by the Privy Council of Canada and three

by the U.S. President—and handles issues referred to it by the two governments. A 1975 report of the commission noted that "the Boundary Waters Treaty is unique in the history of the United States and Canada and in the relations between two independent states. . . . The operating concept assumes that solutions to problems in which the two countries have different—even opposing—interests should be sought, not by the usual bilateral adversary negotiations, but in the joint deliberations of a permanent tribunal composed equally of Canadians and Americans." For instance, the IJC now functions as an international ombudsman for monitoring the cleanup and protection of the Great Lakes. But the treaty has its drawbacks.

Water apportionment has continued to be a vexing problem because the economic stakes of divvying up water are high and the political, social, and ecological variables are many. A controversy over a prairie stream known as the Poplar River is a case in point.

The Poplar rises from runoff in the hills of southern Saskatchewan and flows south across the border into Montana. Historically, the river has been little used except for irrigation and drinking water. Now, however, the spiraling costs of oil and gas and dwindling prospects for new hydroelectric power in Saskatchewan have made the low-grade but vast lignite coal deposits near the Poplar a practical source of electrical generation.

The Saskatchewan Power Corporation, a crown corporation



owned by the province, quickly has realized the economic potential of converting the coal into electricity near the source of supply. Thus, it wants to utilize the cooling power of Poplar waters to run an energy complex alongside the East Branch of this prairie stream just across the U.S. border. At a site three to four miles from the boundary and not many more miles from Scobey, Montana, the Canadian corporation already has nearly completed construction of the first of four possible 300 megawatt coal-fired units for generating electricity. It has purchased huge strip mining machinery and has built a dam to store the needed water. If plans for full development of the coal resource are implemented, more power plants, two coal gasification plants, and ammonia or urea plants also could be constructed at another nearby site.

Given the low-flow characteristics of prairie streams, and also the great unevenness of flow over time, it is necessary for Sask Power to be guaranteed well over the traditional 50 percent of the normal flow of the river that might be expected in a normal negotiated compromise between the two governments. As a matter of fact, Sask Power wants a 70/30 split of the

water of the East Branch. In return, the power corporation argues that the United States could get a 50 percent share of the whole Poplar system by receiving more water from the other two branches and—during low-flow periods—by receiving more from the dam.

Superficially, this offer may seem a reasonable compromise. But in consideration of the concerns on the Montana side of the border, it is not. The community of Scobey worries about its future municipal water supplies from the East Branch and about possible groundwater contamination affecting its ranches and livestock industry. Indians on the Fort Peck Reservation claim they have prior rights to the water for domestic and stock uses and for potential economic development. Moreover, the Indians claim that these tribal treaty rights supersede the rights of either Canada or the United States.

Meanwhile, the state of Montana feels threatened by large-scale Canadian resource development at both ends of the state. The other project in question—the proposed Cabin Creek coal mine in British Columbia—is at a standstill because the coal company has been unable to find a market for the metallurgical coal. The mine would

pollute the Flathead River, which forms the western boundary of Glacier National Park. (See the November 1975 issue of this Magazine.) In the case of the Poplar River, Montana sees its dreams of future economic development being impaired by Canadian use of what it claims to be Montana water.

The matter of Poplar water apportionment has been referred by both governments to the IJC, whose recommendations are expected shortly at this writing. A principal point to be made here, however, is that a substantial investment already has been made, even though Sask Power does not yet know whether it will be permitted a sufficient apportionment of water to operate the plant. In fact, the corporation and provincial officials did not consult with the federal government in Ottawa about the project until plans were well advanced. More recently, the IJC criticized Sask Power for failing to cooperate with the commission's water quality board. The way the provinces in Canada function with much greater autonomy than do the states in this nation often complicates negotiations.

In this case, Sask Power apparently believes not only that the

province is obliged to protect its interests but also that because Saskatchewan owns the coal and water in question, it need not be concerned about what either Ottawa or Washington thinks. It is a typical case of a province working on a different wavelength from its national government. Yet only the federal government of Canada can negotiate with the United States.

The Poplar issue also illustrates the often cumbersome nature of negotiations between the two nations. For instance, reportedly it took Montana officials and congressmen months to get the matter referred to the IJC. (Both the State Department and the Canadian government must agree before the IJC can consider an issue.)

Even though the governments drew up an IJC reference in 1975, the terms of the reference covered only water *apportionment*. One drawback of the way the Boundary Waters Treaty is used is that problems tend to be considered in such a piecemeal fashion. In July 1976 the Canadians finally agreed to allow IJC consideration of the water *quality* aspect of the Poplar River issue, necessitating a second reference. It had taken the governments more than a year to agree on

the wording of this reference. At recent IJC public hearings on the water quality issue, Montana called for a moratorium on the project, noting that the subject of air quality is an issue of great concern to the state.

