

NATIONAL PARKS

& *Conservation
Magazine*

The Environmental Journal

July 1973



AN OCEANS AUTHORITY

OF THE 132 nations now comprising the United Nations, some 80 or more may be needed as ultimate signatories to the proposed convention to establish a global Ocean Resources Authority.

Among these, many are indispensable, in that a convention to which they did not agree would be unworkable: certainly the major maritime powers and coastal nations; likewise many influential landlocked and shelf-locked countries.

The differences among these groups of nations, and indeed within groups, have been fully demonstrated in the meetings of the Seabed Committee which have already been held. The Committee is the preparatory agency for the United Nations Conference on the Law of the Sea, which will meet initially in New York in November and eventually in Chile next March.

A GREAT TASK of statesmanship has been set before the Committee and the Convention. The negotiations could mark a new epoch in the development of international law and the emergence of worldwide institutions of democratic self-government.

Because a broad unanimity will be necessary if the decisions of the Conference are to be accepted, compromise and tolerance will be needed, and yet firmness in negotiations on essentials. More precisely, the practice of statecraft here will be an integrative process drawing on both concurrence and opposition of interests to synthesize new governing concepts and institutions.

THE GENERAL ASSEMBLY gave the Conference a mandate for the protection of the marine environment. In this respect, the guiding principle must be the ecological imperative: that men must live within the context of all surrounding life or die.

The General Assembly also gave the Conference a mandate to develop strong world institutions for the rational management of the resources of the seas.

There may be general agreement on the structural components: an Assembly, representing the Signatories; a Council; a Tribunal; and a Secretariat. These agencies, as the proposal has been presented, would have licensing, revenue-collecting,

rule making, inspection, enforcement, adjudicative, and revenue-sharing powers. Revenue from licensing would go partly to the expenses of the Authority, giving it the essential autonomy, but mainly to development assistance for the less affluent nations.

ON THE CENTRAL ISSUE of mineral extraction, which gave rise to the project to begin with, a cleavage between the industrial states and the less developed countries, particularly coastal nations, was expected from the beginning and has in fact materialized. Will all the nations reach out to the edge of the continental shelf for their own purposes and exclude the others? On the hard minerals issue, including the minerals of the deep seabed, will an agency be set up soon enough to forestall unilateral appropriation?

Heavy pressures are building up in the United States to permit unilateral appropriation. The minerals themselves (oil, manganese, copper) are not so greatly needed here that their development cannot wait for the months, or if need be the years required to set up effective world institutions. Early suggestions for a general moratorium may have had merit. The official United States position opposes hasty legislation; environmentalists will support the position.

ON MARINE POLLUTION, the United States has espoused the establishment and enforcement of exclusively international standards. Others advocate prescriptive powers in coastal nations to supplement such standards. Concern is expressed over possible arbitrary interference with coastal shipping. But the supplemental prescriptive power could be limited by the convention and safeguarded against capricious action unrelated to resources and environment, with review by the Tribunal and appeal to the International Court of Justice.

The development of standards for ship construction to prevent pollution from operations and accidents will be left initially to the Intergovernmental Maritime Consultative Organization (IMCO), which will meet in the fall. If these standards turn out to be inadequate, the situation can be reviewed at the Conference. Whether IMCO can adapt itself

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FRONT COVER Golden-cheeked warblers, by Anne Marie Pulich
Anne Marie Pulich, of Irving, Texas, is widely recognized for her sensitive bird portraits in watercolor and pen and ink. A self-taught artist, she began concentrating on bird studies fifteen years ago, complementing the published ornithological works of her husband, Dr. Warren Pulich, American authority on the golden-cheeked warbler. Her artistry since has graced the pages of several books and many magazines; has been exhibited in one-woman shows in Louisiana, California, and Texas; and is found in a number of private collections. (See page 20.)

BACK COVER Nabesna Glacier, by M. Woodbridge Williams
One of the largest valley glaciers in Alaska, the great river of ice called the Nabesna Glacier flows northeast from the spectacular Wrangell Mountains, which are being studied for inclusion in the national park system. (See page 4.)

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Tanada Peak—a filigreed tapestry in stone and snow—and, in the distance, Mount Wrangell, the flat snowy ridge, and Mount Zanetti, the snowy knob, are diverse and awesome inhabitants of the Wrangell wilderness.

THE WILD WRANGELLS

Jewels of Alaska

article & photographs by **M. Woodbridge Williams**

a Park Service photographer's love affair with a great Alaskan range
that is under study for inclusion in the national park system

The Alaska Native Claims Settlement Act, which became effective in December 1971, imposed several requirements on the Secretary of the Interior. Among the requirements was a study of some 80 million acres of public lands, previously withdrawn from other disposition, to determine their merits for addition to the national park, wildlife refuge, wild and scenic rivers, and forest systems; and the Secretary was to report to the Congress on how they should be designated. In an effort to be helpful, NPCA already has published an evaluation of potential park, refuge, and forest lands and its recommendations in regard to them (National Parks & Conservation Magazine, February 1973). For several months now an Interior Department interagency team has been at work in Alaska studying these lands with a view to formulating proposals for presentation to the Secretary.

IN THE SPRING of 1972 the National Park Service asked me to join its Alaska Task Force to photograph areas in that state that are under study for inclusion in the national park system.

I am no stranger to mountains, having lived among the peaks of the North Cascades of Washington during a task force study that led finally to the establishment of a park and recreational area complex there. Then, I felt that I had fallen in love with the greatest range in North America, forgetting that even loftier peaks lie far to the north. Now I believe that one must see the massive ranges of Alaska before fully understanding the Cascades and the other glacially carved ranges to the south.

For, in Alaska, the coast ranges, with their high precipitation, are still in the grip of the Ice Age. Here all steps in the sculpturing of mountains by ice may be seen, from U-shaped yosemites with hanging valleys and waterfalls to peaks sharpened by the meeting of glacial cirques. These ranges support great ice fields that swell about individual mountains until nothing remains but an island peak; and from the outer edges of the fields glaciers finger down through stalwart mountains that perhaps are still on the rise. The moving ice chisels out deep valleys, then in retreat leaves them naked of plant growth and strewn with moraines of confused rubble, behind which lakes scintillate in the sun.

Here dark peaks stand silhouetted against even higher walls of white. Such lesser peaks are called "mountains" in the lower states, but in Alaska they are called "foothills." Thrust up by the collision of great plates of the earth's surface, according to modern geological thinking, these massifs stand as textbook examples of mountain building. Volcanoes smoulder. Land moves—by as much as forty-seven vertical feet during a single earthquake at Yakutat. Such is the "mountain kingdom" of the North American Continent: wave after wave of peaks refracted in great arcs around the bight of the Gulf of Alaska, reflecting the sea in their fossil remnants of marine life, which erosion is now sending back to the sea.

The Pacific Mountain System of Alaska contains three major ranges, but it is difficult to tell where one begins and the other ends among a tossing sea of peaks. The St. Elias–Chugach complex frames the continent from above Glacier Bay to the Kenai Mountains and

Kodiak Island. The second arc, the Wrangell Mountains, strikes northwest from the St. Elias in the vicinity of the headwaters of the Chitina River, which drains off Mount Logan in the Yukon in Canada. It forms a chain of jewellike peaks—three of which are over 16,000 feet and more than a dozen over 12,000—for about 100 miles. Finally, across the Copper River Plateau, the Alaska Range rises in the distance, a great arc of mountains that runs from the Yukon border to Mount McKinley and then to the Alaska Peninsula. St. Elias–Chugach, Wrangells, and the Alaska Range: the greatest mountain complex in North America. Relatively few have climbed the Wrangells; some sections of the St. Elias remain unexplored.

The seventy-five-mile-long Hubbard Glacier in the St. Elias may be the longest glacier in the world. Malaspina, the piedmont glacier, is larger than the state of Rhode Island; it is 1,500 feet thick and forty miles wide. Along the twenty-eight mile coastal plain of this glacier are kettle ponds in all stages of formation—from old, vegetating ponds such as those at Cape Cod, to recent ones, where block ice has but recently melted, leaving a muddy hole resembling a huge bomb crater.

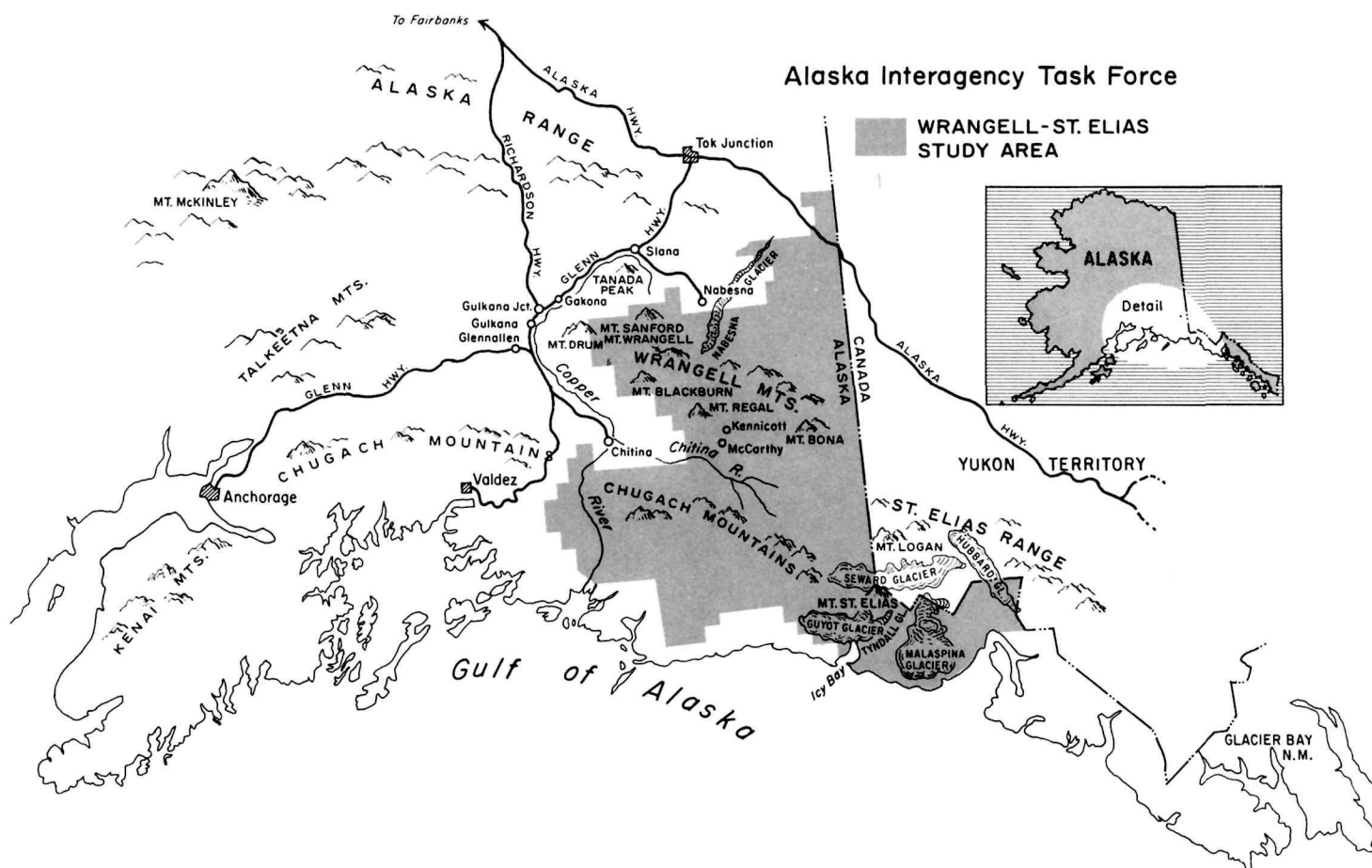
Flying over Icy Bay just to the west, I turned my camera on the climax view of the greatest coast range in the world. In the foreground, fleets of small icebergs dotted the bay, chunks of the Ice Age cast adrift with great roars and splashings from the snouts of Guyot and Tyndall glaciers. Behind the glaciers towered Mount

Mount St. Elias towers over Tyndall Glacier and Icy Bay in the climax view of the greatest coast range in the world.