If constructed in this nation, the Poplar project could violate the "significant deterioration" provision of the U.S. Clean Air Act Amendments. This provision is aimed at protecting areas of the nation that are already cleaner than required by national standards. It sets a limit on the allowable increase of certain pollutants.

Canada, rightfully, does not wish to adhere to or be thought to be adhering to the domestic environmental laws of the United States; but there is a clear need for some degree of uniformity in environmental regulations, at least in border regions. This uniformity cannot be accomplished, of course, without full assent from the Canadian provinces. (It would not require state agreement.) Thus the differences in environmental laws or guidelines and in the provincial-federal and state-federal relationships from one side of the border to the other play no small role in exacerbating environmental controversies between the two nations.

THE TYPE of conflict that can arise from the present disparity in the two governmental systems is exemplified by another air quality controversy—this one centered in Minnesota and western Ontario—that conservationists want the IJC to consider. In Canada this controversy pits the crown corporation of Ontario Hydro against would-be protectors of Quetico Provincial Park, an internationally known area of national park stature that is one of only three parks in the province designated as primitive wilderness areas. The Hydro utility company commands much clout in the province, whereas park interests do not. Unlike U.S. law, Ontario law gives air quality in special areas like Quetico no more protection than it grants to industrial areas.

The lake country just north of the Quetico-Superior wilderness is wildly beautiful but economically depressed. Here one finds the small town of Atikokan, a community that believes it soon will face the trauma of losing virtually its only employment base—two great iron ore mines. So Atikokan residents naturally are desperate for the jobs that Ontario Hydro is dangling before them in the form of a huge coal-fired electric generating plant

near the town. (Unfortunately, most of the available jobs would be short-term construction jobs rather than permanent positions.) The Atikokan Station is to be constructed only 11 to 12 miles from Quetico park. Sources in Canada say a federal study shows that Quetico would be substantially affected by the emissions.

This plant is to be 800 megawatts in size; yet, like the Poplar plant, as planned it will feature no scrubbers to control sulphur dioxide emissions—estimated at from about 125 to more than 225 tons per day. U.S. law requires use of the best available control technology, but scrubbers are not required in Canada. Although Quetico park may receive the worst of the pollution, the proposed plant would be only about 40 miles from the U.S. border at the nationally famous Boundary Waters Canoe Area in Minnesota's Superior National Forest. The Atikokan Generating Station sometimes would exceed the sulphur dioxide increment levels set under the U.S. "significant deterioration" provision, which provides special protection for national parks and wildernesses such as the BWCA. More importantly, scientists are concerned that insufficient study has been addressed to the possibility that acid rain resulting from the sulphur dioxide emissions and heavy metal pollutants from the plant could threaten the health of the forest vegetation and aquatic ecosystems of the area. The lakes and forests of this region have long attracted a dedicated constituency. As a result of conservationists' efforts, in 1909 the United States and Ontario set aside the Superior forest and Quetico for protection, thus creating an international sanctuary.

The current threat of scrubberless stacks spewing great quantities of pollution into the atmosphere north of this region is seen by wilderness lovers in both nations as another in a long series of threats to the Quetico-Superior country. NPCA has been a leader in an international drive for an IJC investigation of the project coupled

with either a moratorium on construction or an agreement by Ontario Hydro to install the best scrubbers and to cooperate in a monitoring program. At a January meeting that was part of ongoing international negotiations on this issue, however, Canadian officials maintained that available studies of the project do not justify a State Department request for a 50 percent reduction in emissions.

Unless conservationists are successful in obtaining IJC jurisdiction over this project, the federal government in Ottawa will not have much of a handle over the matter, despite its reported concern, and U.S. involvement—if any—likely will be minimal. The provincial government certainly has shown no sign of supporting location of the power plant at a site any less convenient to Atikokan voters or of persuading Ontario Hydro to install scrubbers.

Meanwhile, there is no formal agreement between the United States and Canada on air pollution to facilitate more effective handling of issues like Atikokan. Although the two nations have referred air quality issues to the IJC, the Boundary Waters Treaty does not directly deal with air pollution. Conservationists nevertheless hope to obtain a thorough IJC investigation of this plant's design and location before any construction is well underway and thus head off a situation similar to those that now confront negotiators in the Poplar case and in the case of the Garrison Diversion unit in North Dakota.

THE GARRISON CASE provides an example of decisive IJC action on a long-standing transboundary water quality issue. Begun in 1967, Garrison is a complex scheme by the U.S. Bureau of Reclamation for diverting water from behind the Garrison Dam on the Missouri River through 3,000 miles of canals, drains, channelized rivers, and reservoirs. The project would flood thousands of acres of farmland, ruin prairie wetlands and wildlife refuges in North Dakota, and cost more than half a

billion dollars. Yet the major project justification is irrigation of 250,000 acres of *already productive* farmland in the state.

On September 19, 1977, the IJC issued its long-awaited and historic pronouncement on the international aspects of this controversy, advising, in effect, that the project would violate the provisions of the Boundary Waters Treaty of 1909 because it would cause "significant injury to health and property in Canada" and recommending severe curtailment and modification of much of the project. Specifically, the IJC said that waters heavily tinted with salts and chemicals would drain from the project area into the Souris River flowing into Canada. The commission said the resulting impacts on Manitoba municipal and agricultural water supplies would be unacceptable. Furthermore, the IJC noted that the project's McCluskey Canal could transfer alien species of fish, parasites, and fish diseases from the Missouri-Mississippi drainage into the Hudson Bay drainage. This transfer would threaten the major Canadian commercial fishery of lakes Manitoba and Winnipeg.

The IJC recommended that those portions of the project that could affect waters flowing into Canada not be built at this time pending agreement between the nations on proven methods to remove the risks of biota transfer. Although the IJC pronouncements are recommendations and are not binding on the governments, past experience indicates that the nations will probably give them favorable consideration, even though it means significantly curbing a multimillion dollar project long in planning and partly constructed.

Meanwhile, a court agreement had stopped virtually all construction pending completion of a supplemental final environmental impact statement on the project and submission of an Administration legislative proposal to Congress. (Garrison was on President Carter's famous "hit list" of water projects in 1977.) At press time the Interior

Department had just released the draft EIS. Based on that document, an ad hoc departmental working group recommended to Interior Secretary Andrus that the Garrison project be reduced to provide irrigation for 96,000 acres. A significant recommendation was to drop plans to construct the Velva Canal and thus eliminate the link between the Missouri-Mississippi drainage and the Souris. However, the danger of biota transfer via the Red River would remain.

ANOTHER EXAMPLE OF U.S. actions affecting the Canadian environment is the danger of marine pollution of natural areas of outstanding beauty along both coasts from massive oil spills.

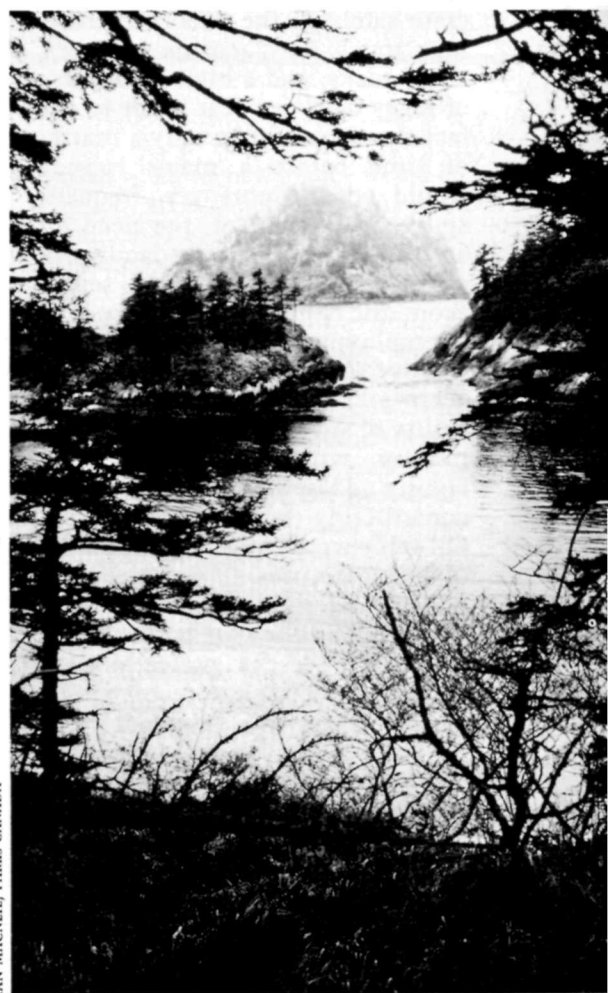
In each case the spills would pose both ecological and economic dangers. They would threaten wildlife and shoreline communities as well as commercial fisheries (salmon on the West Coast and lobster on the East Coast) and areas with recreational potential. Furthermore, off both coasts there is a question of sovereignty over waters that the tankers would ply.

Completion of the Alaska pipeline from Prudhoe Bay to Valdez and the necessity of carrying this oil by tanker to U.S. West Coast ports are signals of inevitable threats to the British Columbia coastal zone. If the oil were to transit Canadian waters or territory, Canada would have a more formal negotiating foothold.

Spurred by some well-publicized tragic collisions between ferries and freighters, the Canada Ministry of Transport has launched a sophisticated Vessel Traffic Management (VTM) scheme for controlling navigation in the waters off the British Columbia coast. Not unlike the concept of air traffic control at major airports, the system has been voluntary to date and has achieved more than a 90 percent compliance rate. The U.S. Coast Guard presently operates a mandatory radar control system at Seattle and other ports. Canada now desires to make the VTM system mandatory and, with U.S. ap-

proval, have it extended to both international and U.S. territorial waters. Thus, VTM would control the movement of oil tankers carrying Alaskan oil through the Strait of Juan de Fuca and into Washington state ports. The United States seems generally to support the principle. Although observers had expected the system to go into operation this year, negotiations have stalled over the Canadian claim to a right of veto over U.S. tanker traffic. In addition to this international issue, in coming months Canada will decide where to locate a new West Coast oil port to serve her domestic needs.