PHOTOGRAPHS COURTESY NATIONAL PARK SERVICE



Alaska Interagency Task Force



St. Elias, eighteen miles from the coast and 18,000 feet high, an average slope of 1,000 feet per mile.

This is Grand Canyon stuff, Yellowstone excitement, Yosemite beauty—but remote and often difficult of access. Although jet airliners fly daily over these mountains, certain areas below remain unexplored, even by scientists. In a sense the Park Service studies of withdrawals for national parks under the Alaska Native Claims Settlement Act might be described as the last of the classical Service expeditions.

True, people live in the shadows of these peaks: they homestead, hunt, mine, and farm, often on primitive terms. Indians control sizable areas about the slopes and under the Settlement Act will be able to mold their destinies and the use of their lands. These needs must be weighed against the preservation requirements of a park.

I FIRST SAW the St. Elias Range from about 30,000 feet. After flying for hours across Canada's Northwest and Yukon territories, we broke out of a cloud cover over this great panorama of peaks, ice fields, and glaciers. Could this be Antarctica? I asked the cockpit where we were. The stewardess brought back a notation: "Seward Glacier."

This was no North Cascade glacier pressing down from a cirque; this one seemed to head in an endless ice field that sent arms up the walls of Mount Logan, second highest peak on the continent. The ice field in turn fed through mountains to join the great Malaspina Glacier on the coast. I shot pictures and admired the last Ice Age remnant on the continent, the western

slope of which is the national park study area. Forty minutes later I stepped from the plane into the attractive airport at Anchorage, the gateway to my first land view of the Wrangells, and my departure point for the interior by way of the Glenn Highway.

Perhaps it is proper that one first note a mountain through man's own framework, for it makes one aware of his inadequacies in coping with an object of sublimity. The lofty peaks stand for what man should be and can be, and plead that modern technology be applied to such an end; for much of the clutter of the human perspective comes from ignorance, prostitution of design capabilities, and technological abuse of the land. These evils are a plague upon the lower forty-eight states and now are reaching into Alaska like an epidemic.

Between Anchorage and Glennallen the Glenn Highway wriggles between the Chugach and Talkeetna mountains to reach the land on the Copper River Plateau at the west end of the Wrangells. There it breaks out on the till and outwash of ancient glaciers. Lakes sparkle on either side, formed in depressions where permafrost has been exposed and melted. Spruce shafts march to the horizon, some of the "soldiers" tilting, weather-blasted in the shallow soil or undermined by the lapping of lakes.

Here the highway follows the surveyor's transit—a thirteen-mile straight shot down a long slope toward the Copper River. This line of sight ends in a rise of 10,700 feet to the top of Mount Drum, a glaciated volcanic cone. Winged in two directions from Drum, the Wrangell Range spreads north and east.

At Glennallen the wilderness scene retreats. Roads and plans for roads reach out for the mountains, beneath which scrawny communities lie dwarfed. Now the view was destroyed by the first of Glennallen's liquor stores, while the car radio picked up religious music and sermons from the local station. Next came a super-variety store called Howdy Padnah—then gas stations, highway patrol, modern school, bank, and finally the Hub, where one turns left for Fairbanks on the Richardson Highway or for Tok Junction on the Alaska Highway, or right on the Richardson for Valdez.

Utility wires and real estate signs, restaurant, country store, gas station, and motel cluttered the Wrangell mountain view. Yet for many, pulling in from the long trip from the lower states through Tok Junction, the Hub was a welcome sight; campers, vans, trailers, and huge trucks huddled together while drivers and passengers ate or rested.

Turning left up the Richardson Highway, I continued to Gulkana Junction, where one turns again onto the Glenn Highway for the Wrangell tour. Farther along, great Mount Sanford rose before me with Drum on the right; it is one of the three peaks in the Wrangells higher than 16,000 feet. The two others—Mount Blackburn in the central range and Mount Bona on the eastern end—rise above lower ranges; but Mount Sanford lifts directly above the Copper River as a wall of some 14,000 feet. To the north Sanford's glaciers pour their water into the upper reaches of the Copper, and there the wilderness descends upon the traveler—a wilderness in which water dominates the scene.

Water covers the peaks as cold, white frosting and drips down their flanks to be lost in turbulent streams. The sound of water seems right for the land, even the sound of that sprite born of water—a mosquito humming

about my room in an old inn at Gakona. As I sat listening to this natural music, it seemed only logical to measure our husbandry of the land by the quality and sound of its waters. Whether it was the sound of the river or my bodily time clock that was still tuned to the East Coast of America five hours ahead of Alaskan time, I found myself on the banks of the Copper River about three in the morning.

Love seems to be a province of the night. No doubt this observation applies to love for mountains as well, whether they are basking in a full moon, are stark black and white against a starry sky, or are washed in pink and orange by the midnight sun of an Alaskan June. Such were my feelings that night on the Copper River when rosy lights played across the clouds and peaks and were reflected in braided channels of the river, turning the milky green and brown and gray waters to shifting networks of pigment. As I explored the Wrangells later, I learned their nocturnal habits. Often they stood clear at night while clouds shrouded their heights by day.

Under such gray skies I drove to Slana on the Glenn Highway and turned east down the Nabesna road, which runs for forty miles or so along the north flank of the Wrangells. The road travels through mining, fishing, and hunting country and through an Indian reservation. New homes and businesses are developing here, and guide services and overnight accommodations are available. But these matters seemed of secondary interest as the soft rain created sparkling details. Fireweed covered the road banks in two species. On occasion a bit of sun played through the clouds; then bumblebees immediately went to work on flowers, seizing every opportunity during a short growing season to complete their life commitments. Among cobbles along

Majestic Mount Sanford, 16,208 feet in altitude, rises above the Copper River as a wall some 14,000 feet high.



stream washes blue and white lupine brightened the floor beneath somber spruces, and the rain coalesced into marvelous jewels in their leaves.

One is constantly tempted to leap from the car and stride into the wilderness scene, but such a move may send one flat on his face. Here the gently rolling hillsides turn to myriad hummocks—miniature mountain ranges created by centuries of moss and lichen growth. No terrain seems more difficult to traverse on foot, particularly in boggy areas.

Much of Alaska is sheathed by tundra of a fragile nature. Geologically, this tundra is of recent origin, as are the animals that inhabit it. It grows on the poorest of soils, those recently freed of glacial ice. Yet upon closer examination, these miniature green ranges support a variety of exquisite dwarf plants: violets, heaths, windflowers, and even a tiny rhododendron—delicate life that seems out of place in this harsh climate.

Along the Nabesna road, the land bleeds and turns to quagmire wherever man pushes a tractor or four-wheel-drive vehicle across wilderness land. Even on government lands, trails that cut through spruce and tundra for access to fishing lakes turn to muck. It is obvious that in this land of harsh climate the hand of man must be gentle. Yet, in this pioneering land where families still subsist on “wild meat” and some children are educated through correspondence courses, the needs of survival and then the urge for development outweigh concern for wilderness preservation or proper land use.

This is the challenge of the mountains in Alaska: a test of the inhabitants' love for their land.

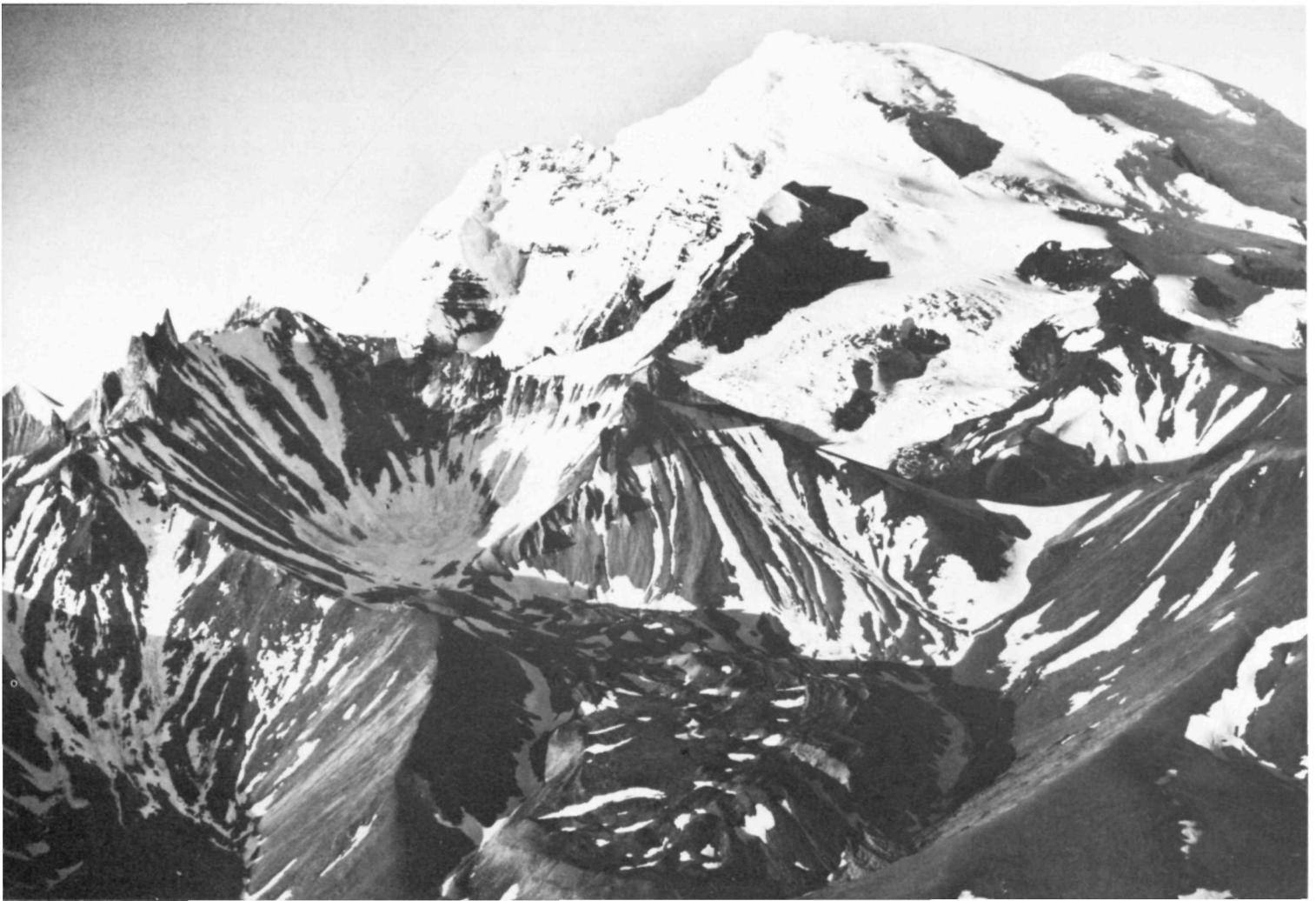
Here and there on the Nabesna road I passed rotted hulks of cars. At certain points on fills wide enough for parking, I saw the remains of caribou among beer cans and trash—souvenirs of the hunting season when a herd moved through the country on its fall migration. In another hunting camp off the road I came upon rows of feet of the snowshoe rabbit strung up for decoration—souvenirs of the great white hunter. How often I saw this contempt for other animals!

At small lakes beside this road a number of fishermen gather. The first I noted on this rainy day was a feathered tyke that spun among the lakeshore plants, dabbing for food with a slender beak. Neat design and red patch on the neck identified the northern phalarope. Wading more sedately in the shallows stood a number of yellowlegs.

Later I came upon the oil drums, the grease cans, and other debris that marked a floatplane base. Yet, without these mechanical birds, we could not possibly have covered the vast stretches of Alaska that were under study. Although there is a certain amount of unsightly disorder in the impact of air technology on a wilderness land, the airplane seems to be the least disruptive of all modern transportation. Perhaps my love affair with mountains came to a climax on one memorable flight over the heart of Mount Wrangell.

At Gulkana a bush pilot named Jack Wilson charts

Mount Drum, an ancient volcano 12,000 feet in altitude, presents a study in dark and light.



flights into the mountains. My daughter Betty and I got him out before coffee time—about five in the morning—because turbulence and clouds build up over the peaks during the day. With Betty in the back seat to take notes and the lean, pipe-smoking pilot at the helm, we took off toward the mountains to the east. While we flew over the Copper River and across open spruce forest, I got my cameras ready.

At 6,000 feet we coasted by unnamed glaciers spilling down the west face of Mount Drum. Then we turned east over a broad saddle separating 12,000-foot Mount Drum from towering 16,208-foot Mount Sanford on our left. Beneath us the snow of the mountain slopes reflected in white dots against the green alpine tundra of the July day.

As we swung around Drum, we saw a jagged side-crater from which a rock glacier poured through an eroded gap. Such spectacular slides are frequent in the Wrangells, particularly in the southern portion near McCarthy. The rocks of these slides are cracked by frost on the summit of peaks. They fall into cirquelike valleys high on the peaks. Here, lubricated by ice, they coalesce into moving tongues of rubble that often reach far down mountain slopes like a flow of lava.

With the hope of photographing the north face of the range, we circled Drum and headed north along the flanks of Sanford. But as we turned the peak, an ocean of clouds filled the wide valley between the Wrangells and the Mentasta Mountains beyond. At the 5,000-foot

level the towers and parapets of Capital Mountain stood above the mists. Jack started a climb toward Tanada Peak, where layered formations retained a filigree of snow—an abstract tapestry in stone. Now, at 8,000 feet we saw that the entire eastern flank of the range was blanketed in cloud. No doubt beneath the cloud cover rain was again forming glistening jewels on summer wildflowers. Jack was reluctant to attempt completion of our mission of photographing the entire north face of the Wrangells. Because the weather looked bad, we turned back toward Mount Sanford and flew up the Copper Glacier, headwaters of the famous river familiar to the mining fraternity. Heading for clear air, I asked Jack about the volcanic activity on Mount Wrangell.

“Sure, there is an active crater—want to see it? We can stay up there about fifteen minutes without extra oxygen,” he said.

SO THE CESSNA CLIMBED to 14,000 feet. A dazzling sheet of ice and snow spread before us, relieved in the south by the long shadows of early morning. We were flying over the softly rounded topography of old lava fields. Only the knob of Mount Zanetti broke the gentle land form. To the east lay Mount Wrangell, so flat on top, unlike any other mountain I knew. Such is the charm of the Wrangells: no two peaks are alike. The big ones, Sanford, Blackburn, Regal, and Bona, stand in isolated grandeur above ice fields and glaciers. Peaks and ridges, serrated and sharpened by glacial ac-

Mount Wrangell's active crater inspires a vision of the primordial world before man.





tion and frost, pay homage from lower levels. Now these peaks stand dormant, and only Mount Wrangell shows signs of volcanic activity. The eruptions that produced the so-called Wrangell lavas commenced about fifty million years ago and continued into modern times, Mount Wrangell having erupted within the nineteenth century. Looked at in this time frame, Mount Drum is a much older volcano; Mount Sanford is intermediate; and Mount Wrangell is relatively new.

The presence of sedimentary deposits between volcanic layers in the Wrangell Mountains tells the story of uplift followed by depression and deposition. In the wild tangle of mountains around Frederika Creek, well-preserved leaves are found in tinted freshwater sedimentary rocks along the east side of the valley. In contrast, on the west side of Frederika glacier black, glassy obsidians are present in the ground moraine. In fact, many of the volcanic rocks in the Wrangells are quite similar to those of Yellowstone National Park and Hawaii.

The Wrangell ice fields swept away to the east and north to gather into a magnificent valley glacier called the Nabesna, which receives the ice moving off the north flank of Mount Blackburn. Nabesna Glacier is among the largest valley glaciers in Alaska. But what we were seeing in July 1972 was only a remnant of the great ice fields, thousands of feet thick, that once surrounded these mountains. This ice carved the ranges as we see them today and transported pieces of the Wrangell lavas as far as the Chugach Mountains to the south and the southern part of the Alaska Range to the north.

Now, flying over the last chapter of this Pleistocene glaciation, we saw small plumes of steam. As Jack flew our plane over the top of Mount Wrangell, a black mouth in the white blanket gaped below us. Small fumaroles smoked on the crater sides. Inside the crater the dark volcanic rocks stood exposed. The outside of the crater was white, merging with the sky—a primordial scene still building atop the continent. We thought it a view of the world before man.

Then Jack zoomed down to show us a row of huts

At left Mount Blackburn looms over Ruskulana Glacier runoff. Center, Mount Bona from Two Harpies Canyon in the St. Elias mountains. Bottom and below, the abandoned Kennecott copper mine at the edge of the great Kennecott Glacier moraine in the Wrangells.



at the edge of the crater. "These were put up here for scientists," he said. Later I learned that they were for a cosmic-ray project sponsored by the Office of Naval Research in the 1950s. The air lift to get them up there must have cost a penny or two, but apparently no pennies were left for getting them off the mountain!

Now the spell was shattered. I became convinced that man must leave his territorial mark like a dog urinating on a tree, whether it be on Mount Wrangell, Mount McKinley (now loaded with climber's junk), Mount Olympus, or Mount Washington. Perhaps "nature" must accept the activities of its most unpredictable and destructive species in the same way that it adjusts to volcanoes, earthquakes, tidal waves, and—yes—even continental drift. Eventually, all these traumas will be buried in rock strata like those of the Wrangell Mountains.

Our time was up for this high altitude. As we swallowed to keep our ears clear, we swooped downward off the glaciers and around Mount Drum.

WE RODE out of Anchorage in a STOL aircraft called a Dornier. Paul Fritz, superintendent of the Craters of the Moon National Monument in Idaho and our study team leader, was in charge of the flight. He wanted pictures of an area where once stood the richest copper mine in the world, the Kennecott Mine at McCarthy in the Wrangell Mountains. The mine closed in 1938, along with the standard-gauge railroad that took the copper down the Copper River to Cordova on the coast. Today the great enterprise lies in ruin, although a few people still live at the nearby town of McCarthy.

From the small airport at McCarthy we flew along the Chitina Valley toward its juncture with the Copper River. Beneath us cuts and trestles of the old railroad were the only marks on the wilderness land. Beyond the sweep of virgin forest loomed the Wrangells, dominated by 16,523-foot Mount Blackburn. Valley glaciers radiated from its slopes. Then we swung around the west end of the range below Mount Drum, where we came

upon a massive stitching in the wilderness scene. Parallel lines swept away to the horizon. Connected by cross lines, the swath looked like a giant zipper on the land. Paul said that these marks were seismic tracks made by oil explorers.

Then, not far from this spectacular but disturbing swath, we came upon other breaks in the forest that looked like mining activity. First we saw the dead forest, then massive fans of barren soil radiating from symmetrical hilltops. They were mud volcanoes. We circled three of them below Mount Drum and took photographs. A week or so later, we reached them by foot from a landing strip nearby.

We worked our way upward to the crest of a mud crater and looked from the rim into a circular lake about fifty yards in diameter. Large bubbles gently rose to the surface at the center of the milky brown water. From the crest on the backside of the spring, I looked at Betty and Jack Wilson watching the strange water rise from an unknown source. There was no sign of man other than a Geological Survey benchmark nearby—and those two wild friends under the great sky canopy.

DURING MY JOURNEY to Alaska I learned to love mountains in a way I never had before. I witnessed the full spectrum of forces that build and destroy mountains. I saw the beauty of the wilderness untouched by the presence of man. I also saw areas marred by man's presence—once-pristine settings littered and destroyed by careless use. Yet Alaska is relatively untouched. In planning its development there is the unique opportunity to profit from mistakes made in the lower forty-eight. May we learn to live harmoniously with nature, giving back as much as we take, and saving what we can. ■

M. Woodbridge Williams, widely known for his perceptive photography in the national parks, is a visual information specialist at the National Park Service's Harpers Ferry Center, Harpers Ferry, West Virginia. Presently he is chief photographer for the Alaska Task Force of the National Park Service.

A strange mud volcano bubbles serenely while Mount Drum quietly watches from a distance.



FOSSIL FORESTS of GLACIER BAY

Ole Wik



Fossil trees at Alaska's Glacier Bay testify to a long-vanished rain forest

They look like ordinary dead trees standing in the creek bottom as they raise their naked branches in a barren Alaskan glacial wilderness. But there are no living trees of comparable size within twenty miles. These are fossil remnants of lush rain forests that grew several thousand years ago, eventually to be buried under glacial ice and to reappear some forty years ago.

Fossil stumps, many still rooted in their ancient positions, are found in a number of places in Muir Inlet in Glacier Bay National Monument. They are among the most informative features of the glacial landscape there, for they can be age-dated by radiocarbon analysis to establish a chronology for the deposits in which they occur. Geologists say that glacial outwash covered the stumps in various episodes between 2,000 and 7,000 years ago. After a period of ice advance (the "Little Ice Age"), in which Glacier Bay was almost completely filled with ice, the glaciers began one of the most phenomenal retreats ever recorded. Between 1880 and 1960 the ice in Muir Inlet, for example, receded almost nineteen miles. Large volumes of meltwater cut deep gorges in the loose glacial debris, and the stumps were once more exposed.

Certainly Glacier Bay's most impressive fossil trees are those that give Forest Creek its name. This small stream, rising on the shoulders of Red Mountain, passes through a bedrock gorge and then across a wide outwash fan before reaching salt water along the golden, rockweed-covered shore of Muir Inlet. Hiking up the stream, the monument visitor comes across a giant rotten log, perched incongruously alongside a creek far too small to have floated it into position. The log may seem perhaps forty or fifty years old; but its true age may be many centuries.

Farther upstream you pass through the narrow gorge, and the "forest" comes into view. Dozens of gray, weatherbeaten trunks stand on a cobbled floodplain where a few mats of mountain avens and a sprinkling of dwarf fireweed and alders recently have taken root. On the hillsides upright stumps reach out with horizontal roots that preserve the level of a soil horizon that ceased to exist thousands of years ago.

It would be easy to pass by these trees in an understandable eagerness to reach the more dramatic scenes at the snout of the Casement Glacier. Their wood appears to have changed little as a result of its long burial, and conditions here were unfavorable for petrification. In fact, at the seaside, the visitor may find it impossible to determine whether he is feeding the campfire with a fragment of modern rotted driftwood or a piece of fossil wood older than the pyramids of Egypt.

In time the fossil stumps will crumble, and the hardy pioneering plants now establishing themselves along the creek will prepare the soil for another rain forest, where red squirrels will cache their spruce cones among the roots of giant trees. Is the latest ice age behind us, or are we merely in another warm interlude? Nobody knows. Perhaps the glaciers will begin another slow advance, and the new forest—warm, green, vibrant—will again be buried under a blanket of cold, gray gravel. ■

Ole and Manya Wik have spent four summers working for the National Park Service in Glacier Bay National Monument on the lower Alaskan coast, where they lived in a tent a few miles from Forest Creek. Mr. Wik has also worked in Alaska's other great wilderness preserves, Mount McKinley National Park and Katmai National Monument.