Similarly, the tanker issue on the Atlantic Coast is far from resolution. The Pittston Oil Company of New York now has many of the permits it needs to construct an oil superport on the easternmost point of Maine across Passamaquoddy Bay from New Brunswick. A recent Canadian government study, however, has determined that, of some twenty possible locations for an oil superport on the northeast coast of North America, Eastport ranks as the worst from the point of view of environmental hazard. The U.S. Coast Guard claims that



IAN MACNEIL, PARKS CANADA

Transboundary environmental problems threaten wild areas in both the United States and Canada. For instance, U.S. tanker traffic could cause oil spills along the British Columbia coast affecting areas such as the Queen Charlotte Islands (above), which have national park potential. Meanwhile, a coal-fired power plant under construction in Ontario could pollute the Boundary Waters Canoe Area, a national wilderness area in Minnesota (below), with acid rain and mercury.

TOBY OLD



the tankers should be able to operate safely in the area. Nevertheless, rough seas, narrow passages, sharp rocks, and a high percentage of foggy days per year point to the fact that it would be only a matter of time before a major tragedy would occur; moreover, frequent spills are likely. Yet, the need for an oil port and refining facility in northern New England, severe economic depression and very high unemployment in Washington County, Maine, the presence of a deepwater harbor, and the availability of sufficient land and a community willing to accept the facility add up to great pressure for constructing the port on this site. Oil spills would affect the resources of both countries.

A big underlying issue here, however, may be one that both governments at present prefer not to elevate: the basic sovereignty issue of who owns the waters of Head Harbor Passage through which the oil tankers must operate. Canada claims these waters as her territorial waters, whereas the United States has said they are international waters. Although the Canadian claim is now acknowledged by this nation, the United States claims the right of "innocent passage" for her tankers and believes denial of this claim would be discriminatory. Canada believes such passage would not be innocent.

Of course, this question would not have to be decided at present were it not for pressure for the oil port. One knowledgeable diplomat has suggested to me that this problem may be the very first U.S.-Canada environmental issue to go to the World Court at the Hague for adjudication, not on environmental grounds but on sovereignty grounds.

TRADITIONALLY, involvement in international environmental issues was strictly limited to the formal channels of government. Today, however, we are witnessing an increasing interest on the part of private citizens in trying to review governmental workings that once received little publicity and to assert their views. Sometimes to the chagrin of their gov-

ernments, private organizations often give their first loyalty to the health of the environment rather than to the political or economic positions of their nations. Some of the involvement of environmentalists in both countries on various issues has come under the umbrella of the loosely organized Canada-U.S. Environment Council (CUSEC), which is chaired by the Canadian Nature Federation in Canada and the Wilderness Society in the United States.

But how about the professional negotiators and other official personnel on the scene? On the Canadian side, the professionals are greater in number and more diversified in their backgrounds than their U.S. counterparts.

The Canada Department of External Affairs—the counterpart of the U.S. State Department—employs a diplomatic complement of five on U.S. transboundary environmental issues, whereas the U.S. State Department Office of Canadian Affairs has only one professional assigned to such issues. This disparity in numbers is pervasive. In the federal bureaucracies, in the embassies and consulates, and in the IJC staff offices in Ottawa and Washington, Canada devotes more personnel and thus more investigative time and data collection to these issues. Part of this discrepancy can be traced to the geographical consideration that a large percentage of the developed and populated regions of Canada are near the United States, making this nation of greater concern to Canada than vice versa.

With so much more of Canadian border territory "coming of age," however, it is incumbent upon the United States to devote more resources to foreseeing transboundary environmental problems and alleviating potential problems *before* they arise.

Along those lines, IJC commissioners have started some animated discussion in diplomatic circles by contending that there is a need for a "broader and more systematic basis" for notice and consultation between the two countries before projects are planned or undertaken.

Exercising foresight could save great amounts of money now wasted and could avoid many headaches for the entrepreneurs and communities in question. It certainly would avoid unnecessary environmental damage in both nations. To institutionalize a process to accomplish such an end, a new environmental agreement of some considerable dimension is called for. A treaty providing for forewarning and early attention to actions of international environmental impact admittedly would be politically difficult to achieve—particularly because of the difference between federal-state and federal-provincial relationships.

If we do not find better diplomatic mechanisms, however, citizens of both Canada and the United States will lose more valuable natural resources, and the unmatched record of cooperation between the two friendly nations could be tarnished.

NPCA Trustee Dr. John E. Carroll - Assistant Professor and Chairman of the Environmental Conservation Program at the University of New Hampshire's Institute of Natural & Environmental Resources. This paper was adapted from a talk presented to the Association for Canadian Studies in the United States on October 8, 1977.

U.S.-Canada Environmental Relations Conference

The University of New Hampshire is sponsoring, with government support, a conference during April 10-12, 1978, to bring diplomats, businessmen, academics, students, and interested members of the general public together to discuss Canada-U.S. environmental relations. For more information, write or phone Dr. John E. Carroll, Institute of Natural & Environmental Resources, University of New Hampshire, Durham, New Hampshire 03824 (603-862-1020).

NPCA at work

NATURAL LANDMARKS PROGRAM

Future of Threatened Natural Landmarks Uncertain

As part of his responsibility to monitor areas that have potential for inclusion in the National Park System, a 1976 law directed the Secretary of Interior to forward to Congress each year a list of threatened sites from the National Registry of Natural Landmarks. The Secretary has submitted the first list, including forty-one areas in twenty-two states.

Consideration of the list will focus attention on a little-publicized function of the Park Service as well as part of President Carter's new National Heritage Program. That is, in addition to administering the units included in the National Park System, the agency has tried to foster preservation of other nationally significant areas through the Natural Landmarks program. Publicly or privately owned, these areas range from famous landmarks such as Mount Katahdin, Maine, and Point Lobos, California, to lesser known sites including many areas identified as threatened in the new list.

Under the program the Park Service has attempted to identify a varied selection of outstanding natural areas that will illustrate the diversity of the country's natural environment.

NPS has used a list of ecological and geological themes to provide a logical scientific basis for choosing natural landmarks.

For instance, Sharktooth Hill in California, long respected by vertebrate paleontologists as the site of one of the most important marine fossil deposits in the world, illustrates the Miocene Epoch. Amateur rock hounds currently are assaulting this landmark with pick, shovel, and even bulldozer.

In addition to the 458 current natural landmarks, the Park Service has contracted thorough and systematic studies of all thirty-three of the nation's physiographic provinces to identify potential landmarks. Based on these studies—most of which are either completed or underway—the agency estimates that at least 2,000 more areas qualify as landmarks.

The Carter Administration recently announced that under the National Heritage Trust Program, the Bureau of Outdoor Recreation has been renamed the Heritage Conservation and Recreation Service and will handle the Natural Landmarks program as well as some of the historic preservation functions of the Park Service. At press time it was

unclear what the new agency would do with the extensive landmark data bank accumulated by the Park Service. Furthermore, Congress had shown no signs of seriously considering the list of areas in need of protection.

At present the government has no authority to protect natural landmarks but can only hope that the recognition of appearing on the registry will encourage landowners and communities to protect them. As shown by the following list, many important areas have not been sufficiently protected.

This list includes all forty-one natural landmarks officially submitted to Congress under PL 94-458 and three additional areas that subsequently were identified as threatened. The latter areas are those listed here for Ohio and South Dakota.

You Can Help: More detailed information on each area would be helpful in case congressional subcommittees review the list soon. Please send any additional information on the natural attributes of the areas or threats to them to Destry Jarvis, National Parks and Conservation Association, 1701 18th Street, N.W., Washington, D.C. 20009.

Natural Landmark

Significance

Threats

ALABAMA

Mobile-Tensaw River Bottomlands

Vast, diverse wetland and important wildlife habitat; rare species including officially endangered species

Industrial pollution, logging, dredging, siltation; impending highway construction, housing development, and industrial expansion

ARIZONA

Hualapai Valley Joshua Trees

One of the best stands of Joshua trees in the Mohave Desert

Placer mining claims on some federally administered sections have recently been improved and could be mined in the future. Potential of development on some private sections

CALIFORNIA

Sharktooth Hill


One of the world's most abundant, diverse, and well-preserved Miocene marine vertebrate fossil localities

Uncontrolled fossil collecting, causing extensive damage from the use of shovels and heavy machinery

American River Bluffs and Phoenix Park Vernal Pools

Contains examples of two California plant community types almost vanished in the state, in an essentially presettlement condition

The American River Bluff site is in private ownership and is being rapidly developed; the rest is used extensively by off-road vehicles. Part of the Vernal Pools site is used as a baseball field and parking area, the rest almost has been destroyed by motorcyclists.