Above, spreading roots indicate the former level of an ancient soil horizon. Below, fossil wood, buried for thousands of years, and modern deadwood are difficult to distinguish by mere visual inspection.

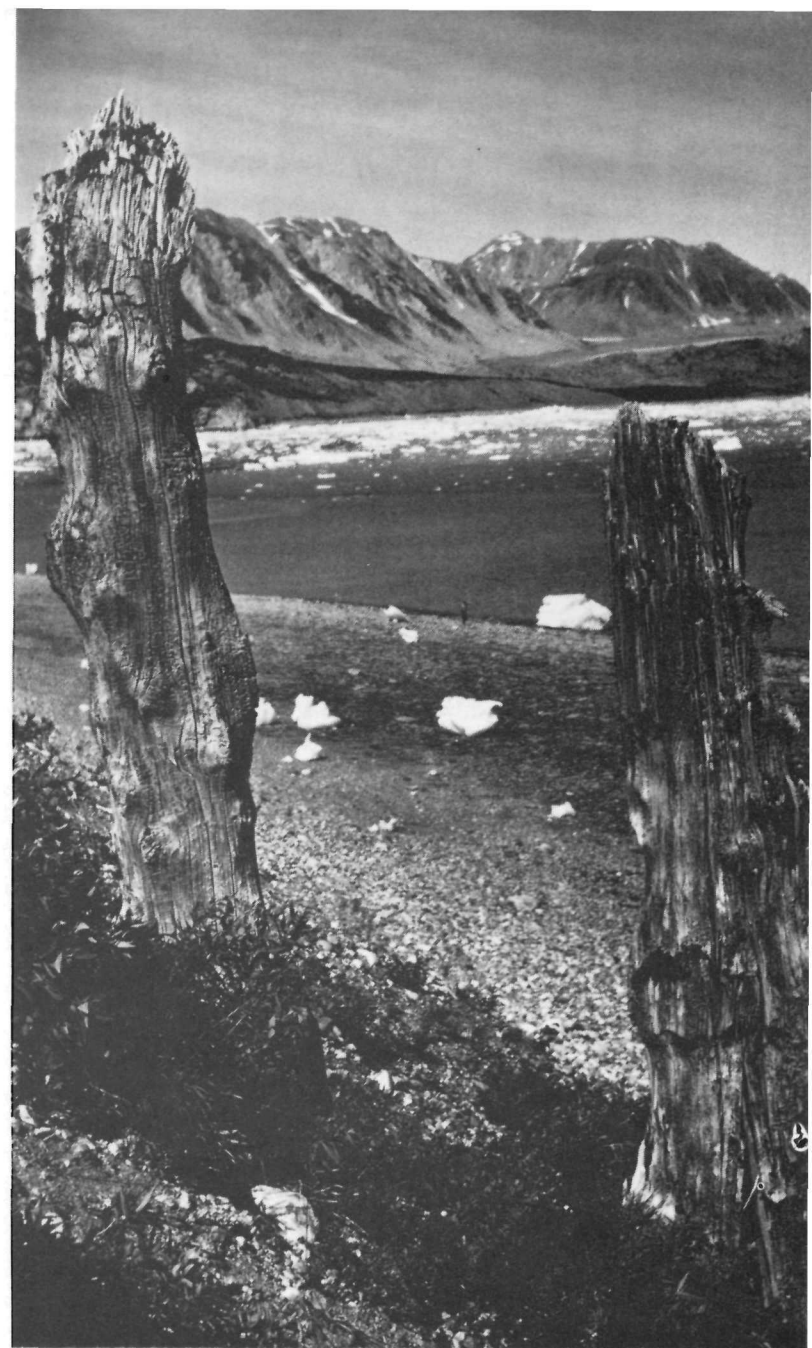


PHOTOGRAPHS BY MANYA WIK

Dwarf fireweed, mountain avens, and alders begin a new cycle of soil building around fossil stumps.



Above, fossil stumps look out over ice-choked Muir Inlet, Glacier Bay National Monument, Alaska.



ECOLOGICAL FORESTRY for the COAST REDWOODS

Peter A. Twight

REDWOOD, COURTESY OF U.S. FOREST SERVICE

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

"There have been many tragedies in the redwoods, but not the least of them has been the general failure to manage private commercial redwood holdings on anything like an ecological basis."—From an editorial in *National Parks Magazine* for April 1968.

Today ecological forestry for the Pacific Coast redwoods is part of NPCA's overall forestry program, which advocates timber harvest and management methods that protect and conserve the soil, water, wildlife, vegetation ecosystems, recreational opportunities, the scenery, and the timber itself.

Commercial cutting in the coast redwood region is rapidly approaching a crossroads. Old-growth forests have been nearly all cut. Sawmill capacity greatly exceeds forest growth. The stage is set for severe competition; for short-cutting forestry to reduce costs; for overcutting of the second-growth forest; and for uncertainty regarding profits or losses on lumbering operations.

Environmentally acceptable forestry can be practiced in most of the redwood region at a reasonable cost. Public and private values can be reconciled, and the national interest in a million acres of private redwood lands, with its enormous forestry potential, can be protected. For the coast redwoods, this kind of forestry will mean selection or group selection cutting rather than destructive large-block clearcutting.

The kind of beautiful, productive redwood forest that is needed would be based on the ecological strengths

of the tree itself. The species is sufficiently tolerant of shade to be cut selectively, and it seeds into small openings readily. It also sprouts vigorously; and once such a forest were fully stocked, it would be self-renewed by sprouts. Indeed, the most important survival characteristic of the redwood is its ability to sprout from the root-crown following death of a main stem. Because sprouts utilize established root systems, their growth may be from three to seven feet per year; and they will rapidly overtop all associated plants.

Where mixtures of redwood and other plants occur, forestry is not so simple as it is in a pure redwood forest. After logging, Douglas fir, tan-oak, madrone, bay, alder, and shrubs grow rapidly and utilize the light and nutrients formerly used by the old trees.

Historically, cutting in the redwood region resulted in thousands of acres now dominated by brush, alder, and tan-oak. Good forestry in the coast redwoods requires much more than reestablishment of commercial trees for the next crop. Water quality, wildlife habitat, and human needs for a quality outdoor environment in an increasingly urban nation must be protected and enhanced.

The climate, topography, and soils of the region require much restraint and skill in logging if great destruction is to be avoided. Erosion on the steep slopes on which redwood grows may be relatively fast under natural conditions and will be greatly accelerated when vegetation is damaged or soils are exposed. Some soils—including some in Redwood National Park—are so un-

stable that massive landslides occur naturally and may become common following logging or road-building. Flooding, natural to the region, can occur more frequently with unrestricted logging.

But redwood logging need not be destructive, and can be done so as to produce only short-term esthetic damage.

The seemingly simple model of clearcutting and even-aged management that has such appeal to foresters today would be nearly impossible to follow in a properly managed redwood forest. The intensive forestry required to capitalize on the growth potential of the coast redwood, and to sooner attain the large trees that are so esthetically appealing, would mean several thinnings over the life of the main forest. But with each thinning, sprouts would spring from the root collar of the cut tree.

The intensively managed redwood forest advocated by NPCA would be uneven-aged, would regenerate primarily from sprouts, and would be fast growing, with trees of all sizes. Many small, shifting openings would occur because of thinning of clumps and patches throughout the forest. Such openings would contain small redwood sprouts, berry bushes, salal, tan-oak, bay, madrone, and other species, including grasses and wildflowers. The smaller plants would be suppressed as redwoods created dense shade for the few years before each thinning.

The model forest would require interplanting of redwood where there was inadequate spacing in the uneven-aged forest. With increasing distance from the canyon bottom, spacing between redwoods increases and the numbers of Douglas fir correspondingly increase. It becomes relatively more easy to grow Douglas fir than redwood on the drier sideslopes and ridgetops. Fewer redwoods would mean fewer sprouts and much more uncertainty and expense in maintaining commercial tree regeneration without losses to dense growths of unwanted trees and shrubs. In such areas group selection, with site preparation on plots of one-half to one and one-half acres, would allow Douglas fir and redwood the best opportunity to dominate competing shrubs while minimizing the ugliness and potential soil erosion of larger clearcuts. Such small cuts would minimize diversity for wildlife and esthetic values also, and would allow precise fitting of a cut to age, growth, microclimate, and soil characteristics.

Ecological forestry in the coast redwoods would require changes in logging practices and attitudes. Soil damage resulting from use of skidders or tractors would be eliminated by use of skyline and simple cable-logging equipment. Roads would be not less than 1,200 feet from streams. Less road mileage would be built and maintained. Skidroads would disappear in favor of cable skyroads.

The cost differential between skyline and other systems is not great, but the difference in impact on the environment is significant. Reduction in environmental damage by skyline logging has the effect of internalizing logging costs that have been shifted to the environment in the past.

Two examples of the best current second-growth coast

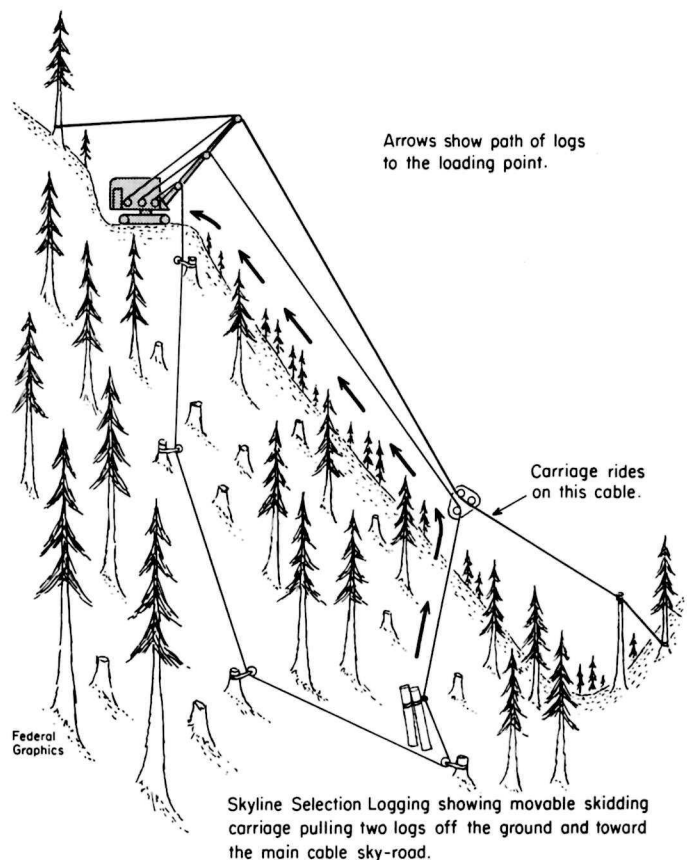
redwood forestry show the realistic nature of this discussion.

Both productivity and environmental damage are to be seen on the 7,700-acre McKay tract of the Georgia-Pacific Corporation. Although subjected to destructive logging in the 1890s, this second-growth forest is now fifty to eighty years old and is for the most part heavily stocked with redwood. Only remnants of damage are evident to the trained eye. Limbs and unusable portions of treetops from current logging still cause short-term ugliness.

Georgia-Pacific now utilizes small, broken, and short material, and a sawmill with a short carriage will soon be cutting pieces only four feet long, greatly reducing the amount of material left in the woods.

Stream damage from past logging is still in evidence. With miles of wood-choked stream in the McKay tract, Georgia-Pacific has begun to clear a slough at the bottom of the watershed. Some logs will be salvaged, and some material for shakes and shingles will be recovered. The main road is too close to the stream and produces a continuing impact on it. Georgia-Pacific argues that construction of a new road would cause yet more damage; but skyline yarding would permit the road to be moved to a position 1,200 feet from the stream and placed on less steep terrain.

One of the major threats facing second-growth red-



wood lands will be the coming transition from very large and voracious sawmills to smaller mills better suited to the growth capacity of the land. Georgia-Pacific will soon have to rely on the volume and growth of its second-growth forest. Although those forests are growing at a tremendous rate, there will be a period of ten to fifteen years during which the company will have a relatively small number of trees large enough to cut.

During this period the company will be faced with these alternatives: reduce mill output (with consequent drop in profit and employment); overcut its fine young forest a second time; supplement the timber supply to its mills; or a combination of these courses. The situation will be even more difficult for other big companies.

A small, 2,440-acre ownership at the southern end of the redwood region may place redwood forestry in a new perspective. The Gazos Creek Tree Farm, owned by Dr. Paul R. Hama and others, is managed by consulting forester James E. Greig of Soquel. Its owners take pride in their forest and try to upgrade it in productivity while maintaining or increasing its beauty. They expect forest revenues to pay the costs of ownership and provide a small income as well.

Land now within the Gazos Creek Tree Farm was heavily overcut in the past. As stocking is increased by planting and natural regeneration, and as timber stand improvement treatments are made, the sustained-yield cut is expected to increase from its present 750,000 board feet to 1,500,000 board feet annually from the entire property. Low growth relative to the McKay tract is caused by three factors: poor stocking because of heavy overcutting in the past, a much greater percentage of property in non-redwood and nonproductive upper-slope and ridgetop sites, and lower rainfall with longer periods of drought.

The selection system was chosen by the manager of the tree farm because under it, after careful cleanup of logging slash, he can operate with a short (twelve-year) cutting cycle and maintain the beauty of the forest. Management is working with well-developed theory in its tree-growth goals, but depends almost entirely on personal feelings in formulating esthetic goals.

Logging practices reflect the attitudes and goals of the owners. The contract logger, chosen by the forest manager for the care he exercises in his work, keeps soil damage, compaction, and erosion to a minimum. Because the selection system takes only a few trees per acre during harvest, there is little disturbance of the forest floor. Stream crossings are few and carefully protected; debris that reaches the stream is carefully removed. Roads and landings are made as narrow and small as possible to minimize waste of growing space.

The quality of land management, attention paid to esthetic values, and prospects for an increasing product output show that the Gazos Creek Tree Farm is fulfilling its public responsibilities in the coast redwoods.

The potential for rapid redwood growth and the potential for environmental destruction in this region both argue for establishment of a permanent forest industry that is concerned about natural beauty and other

wildland values as well as profit. Redwood ecosystems have been shown to be compatible with ecological forestry practices that protect forest values needed by the public.

Allocation of uses in the redwood region requires an inventory of basic resources and environmental hazards and potentials incorporated in a comprehensive, detailed plan. Currently available information resources contain the necessary data. Maps delineating soil-type boundaries, including average soil depth, fertility, and dominant vegetation, have been prepared for most of the region by the California Cooperative Soil-Vegetation Survey. A redwood tree farm or a unit of a large corporate ownership could easily develop maps and overlays showing the basic land resource, sensitive landslide areas, and an erosion hazard inventory. Timber cutting could be planned with this basic inventory in mind, and the maximum in values could be developed or protected as desired.

Future planning in the redwood region should seriously consider diverting some camping and recreational use of redwood parkland that requires development to suitable private redwood properties in a federal, state, and private cooperative effort. Such a diversion would profit both the redwood industry and the public during a needed transition to ecological redwood forestry.

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

This forest in Little River Canyon, which was clearcut in 1909 and thinned by 28 percent in 1955, is now an example of commercial forest beauty owned by Georgia-Pacific Corporation.



PETER A. TWIGHT



Motorized vehicles ring Paradise Campground in Mount Rainier National Park.

THE *MOTORIZED* ASSAULT

A reformed camping writer explains why she has given up promoting motorized camping

article and photographs by

Frances Greiff

"FROM THE REDWOOD FORESTS . . . to the Gulf Stream waters," you could not have found a more avid supporter of recreation vehicle travel.

In numerous magazine articles I have described the fun of camping on wheels, reminiscing about trips my family and I have taken in an eight-foot camper truck and, more recently, a fifteen-foot trailer. And I have urged other families to go and do likewise.

Last week I made a decision. I will write no more articles in support of recreation vehicle camping in state and national parks. If you want to take your twenty-one-foot trailer or thirty-foot motor coach to any of the myriad commercial trailer parks and campgrounds that have sprung up all over the country in recent years I will not try to discourage you.

But if you continue to campaign for more and bigger drive-through pads—unencumbered by overhanging branches—or for universal water, electric, and sewer hookups, or for around-the-corner dumping stations in every fragile national and state park, I will contest your rights. And I will do my best to push you to the outermost perimeter of the parks, where you can less easily destroy the unique environment your machinery now pervades.

If you ride the freeways on Friday afternoons or Sunday evenings, you already know that what began fifteen years ago as a modest little house on wheels towed by the family car or a simple piggyback shell on a truck has flourished into an account executive's dream.

“Outdoor fulfillment” has become a six-wheel bus with a boat on top, trail bikes on carriers fore and aft, and, frequently, a dune buggy or compact runabout towed behind. When there is no boat, you can see the twin air-conditioners and antennas for short wave, television, and citizens-band radio protruding from almost every mammoth roof.

Because my husband works for the same school system our children have attended, we have been able to spend, most years, eight or ten weeks in public parks of the United States and Canada. For some time now, I have been nagged by concern about the overwhelming proliferation of camping vehicles, and I have grown tired of being drowned in a shining sea of hubcaps and aluminum siding.

Lately, I have begun to wonder about my part in adding to the wheeled-vehicle folklore that induces more people with more machines to seek the already congested beauty spots of the land. I have tried to quell my uneasiness by telling myself, “They’re going to go, anyway. What difference does another story make?” “Go in off-season,” I would be sure to write, or, “Try outlying campgrounds or the high country.” For several years, I ignored—in print—the existence of Yellowstone and Yosemite.

If, within the past few years, you have not been to a national park like Sequoia-Kings Canyon, the Tetons, Olympic, Great Smokies, or Acadia, or one of the many state parks that dot the countryside today, you may not realize what is happening.

I have seen instant tenements created by the mounting influx of bigger and bigger vehicles. Once inside the crush of vehicles, I feel bombarded by noise and air pollution and sometimes begin to grow claustrophobic from what well may be an illusion but feels like an oppressively dense population. Everywhere, there is physical damage caused by the conflict between forest or meadow and the alien machine.

At night, in almost any public campground, I have been awakened by screeching brakes and by high-beam headlights shining into our windows, while a huge vehicle circles campsites hunting for space hours after the posted curfew.

The parking scene does nothing for tranquility. Day or night we hear the sound of branches snapping off

against the bulky shoulders of a cabover camper, followed by the driver’s reactions to scratches or dents from trees and posts.

Because the larger vehicles are fully self-contained—the euphemism for having a water heater and complete bathroom—their owners are independent of campground restrooms or daylight. They can and do move in any old time.

Morning or evening the staccato sounds of our neighbor’s generator have kept us company at outdoor meals. After all, he must have energy to operate his electric blankets, the refrigerator-freezer, electric coffee pot, toaster, and microwave oven.

You can appreciate the hookup mania when you see the long lines in which drivers wait for a place in the few concessionaire-operated trailer parks inside national park boundaries.

I remember seeing—near the entrance to a privately owned trailer park in Alberta’s Banff National Park—hundreds of trailers, truck campers, and motor homes. They were strung out along the curbs of barren roadways, smoke rising from barbecue grills out on the pavement, folding tables and chairs set up, children playing in the street.

Families remained in line for days rather than take a site without hookups in the lovely campgrounds elsewhere in the park.

The choice is still a free one. Should it be? How can you compare the energy drain of a million recreation vehicles with that used by knapsackers and tent campers?

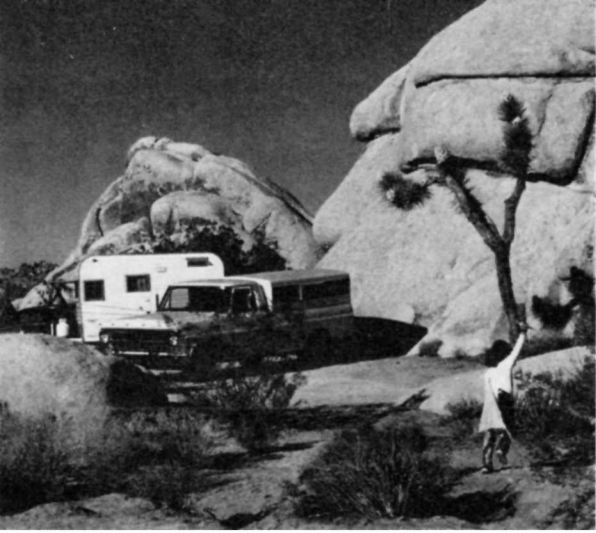
How many sequoias, woodpeckers, chipmunks, and mule deer and how much oxygen are we willing to destroy or displace for the benefit of this omnivorous wheeled industry? How many more grassy meadows and forest glens, how many winding creeks and stream beds are we going to bury with asphalt to make room for more machines?

Campgrounds usually are not designed to handle the big, heavy vehicles, even when they contain a few individual campsites that are large enough. Roadways are narrow; curves and turns are sharp; grasses, shrubs, and wildflowers along the edges of inner roads grow in the way of the machines.

By afternoon in summer the campground resembles a gigantic parking lot; and when we return from day-

Yosemite becomes clogged in summer and vacation seasons with oversized recreation vehicles.





Campers overrun high desert plant life of Joshua Tree National Monument, at left. Above, overcrowding common to California's beach parks is displayed at Palisades in Southern California's San Elijo State Park.

time activities, we become separated from the natural features of the park. The granite cliffs, a volcanic skyline, the brilliant red soil, the twisted cypress—whatever distinguishes the place—must be viewed from the perspective of the parking lot.

If our society needs vast parking lots of recreation vehicles to promote sociability, to convey to the owners a feeling of having gone somewhere important for a vacation, or even to provide overnight stops on the way to wherever, those lots do not have to intrude upon the nation's most cherished places—those places, with their vulnerable ecosystems, rarely duplicated anywhere else on earth.

So what can we do? I had thought there was nothing to do until I recently began research for an article on prospects for summer wilderness camping in California. In talking with Forest Service officials, Park Service planners for Yosemite National Park, with Sierra Club, Boy Scout, and Kelty Mountaineering Company representatives, I believe I have discovered who can lead the way.

Excessive and unwise use of wilderness and backcountry areas has caused permanent damage to the most popular wilderness regions of the state. To reverse this trend and give badly damaged areas a chance to recover, some prominent groups have begun placing limits on wilderness hiking, backpacking, and camping. The controls are partially voluntary and partially imposed through compulsory Forest Service and national park "wilderness permits" and the setting of quotas on how many can enter specific trails each day.

My recently sharpened awareness of recreation vehicle practices has resulted mostly, I think, from learning about those growing self-disciplinary actions.

Within organizations that have actively promoted the use of the backcountry, policies are being exhaustively studied. Now there is increased stress on restoration and preservation, to minimize impact and to leave the wilderness cleaner than it was found.

When a commercial mountaineering company like Kelty issues an extensive list of "non-trip suggestions" to save the wilderness and urges backpackers to avoid the entire John Muir and High Sierra trails, San Jacinto and San Geronio wilderness areas, and dozens of other accessible regions in California, it indicates

that a readiness to sacrifice is spreading through the wilderness fraternity.

In California also, local Boy Scouts are requiring the traditional unit, the troop, be broken down into smaller, low-impact groups for outings—a step that requires increased hard-to-find adult supervision.