Continued 

Natural Landmark	Significance	Threats
CALIFORNIA (CONTINUED)		
Black Chasm Cave	Outstanding speleothem variety and some of the best helectite formations in the West	Potential vandalism, real estate development, or commercial exploitation
Cinder Cone Natural Area	A large area with excellent examples of cinder cones and lava flows	Potential expansion of presently localized cinder mining activity
Consumnes River Riparian Woodlands	Remnant biotic community type almost vanished in an essentially pre-settlement condition	Existing pressure for some private landowners to harvest this timber for pulpwood
COLORADO		
Garden Park Fossil Area	Many species of fossil dinosaurs and other forms	Recent mining claims could result in uranium mining unless site is withdrawn from mineral entry
Morrison Fossil Area	Major dinosaur fossil discoveries here, including the first large dinosaur bones found in North America	Proposed state highway and interchange may be constructed dangerously close to this area; present suburban development planning will allow potential impact on southern tract.
Slumgullion Earthflow	Outstanding example of an earthflow	Proposed overhead transmission line will cross the site, thereby diminishing scenic values
FLORIDA		
Emeralda Marsh	Representative of virtually undisturbed inland freshwater riverine sawgrass marsh, outstanding wildlife refuge including officially listed threatened and endangered species	Increased airboat traffic may be negatively affecting wildlife species; potential for residential development and agricultural reclamation; restricted waterflow in the marsh caused by a ditch and dike
Paynes Prairie	Largest, most diverse freshwater marsh in northern Florida; good examples of karst topography; outstanding wildlife sanctuary; habitat for endangered species	Urban development pressures
Rainbow Springs	Second among Florida's artesian springs in rate of discharge and first in rank as a single-outlet spring	A planned 5,000-home village could adversely affect water volume and quality
San Felasco Hammock	Largest example of north Florida's climax forest ecosystem—the upland mesic hammock; rare species; outstanding karst phenomena	Acidic water pollution is altering the character of one of the component communities
GEORGIA		
Ebenezer Creek Swamp	Best remaining cypress-gum swamp forest in the Savannah River Basin; habitat for endangered species	Subdivision of land to the south may result in heavier or adverse recreational usage and sewage problems
IDAHO		
Hagerman Fauna Site	World's richest known Upper Pliocene age terrestrial fossils	Off-road vehicle impacts; erosion and siltation from irrigation water runoff
ILLINOIS		
Forest of the Wabash	Essentially undisturbed oak- and hickory-dominated forest	Tentative plan for subsurface mining
Volo Bog Nature Preserve	Rare biotic community in the state, excellent condition; rare species of plants near their southern distributional limit	Impending proposed federal highway "alternate route"

Natural Landmark**Significance****Threats**

Natural Landmark	Significance	Threats
INDIANA Cabin Creek Raised Bog	One of few known inland raised bogs in the conterminous United States	Unregulated visitor use; possibility of future mining for gravel, peat, and marl
Cowles Bog	Among the important sites studied by a famous ecologist who advanced pioneering ecological theories	Ongoing construction of nuclear power plant nearby
KENTUCKY Red River Gorge	Outstanding examples of natural bridges; diverse biotic communities; wildlife refuge including rare species; scenic	Army Corps of Engineers dam proposal has been deferred but not de-authorized
MARYLAND Battle Creek Cypress Swamp	Good example of bald-cypress-dominated swamp occurring here near its northern distributional limit	Proposed rerouting of state highway through the swamp
Belt Woods	One of few remaining old-growth upland forests occurring in the Atlantic Coastal Plain physiographic province	Property being held by trustee, subject to future sale
MINNESOTA Lake Agassiz Peatlands	Outstanding example of peatlands; contains raised bogs, strings bogs, and uncommon flora and fauna	Potential of peat mining adjacent to the site boundary
Upper Red Lake Peatland	Best part of largest peatland in Minnesota; wildlife refuge; scenic; wilderness characteristics	Potential of peat mining within eastern one-third of site and adjacent to site boundary
NEW MEXICO Kilbourne Hole	Large example of maars, very uncommon geological features	Potential development for geothermal energy; present off-road vehicle impact
NORTH CAROLINA Green Swamp	Largest and most unusual mosaic of wetland communities in the Carolinas; rare plants and animals	Present conversion to a commercial timber management operation in the northern half of site, with accompanying lumbering, bulldozing, planting, and drainage
Nags Head Woods and Jockey Ridge	Apparently the largest sand dune on Atlantic Coast; excellent examples of succession from open dunes to forest, with freshwater pools	Impending construction of residential housing in Nags Head Woods
Piedmont Beech Natural Area	Perhaps the finest example of mixed mesophytic forest in the eastern Piedmont of North Carolina	Reported plans for flood control structures on the watershed of Crabtree Creek could result in variation of water levels.
Pilot Mountain	Classic example of a monadnock, rising 1,500 feet above terrain; harbors disjunct vegetation; sanctuary for uncommon raven	Plans to build a stairway up the monolith could negatively affect rare plants as well as nesting ravens and roosting migratory hawks.
NORTH DAKOTA Rush Lake	Excellent example of large, shallow, essentially undisturbed prairie pot-hole lake	Lake is being drained by means of a ditch at north end, and wetlands surrounding the lake are being diked and drained.

Continued ↗

Natural Landmark

NORTH DAKOTA (CONTINUED)

Sibley Lake

Significance

One of few large, permanent alkaline lakes in North Dakota; outstanding water bird habitat

Threats

Power line being constructed across the south end of the site

OHIO

Hazelwood Botanical Preserve

An important ecological benchmark due to extensive past scientific studies at this site; distributionally significant ecosystem; rare plants

This site suffers from vandalism and other forms of visitor impact because of the lack of a management policy or site manager.

Crall Woods

Near-virgin remnant maple-basswood-beech hardwood forest, rare in the state

Although the woods have been well protected in the past, there is potential of a future sale, possibly for lumber or development.

PENNSYLVANIA

Tionesta Scenic and Research Natural Area

Largest virgin forest left in the hemlock-white pine-northern hardwoods forest region of North America (as identified by Dr. E. Lucy Braun)

Proposed mining of oil and possibly natural gas by the holder of mineral permit

SOUTH DAKOTA

Cottonwood Slough-Dry Run

Completely undisturbed riverine wetland complex bordered by tallgrass prairie; glacial geology; outstanding waterfowl habitat

Tentative plan to route Interstate Highway 29 across the site

TENNESSEE

May Prairie

Largest and best relict prairie remaining in Tennessee

Management efforts are underway; invasion by woody shrubs is still a problem.

TEXAS

Greenwood Canyon

Most important locality for early Cretaceous mammalian fossils (microscopic) in the Western Hemisphere

Recent construction of two large water control earthworks across the canyon potentially could cause damage by inundation or erosion.

Odessa Meteor Crater

One of only two known meteor impact sites in the United States

Lack of maintenance is contributing to erosion of the crater walls.

Santa Ana National Wildlife Refuge

Represents an ecosystem type that has become rare in the lower Rio Grande Valley, and is a sanctuary for uncommon and rare species of plants and animals

Water shortage

WASHINGTON

Nisqually Delta

Excellent example of relatively undisturbed estuary; outstanding refuge for flora and fauna

Potential industrial development adjacent to site

WEST VIRGINIA

Canaan Valley

Unique boreal relict community occurring at this latitude by virtue of its size, elevation, and diversity

Inundation of the valley by dam—licensed but not yet constructed—for power generation; potential mining

WISCONSIN

Kickapoo River Natural Area

Largest concentration of seeping sandstone in state; many entrenched meanders; diverse and rare species

Army Corps of Engineers dam proposal is deferred, not deauthorized; no land use regulation at present

WYOMING

Crooked Creek Natural Area

Site of discovery of early Cretaceous fossil vertebrates including dinosaurs and mammals

Mining claims recently staked; area could be destroyed; some off-road vehicle impact

reader comment

Illegal Immigration Controversy

I was thrilled to see your article, "Immigration Policy: The New Environmental Battlefield," in the December issue of your magazine. Why can't someone in Washington see the seriousness of our folly? We are selling America out to both those coming in and with foreign aid and give-aways to other countries. I have been a liberal all my life, and have fought for the underprivileged at great cost to myself. But I love my country and it breaks my heart to see what the whole world is doing to it. I can understand that some of our legislators are stupid, but can they all be so? The lack of strong leadership, except for a very few, is costing us dearly.

Keep up your great work. I am proud to be a member.

Leora Amstutz
Waukegan, Illinois

Congratulations on publishing the article on immigration policy by Gerda Bikales.

I hope that you are successful in making our government more aware of the magnitude of the problem, which if not curtailed and controlled, will in my opinion, lead to the destruction of our society as we know it.

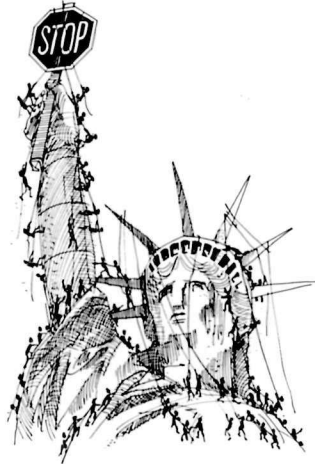
Most of the immigrants of today are not enhancing our society but are living off it.

Bruce Hausman
New York, New York

Your article on immigration policy in the December issue is racist and totally reactionary. For shame! This is what Reactionism inevitably leads to.

Joseph P. Moore III
Warren, Michigan

Your article smacks of elitism of the worst kind and I am surprised that NPCA would publish it. I agree there is a problem of the American lifestyle but don't blame immigration—legal or illegal—as a major factor. The way your article reads we should slam the doors because it threatens social and ecological ruin. Balderdash! Our *lifestyle* is the problem—don't foist it off on a scapegoat. We can have additional



Americans as long as we head toward ethical changes that demand lower comfort. Remember, too, that poverty is not a reason for all immigrations but *political freedom* much as my forefathers from Eastern Europe did. If we can't change our lifestyles then perhaps we should court ecological disaster. To me that's better than deciding who to keep out and who to let in, something our style of democracy has been working to prevent.