If the wilderness bunch can attempt to change old habits and exert self-control to solve problems, why can't recreation vehicle travelers accept responsibility for similar controls? *Bigger* is not necessarily better. *More* must not stretch into infinity. *Anywhere* is not reasonable.

In saying this, I realize I will not be welcome at the Good Sam Club or in Wally Byam Caravans. I don't know what will happen to my recreation vehicle articles being held for future publication.

The only hopeful sign I know of is in the proposed master plan for Yosemite National Park. Sometime in the far future, it is suggested, all private vehicles will be excluded from Yosemite Valley; entrance will be possible only by a park transportation system.

When visitors to the valley can take only what they can carry, camping equipment will be limited—practically—to sleeping bags and tents. Vehicle campgrounds will be confined to the perimeter of the park in nonsensitive areas.

Is that the way all public parks should go? I am not asserting that users of campers and trailers are less knowing or caring than anyone else, but whatever we permit will continue to happen.

The superb parks of the nation belong to us. We are responsible for their survival. In this, the beginning of the second century of national parks, we must define the proper role of the camping vehicle, especially in relation to those treasured places that Congress has set aside in perpetuity "... for the benefit and enjoyment of the people." ■

Frances Greiff has traveled more than 50,000 camping miles throughout the United States and Canada. She has published several dozen articles on scenic, historic, and recreational features of state and national parks in various national publications.



GOLDEN-CHEEKED WARBLER

A bird that needs more friends



L. T. ADAMS

*old junipers in Texas are keys to the future
of the golden-cheeked warbler*

DAVID R. ZIMMERMAN

For each threatened bird there fortunately seems to be one human friend who cares enough to assume the role of advocate and spokesman. For the golden-cheeked warbler, *Dendroica chrysoparia*, a rare, tiny gem of clear song and gold, black, and white feathers, that mantle of human concern is borne by a fifty-three-year-old former wildlife worker in Texas, Warren M. Pulich, who now teaches biology at the University of Dallas.

"Someone has to look out for dickybirds," says Pulich, explaining why he came to be the foremost authority on and defender of this tiny warbler, which breeds only in the cedar brakes of the central Texas plateau. "I love to do golden-checked work," Pulich says. "But I have to divide my time [between it and teaching] in order to keep myself going."

Part of the responsibility of watching—and watching out for—a bird is writing about it, both for science and to bring its problems into the public view. Pulich is painstakingly completing a monograph on the golden-checked. He reports regularly in the popular press on the struggle to keep it from the brink of extinction.

In the March 1969 issue of this Magazine, he described the fight, then in progress, to keep the golden-checked habitat in one of the few Texas state parks that attracts breeding adults, Meridian State Park, from being torn up for a golf course. That fight has been won, Pulich says, but on a wider front the bird's fate remains unsure.

For the golden-checked, an insect-eating species that is fairly far down on a pesticide-concentrating food chain, the threat seems to be less one of chemical poisoning than one of habitat loss. Specifically, it is the loss because of the clearing for grazing, farming, and development of one tree, the bark of which seems to be an essential element. Without it the female cannot or will not build her nest.

She may site her nest in a different size or species of tree; but, Pulich finds, she invariably constructs it out of long strips of bark torn from the Ashe juniper, an evergreen also called Mexican cedar. In Texas, stands of this tree are known as cedar brakes.

Only mature cedar trees yield the needed nest matter. Pulich says: "Neither young Ashe juniper nor any of the other three species of juniper found in part of the warbler's nesting range offer acceptable nesting material." Thus, the *sine qua non* for the golden-checked warbler's continued survival is the preservation of mature cedar stands. Pulich has no evidence that the bird is menaced on its wintering grounds in Central America.

A vast brush-cutting program began in Texas a quarter of a century ago, with the support and the encouragement of the Department of Agriculture's Agricultural Stabilization Service and Soil Conservation Service (SCS). Ranchers were reimbursed for cutting their cedar brakes. Although federal specifications for expendable cedars have, at least recently, excluded brakes on the hilly and marginal lands most favored by warblers, Pulich says the clearing operations have destroyed much golden-checked habitat and threaten much that remains.



VERNON HICHS, USDA, SOIL CONSERVATION SERVICE

Over the past quarter-century a brush-cutting program in Texas, supported and encouraged by federal agencies, has destroyed much of the golden-checked warbler's highly specialized habitat and threatens that which remains.

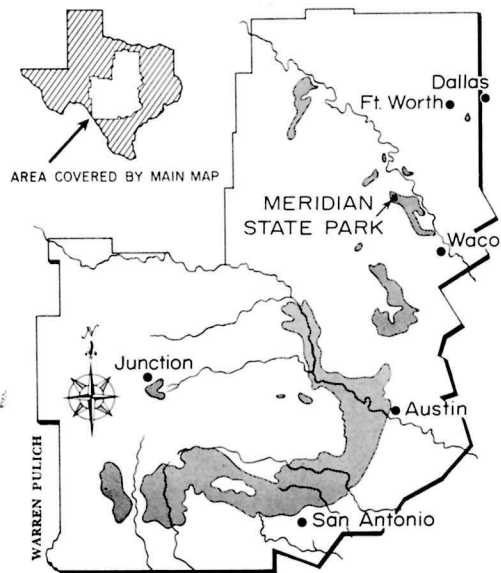


"My records," he states in a report he sent last year to SCS and the Office of Endangered Species of the Interior Department's Fish and Wildlife Service, "indicate that ten Texas counties, other than the thirty [that are] part of the bird's present range, have suffered a total loss of golden-checked warbler habitat due to cedar eradication programs."

How many warblers remain is less clear. They are small and shy and are spread over thousands of acres of brush country, most of which is private ranchland; some nest on army installations, where entrance is restricted.

Surmounting these obstacles, Pulich conducted a golden-checked census in 1964, at a cost, out of pocket, of about \$600. He would like to repeat it next year, but he estimates that the travel will cost \$2,000—a sum he does not have and, he says, has no imminent prospects of getting, either from individual donation or from private or government research grants.

Ironically, his failure to find funding stems in part from the results of his previous census. He estimated



The known breeding range of the golden-cheeked warbler is shown above. The species is found in mature stands of Ashe juniper scattered within the shaded areas.

then that the golden-cheeked population was between 15,000 and 17,000, which he says is "a mere handful" for an avian species. Although he feels the population has decreased since that census, the golden-cheeked status is not currently critical. Thus, while the Fish and Wildlife Service is increasingly assisting threatened birds through its endangered species program, budgets are tight and priority has been assigned to acutely endangered species rather than to those like the golden-cheeked, whose official designation is the less critical "rare."

Explains the chief of the branch of native endangered species Gene Ruhr: "I look forward to the time I can give Warren some money and tell him to do it [the census]. But right now I can't. We just don't have the money."

This improvident well-wishing frustrates and angers Pulich, who says it would be cheaper and easier to keep the golden-cheeked from becoming acutely endangered now than it would be to effect its recovery from that stage later.

Like the federal government, the state of Texas, through its Parks and Wildlife Department, has become interested in the golden-cheeked, which breeds on four or five tracts that it controls. The department plans an educational campaign on the bird's behalf. But, says staff biologist John C. Smith, "the department has not—and is not—acquiring tracts of land for the sole purpose of protecting golden-cheeked warblers. The department has never put any funding into actually working with golden-cheekeds. . . . As far as a golden-cheeked warbler program goes, we just don't have one."

As a result, virtually all the bird's breeding acreage remains in the hands of ranchers, whose land-use practices have been governed far more by commercial considerations than by those of wildlife conservation.

Thus, cedar brake clearance continues. The reason for the cutting, according to soil biologist Vernon Hicks of SCS, is that overgrazing in the past century led to an overgrowth of cedar; he says the cedar may be more widespread today than it was a hundred years ago.

To protect this warbler, as well as highly valued upland game species like the wild turkey and the white-tailed deer, Hicks says SCS urges ranchers to leave mature cedar stands uncut, especially on marginal lands. He estimates that more than half of the ranchers who have golden-cheeked warblers follow these protective practices. He disagrees with Pulich, who recently said: "The government cedar clearing program of SCS and subsidy payments . . . are in direct conflict with the retention of golden-cheeked habitat."

"No. That's not right!" Hicks replies. "We're not advocating clearing areas that are good golden-cheeked habitat at present—we're advocating that landowners leave these areas." The subsidies for cedar clearance, he adds, have ceased.

Pulich concedes that SCS "recently started to encourage the protection of known golden-cheeked habitat," and he agrees with Hicks that the bird's welfare rests in the ranchers' hands. "Sheep and goat ranching are apparently compatible with the warbler's requirements," he says, "provided the cedar brakes are not removed. Removing the understory of vegetation . . . has no [ill] effect . . . [and] a limited amount of clearing may even increase the local bird population. . . ."

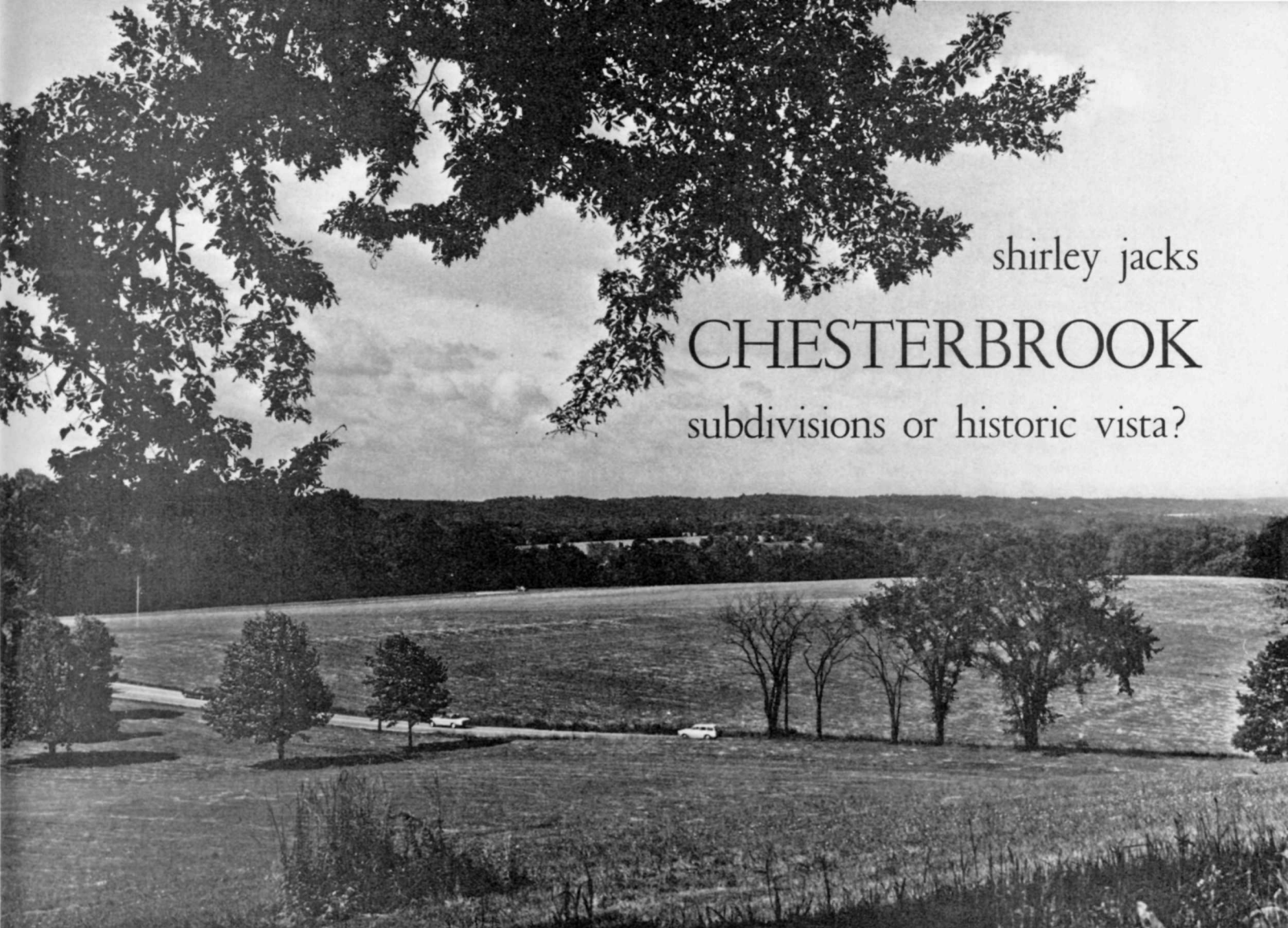
"Many ranchers realize as much monetary return from [leasing of rights for] deer hunting activity as they do from all other land uses. There is no conflict of interest in producing deer and retaining golden-cheeked habitat."

The warbler has additional value, Pulich says, as a natural attraction that enhances the recreational use of the scenic hill country in Texas where it breeds. More birdwatchers' dollars would be spent in Texas, he says, if there were more public lands upon which the bird could be seen in spring.

The best start to golden-cheeked warbler conservation would be to stop all cutting of virgin cedar brakes, Pulich says. Short of that unlikely step, he would like to start a well-coordinated campaign to stress the value of multiple-land-use practice beneficial to the warbler. He would pay ranchers subsidies for land-banking virgin cedar brakes. And he would have the government buy warbler habitat for sanctuaries.

"If we are really serious about the golden-cheeked," Pulich says, "we then should all get together to preserve this rare bird before it becomes endangered." Thus far, he has not been given the minimal funds needed to carry out the first step in such a program—a census that would determine how many birds remain, where they are, and where help is most needed. ■

Free-lancer David R. Zimmerman has been a bird watcher for thirty years and a science writer for ten. He writes the column "Medicine Today" for the *Ladies' Home Journal* and is a contributor to the *New York Times* on ornithologic topics.



shirley jacks

CHESTERBROOK

subdivisions or historic vista?

The large natural tract that adjoins Valley Forge is threatened by real estate development.

The signature of Brigadier-General Louis L. Dupontail, were he alive today, might be first on the list of founding sponsors of the Chesterbrook Conservancy of Valley Forge, Pennsylvania. Dupontail's Revolutionary War quarters, on the 865-acre Chesterbrook tract the Conservancy is battling to save, where he mapped out General George Washington's famous encampment, are doomed to be ringed with apartments and offices.

Lost, too, among the townhouses, stores, and resort motel will be the Lee-Bradford House, the Captain John Davis home that served as a picket post, and the barn that sheltered the horses of Washington's army. The natural habitat of deer and small wildlife will be turned into roads, a golf course, and a shopping center. The thickets belonging to game birds will give way to parking lots.

Shocked by the impending and irreparable loss, a group of private citizens formed the Conservancy during the past January in a last heroic effort to save the historic wilderness ground adjacent to Valley Forge

State Park. They are not fighting development per se. They are aware of the housing crisis that has spread from the urban centers and they are mindful that people must have places to live. But they are appalled that the historic Chesterbrook tract is being treated like any other piece of ground ripe for the developer.

A magnificent landscape, replete with memories, Chesterbrook has significance for people throughout the country. The private battle of the Conservancy is no back-yard zoning fight.

The need to save Chesterbrook is felt even more keenly because Valley Forge State Park itself is not meeting the needs of 1973. With well over a million visitors a year, the park is becoming clogged with people and automobiles. At each of its monthly meetings, the commission that administers the park wrestles with requests for park usage that cannot be met. As local population continues to grow, the crush can only become greater.

Valley Forge, a national shrine, attracts visitors from all over the United States, eager to study and appreci-

ate the site of "the turning point in the Revolutionary War." Chesterbrook itself was part of that turning point. Living and working in the stone house that still stands, Duportail, a twenty-six-year-old Frenchman, laid out the plans for the Valley Forge encampment and its fortifications.

In the early 1900s, shortly after the Commonwealth of Pennsylvania had designated 2,255 acres as a state park, Duportail's map was discovered in the attic of his Chesterbrook quarters. It details the strategic location of the encampment, built in a saucer of land to give Washington and his men full view, from the saucer's rim, of the countryside and the approach of the enemy. In 1972, a program of archeological "digs" was begun in the park to find artifacts of the revolutionary period and to recreate the life of the encampment period. Duportail's original map serves as the basis for that restoration.

When Valley Forge State Park was created, it was the intention of the Commonwealth to expand it to 3,000 acres at some future time. The surrounding hills and valleys were still farmland. There seemed to be no hurry.

But in the ensuing years, the original intent was put aside as the land was subdivided, homes were built, towns sprang up, and roads were cut across fields. Stores, gasoline stations, and industry moved in to serve the growing population and cut off one expansion point after another. Today, a visitor to Valley Forge can walk the rim of Duportail's saucer and look out on housing developments, motels, commercial strips, and industrial parks. At only one spot on the rim can one stand and see what the Continental soldier saw in 1777. That "last open vista" is Chesterbrook.

With the land in private ownership for so many years, residents of the surrounding area took it for granted that Chesterbrook would always be there—a lush green expanse of trees, shrubs, and hedgerows where people could stroll past Duportail's quarters; peek in the windows of the Lee-Bradford House, home of Washington's second in command, Major-General Charles Lee; and envision the restoration of the vandalized home of Captain John Davis of the Ninth Pennsylvania Regiment.

Horsemen rode to the hounds across the Chesterbrook meadows and children sought out the deer, the rabbit, and the pheasant, long gone from their own neat housing developments. Most of the tract was still owned by the heirs of Alexander J. Cassatt, who had built his private estate there in 1881 when he was president of the Pennsylvania Railroad, but it remained wild and open for pleasant pursuits. The University of Pennsylvania owned another large segment, and residents believed plans called for perpetual preservation. A horse farm occupied the remaining acreage.

The shock wave began in 1971 when it was learned that developer Richard J. Fox, of Jenkintown, Pennsylvania, working without fanfare, had bought the Cassatt property outright and had taken options on the two other parcels that make up Chesterbrook. He presented plans to Tredyffrin Township for a mammoth



PHOTOGRAPHS COURTESY OF THE CHESTERBROOK CONSERVANCY

apartment-office-commercial complex, where 10,000 people would live and another 15,000 would come to work every day. No one quite believed the plan would be sanctioned, but less than a year later, following multiple citizen protests, the township supervisors rezoned the land to fit the Fox plan.

A number of private citizens sued the township, charging the supervisors had failed to consider the impact of the development on the park, the 22.3-square-mile watershed including Valley Creek, and the entire surrounding area. They quoted the words of landscape architect Ian McHarg in his book *Design With Nature*: ". . . the valleys should be prohibited to development save such land uses as are compatible with the present pastoral scene. These would include agriculture, large estates, low-intensity use, parks and recreation, public and private." They noted McHarg's dictum that if houses were to be built in this valley, with its underlying limestone formations, they should not exceed one home for each twenty-five acres. Ironically, it is McHarg's firm—Wallace, McHarg, Roberts and Todd—that has designed the Fox complex.

The legal battle is still inching its way through the courts. But a handful of other citizens, feeling the pressure of time and wary of the effectiveness of the court challenge, decided to take a positive step—not to stop the developer, but to save the land.



The Revolutionary War quarters of Brigadier-General Louis L. Duportail (above) are located on the 865-acre tract the Chesterbrook Conservancy is battling to save. At left is the field in front of the Duportail house. Developer Richard J. Fox has a permit to build the first forty houses of a huge residential-commercial complex here.

The Conservancy was formed to solicit pledges from private citizens to help buy back Chesterbrook from the developer for an estimated \$8 million. Their intent is to preserve Chesterbrook in its natural state for all time. If enough private citizens are willing to contribute their money to save the land, reason the Conservancy's founding sponsors, those pledges will act as a catalyst to attract other private money, state and federal funds, and private foundation grants.

In his plea for rezoning, the developer presented a battery of experts to testify that the environment would not be spoiled by his development and that the historical sites would not be harmed. In addition, he waved questionable tax advantages in front of the township supervisors. While many of his claims lend themselves to differences of opinion, there is one fact that is not open to dispute. The development of Chesterbrook will close the "last open vista" with 3,770 dwelling units, a 1.5 million-square-foot office building, a motel, shopping center, and golf course. What the Continental soldier saw in 1777 will be gone forever.

The open fields and woods, available for informal recreation, will be gone, too, and with them the natural systems for protection of the environment. As members of the Conservancy point out as they make their daily calls on anyone and everyone who might help, a network of sewer lines would be necessary and have

been planned to serve the community. In this area, the Conservancy has won a major battle. Since the sewers rely heavily on federal funding, the Environmental Protection Agency finally has promised to produce an environmental impact study concerning the sewer system.

Of prime importance to the Conservancy is Valley Creek, which flows through Chesterbrook and into Valley Forge State Park, passing under the historic Knox covered bridge and flowing past Washington's headquarters on its way to the Schuylkill River. During the June 1972 floods, Conservancy members note, water entered the basement of the headquarters and threatened to sweep away the covered bridge. The prospect of cramming much of the Valley Creek watershed with apartment houses, office buildings, roads, and parking lots is frightening in this respect alone.

Currently, in dry weather, the stream flows at twenty-five cubic feet per second, with a peak flow of 6,400 cubic feet per second. The development of Chesterbrook alone is a danger alert; but surrounding communities are also building at an accelerated rate, multiplying the problem from all directions.

The Conservancy also feels the people of today owe a debt to the heroes of the Revolution. They are eager for the restoration and preservation of Duportail's quarters and the Lee-Bradford House, both of which are on the National Park Service's National Register of Historic Sites; the Davis House; and a slightly later but significant building, the signed 1792 Pennsylvania bank barn on the Duportail site.

But the most serious concern of the Conservancy is that urbanization will sweep away one of the few remaining open spaces on the East Coast with historic value and natural amenities. In this sweep Valley Forge State Park cannot help but be diminished.

The number of applications submitted monthly for zoning changes and subdivisions in all of the neighboring townships is testimony to the commercial value of land here and the trend of the times. The 1970s will be a decade of growth and profit for developers. It must stop somewhere, says the Conservancy. Why not now—with Chesterbrook—through the efforts of people who love the land?

One state senator and one state representative each has filed a bill in the Pennsylvania legislature calling for acquisition by the state. Both bills are stalled in committee. The Valley Forge State Park Commission has voted to support the Conservancy, and some of its members have pledged money to help buy Chesterbrook. In adding her "yes" vote to that resolution, the secretary of the park commission said it well: "I'm not voting against development. I'm voting against what is happening to the whole world." ■

Shirley Jacks is a staff writer for a suburban Philadelphia daily newspaper, *Today's Post*, and a free-lance writer specializing in local government and its effect on the environment. She has covered the story of the Chesterbrook controversy since the plan was first unveiled more than two years ago.

DEATH, WATERFOWL, AND LEAD SHOT

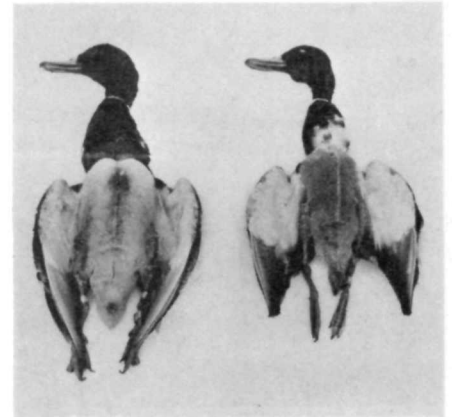
Interior continues to stall

a staff report

OVER THE PROTESTS of NPCA and those of most other conservation organizations, the Department of the Interior continues to allow two to three million waterfowl to suffer and die annually because of ingestion of lead shotgun pellets. Furthermore, the department has known of the problem for decades and proved in 1968 that iron shot is ballistically suitable; still Interior refuses to act!