Steve Verchinski
Middletown, New York

Save Indiana Dunes

On behalf of the Save the Dunes Council, thank you for publishing Tanya Lee Erwin's excellent article, "Indiana Dunes: Another Border to Defend," which appeared in the October 1977 issue. Ms. Erwin's article explains the issues clearly and concisely, and emphasizes that the construction of the Bailly nuclear power plant next to the Indiana Dunes National Lakeshore sets a precedent which threatens all units of the National Park System.

Charlotte J. Read
Executive Secretary
Save the Dunes Council
Beverly Shores, Indiana

Remembering Mt. Rainier Days

May I congratulate you on the November 1977 issue of the *National Parks & Conservation Magazine*? I must say that I think that you deserve equal commendation for your other issues, but it happens that the November issue is about Mt. Rainier, which has been

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reader comment

"My Mountain" as long as I can remember. As a Scout, I hiked around the mountain; when in medical school, I was a summer ranger in charge of the campground at Paradise in 1930 and 1931, and two of the summer rangers at that time, who were ranger-naturalists, were Victor Scheffer and Howard

Coombs, and our mutual best friend was C. Frank Brockman, the park-naturalist. Alton Lindsay's article was well done, and I am sorry that I had gone back to becoming a real doctor before he came to Longmire.

When my sons grew up, they went back on the trail crew at Rainier, and

we still feel that there is nothing to match it any place.

Your front cover of Mt. Rainier and Tipsoo Lake by Ed Cooper, and the back cover of Mt. Rainier by Bob and Ira Spring were beautiful.

*Albert W. Snoke, M.D.
Hamden, Connecticut*

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Continued from page 2

flowered and delicately pink, and later the deep rose-russet of the peach trees. And, yes, the butterflies, the yellow swallowtails, soaring on winds, the Monarchs, returned from intercontinental journeys.

How long will all these airy creatures be with us? The clean-till farming destroys their habitat year by year; the wild flowers that invited them by matching brilliance across fallow lands and along untroubled roadsides have been vanishing. The latest abomination of no-till agriculture, profitable as it may be for the chemical companies, strips the land of their food and shelter. But yet, perhaps the agribusiness managers are learning that the poisons cost money; that the troublesome insects have been developing immunities; that it may still be best, even for them, to work with Nature, not against her.

THE ROLLING FIELDS of green will yield their wealth of hay, their timothy and orchard-grass, their clover and alfalfa, throughout the summer—a first cutting late in May, a second and at least a third in early July and late August. By the first week in July the barley and the wheat will be yellow and ripe, and the big grain-combines will rumble across the land; the oats we planted in the Spring will come in toward August. And by August there will be just a suggestion of bronze in the green of the forests on the mountainsides. The crickets, the cicada, the katydids will be in full orchestra, acclaiming the heat; the brief drought of the summer months will encompass the world for a time.

Once there was community here, and a remnant survives. The land speculators tear community apart. The poor fare of television draws men from their meetings with neighbors. The woods are filled in autumn with the noise of the warfare on the animals, carried on with modern armaments against which the victims have no chance. The continuous commotion on the roads, the never-ceasing travel in the family auto, bespeak the unremitting, unconflicted human dread of mortality. And the migrations to the towns and cities—for jobs, for companions, for distraction—what avail? Yet perhaps this unhappy tide may also be turning.

THE RACE OF MEN has choices to make in the years just ahead. Will it turn back to the land, to the love of Nature, to the freedom of the wide open spaces? Will it build cooperative communities there, in place of the remnant family standing alone? Will it limit its births to a maximum of two per woman, and refrain from reproduction entirely where mental or physical defects would otherwise be transmitted by courtesy of modern medicine? Will it open its big cities to the life of the fields, forests, and streams by restoring green spaciousness within them? Will it curb the abominable traffic which is demeaning all our lives? Will it—can it—transform the mills and the factories into places where men love their work again, take part democratically in the decisions as to production which shape their product and their lives?

AFTER THE SUMMER, the planting of the new wheat and next year's barley comes; then the yellow feedcorn will be picked and stored in the cribs for the herds, or sent to the grain elevators. The mood of the hills then is for autumn; the green blood of the trees will drain away for another winter. The glory of the fall colors will break across the mountainsides, and soon there will be flurries of snow. The white-tailed deer will hold their own in the hills, despite—or indeed because of—the fusillades. The great horned owl will utter his mystic call—at least for a little longer—into the wintry night. And perhaps even the hunted bobcat, if men are merciful, may preserve a remnant of his lonely stalking grounds.

The moods of the hills change with moonrise, silvery behind thin veils of cloud; with sunrise and the spreading of dawn across fields; with the deep night under the brilliance of stars. Shall we take upon ourselves now, forthwith, as a solemn obligation to our fellow men and to ourselves, and to all the generations of the future, and to all life on the planet the preservation and restoration of the open countryside and the creation of those true communities of the spirit there without which that restoration must tragically fail?

—Anthony Wayne Smith

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