Death by lead poisoning in waterfowl normally is slow and lingering, its ultimate cause being starvation brought about by inability to reabsorb assimilated food. Weight loss before death ranges in most cases from 25 to 60 percent; however, after a weight loss of 30 to 40 percent, recovery is virtually impossible, although death may not occur until suffering has continued for an additional two weeks or more. Liver and kidneys are essentially destroyed and cease to function normally. Both nervous system and blood are seriously damaged. Death by such torture may take sixty days or more, during which time the waterfowl become listless and lethargic. Many ducks crawl ashore to die; others, like those shown in the photograph below, become so weak

The high weight losses associated with lead poisoning in waterfowl are seen here. Mallard duck at right had lost 45 percent of its original weight by the twenty-fourth day following a dose of two shot pellets. This picture was first published in a 1951 study that proved iron shot a nontoxic substitute for lead shot. Photograph by courtesy Illinois Natural History Survey.



that their wings droop lifelessly in the water as they become unable to fly. The duck finally becomes so weak that its head falls in the water and it drowns.

In June 1972, Interior "hoped" to make iron shot mandatory by the 1974-1975 season. In February 1973, Interior "hoped" to make iron shot mandatory by the 1975-1976 season. NPCA and the Humane Society of the United States, through petition, and most other national conservation organizations demand that the use of iron shot for migratory waterfowl hunting be made mandatory by the 1974-1975 season. Interior continues to ignore these demands of the conservation

community, has refused to meet with the organizations, and is defaulting in its responsibility to serve the public interest. Apparently yielding to pressure from small special interest groups to ignore the iron shot alternative, the Department of the Interior is sentencing millions more waterfowl to the kind of torturous death shown on this page. PLEASE HELP!

Write Hon. Rogers C. B. Morton, Secretary of the Interior, Washington, D.C. 20240, and Hon. Russell E. Train, Chairman, Council on Environmental Quality, 722 Jackson Place, Washington, D.C. 20006.

Below, ducks dead from lead poisoning at Rice Lake, near Banner, Illinois, March 1972. Photograph by courtesy of the Illinois Department of Conservation.



Back Bay Refuge We informed members in the June issue that a preliminary injunction secured by various off-road vehicle users will prevent implementation of the Interior Department's vehicular entry regulations for Back Bay National Wildlife Refuge in Virginia for the rest of the summer, and thus effectively for the balance of the vehicle-use year. NPCA has been and will continue to be an intervenor in this matter.

The Association has sent the Interior Department's Assistant Secretary Nathaniel P. Reed a letter indicating its disappointment over the outcome at Back Bay, but assuring him of NPCA's continued support for proposed ORV regulations as formulated by the agency of immediate jurisdiction, the Bureau of Sport Fisheries and Wildlife. "We applaud your effort to continue to full trial on the merits of the case," wrote NPCA, "and would urge you to continue your fight to preserve the viability of this national wildlife refuge."

Rainbow Bridge litigation As a result of litigation brought against the Department of the Interior and the Bureau of Reclamation by two environmental organizations and a private individual, a federal district judge in Utah has permanently enjoined the Department and the Bureau from allowing reservoir waters behind the Glen Canyon dam on the Colorado River from intruding into Rainbow Bridge National Monument in southern Utah.

The court held that it is the statutory duty of the Interior Secretary and the Reclamation Commissioner not only to prevent intrusion but to remove water that already has intruded, in accordance with the language of the Colorado River Storage Act of 1956. This act, the judge said, is still "in full force and effect." The act specifically forbids intrusion of reservoir waters into the monument.

The Interior Department, State of Utah, and numerous water and energy user groups of the region, defendants in the case, have appealed the district court decision to a court of appeals, and NPCA will participate in the litigation with a "friend of the court" brief that it is hoped may raise some valuable points in the matter.

Longer-term members of the Association will recall that NPCA was working toward protection for Rainbow Bridge as early as 1960, during the construction days of the Glen Canyon dam. In an editorial that year discussing lack of provision for monument protection NPCA said: "The main point at issue . . . is whether or not the Department of the Interior is going to uphold the provisions of [the Colorado River Storage Act] as well as established national policy against reservoirs in national parks and monuments."

Work on the dam went forward, and a 1962 editorial in the Magazine was saying that "The commitments to protect the monument are still in the law; they still prohibit the closing of the gates at Glen Canyon dam until protection is provided."

When it became apparent that the Interior Department would not provide protection of one kind or another for the monument, NPCA filed suit in federal district court to pre-

vent closure of the dam's gates. It appealed an unfavorable decision to circuit court, and then to the Supreme Court; but the case was lost, largely on technicalities, and the reservoir continued to fill. Now the recent decision of the Utah court has brought the Rainbow Bridge matter back into the news.

We would like to point out to members that a rather complete history of NPCA's earlier activities in behalf of Rainbow Bridge is contained in numerous editorials in the 197-page illustrated volume titled TOWARD AN ENVIRONMENTAL POLICY, published by the Association in 1971 and still available at \$5.95 in paper cover and \$12.95 in cloth, both prices postpaid.

Pipeline right of way Public hearings on the trans-Alaska oil pipeline question already have been held in Senate committee, as reported in the May issue, and have been followed by hearings by the Subcommittee on Public Lands in the House. On invitation, NPCA's president A. W. Smith presented Association views and, in his private capacity as chairman of the Environmental Coalition for North America, for that organization also.

ENCONA recommended legislation that would provide for U.S.-Canada negotiations toward a treaty for construction of oil and gas pipelines from the Prudhoe Bay oilfields through a common corridor in Canada to the U.S. midwest, with an immediate study of the economic, ecological, and security aspects of the route, and a report to Congress. The organization recommended against issuance of a permit to construct the Prudhoe Bay-Valdez oil line pending a final decision by Congress on the best route. Any such legislation, said ENCONA, should avoid modification of the National Environmental Policy Act, both generally and specifically in regard to the north slope of Alaska, and should contain no restrictions on judicial review of relevant issues. Such proceedings, ENCONA said, should be broad enough to cover other alternative ways of getting Prudhoe Bay oil that might not include pipelines. "None of the alternatives to the Valdez route have been adequately investigated," the organization testified.

NPCA supported ENCONA's position in the matter, but not only recommended immediate enactment of legislation directing negotiations with Canada but also prompt construction of a line from the north slope and up the Mackenzie River. "We are satisfied that the ecological hazards of the Valdez route are insurmountable and that those of the Mackenzie route are minimal," the Association testified. NPCA also insisted that legislation on the subject ought not modify NEPA in any way; that the current Prudhoe Bay "should not be the occasion for the impairment of an invaluable statute."

"We recommend very strongly against the passage of legislation at this time authorizing the Secretary of the Interior to grant permits for broader rights of way generally [for pipelines on public lands] unless an exception is made for any pipelines from the north slope of Alaska,"

(continued on page 28)



Clarence Cottam

ANNUAL MEETING OF THE BOARD OF TRUSTEES



Spencer M. Smith, Jr.

The annual meeting of NPCA's Board of Trustees was held at Association headquarters on May 25, 1973. Dr. Clarence Cottam, retiring Chairman of the Board and Executive Committee, was replaced by Spencer M. Smith, Jr., member of the Association's Executive Committee. Also retiring as a long-time member of the Executive Committee was Willard E. Brown. Newly elected Executive Committee members are Mrs. Richard E. Byrd, prominent as leader in the Garden Club of America and in national historic preservation; and Mrs. Laughlin Phillips, member of NPCA's Board of Trustees since 1969.

Vacancies on the Board of Trustees created by the retirements of Charlton Ogburn, Jr., and Ian L. McHarg were filled by Mrs. W. L. Lyons Brown, of Harrods Creek, Kentucky, who has held several positions in the Garden Club of America; Mrs. Ariel B. Appleton, of the Research Ranch of Elgin, Arizona, co-owner with her husband of an Arizona ranch dedicated to nonprofit research on the ecology of the shortgrass regions of Arizona, and to the preservation of endangered species there; and Isabelle Lynn, of Goose Prairie, Washington, manager of an outdoor recreation resort at Goose Prairie and several times a contributor to NPCA's Magazine on controversial environmental issues.

In other action, the officers and trustees of NPCA awarded Conservation Service Citations to Dr. John H. Cover for his long and distinguished services to the Association as member of the Board of Trustees (since 1960), as Secretary of the Board and member of the Executive Committee (1960-1972), and for many years as Chairman of the Association's Conservation Education Center; to Willard E. Brown, for fifteen years of service to the Association as member of the Executive Committee (1958 to 1973) and as member of the Board of Trustees from 1958; and to Dr. Clarence Cottam, for his long and distinguished services to the Association as member of the Board of Trustees (1956-1973), as president (now Chairman of the Board), and as Chairman of the Board of Trustees and Executive Committee (1960-1973).

(continued from page 27)

the Association stated. "Such general legislation would have the effect of authorizing the Valdez route by indirection without full consideration of the merits of the alternatives by Congress."

Provincetown airport We outlined in several previous issues plans of a consultant to the Provincetown, Massachusetts, Airport Commission to extend the runway of the municipal airport at Provincetown so it would intrude into Cape Cod National Seashore. We also indicated the strong objections to the

operation of both NPCA and the National Park Service. The commission wants the airport extended to take care of supposed future increases in use. NPCA has supported the Service in its contention that, with modest upgrading of present facilities for safety and service, and possible future use of short takeoff and landing aircraft, the airport would be adequate without further infringement on the seashore.

The airport commission now has issued a report on its public hearing in Provincetown at which it indicated that critics of the plan were concerned over demographic and environmental issues. The latter concern, the com-

mission said, was "without validity." The commission now is going to make its recommendations to "higher authorities." NPCA has written the commission asking how it arrived at the conclusion that the concern of opponents is "without validity," and how the commission itself resolved demographic issues during formulation of its plans. The Association also indicated it would be pleased to have the commission identify the "higher authorities" mentioned in the report. NPCA pointed out that statutes controlling use of Federal Aviation Administration funds indicate that airports may not be expanded into national park system units unless no clear and prudent alternative exists. "This may be a subject for serious discussions on a national level as well as a local level if the commission or authors of the plan do not alter their recommendations," NPCA told the commission.

Refuge camping Interior's Bureau of Sport Fisheries and Wildlife has proposed that overnight camping at Tule Lake and Lower Klamath wildlife refuges in California be prohibited, and also that vehicles be prohibited in the two refuges from ninety minutes after sunset to two hours before sunrise because of insufficient sanitary facilities and protective personnel.

NPCA has written BSWF's regional director, John D. Finley, expressing support for the proposed policy as outlined in the FEDERAL REGISTER (May 10, 1973). "We have long supported the location of camping and recreation facilities outside the boundaries of certain natural areas," the Association wrote. "We believe such practices as this are compatible with the primary purposes for which the refuges were established."

Fortuitous hearings? When Congress passed the Native Claims Settlement Act in 1971 it provided, among many other things, for establishment of a Joint Federal-State Land Use Planning Commission with wide investigative and advisory powers on public land uses in Alaska, including national park and national wildlife refuge system uses. The commission has initiated a series of public "listening hearings," so-called, that eventually will cover the state and will, the commission hopes, discover regional feelings in Alaska on proposed final designation or disposition of public lands withdrawn a number of years ago in anticipation of eventual congressional review.

Some NPCA members have complained that in at least two recent in-

stances the U.S. Forest Service has held public hearings a few days prior to commission hearings in Alaskan towns, apparently to generate public support for designation of public lands as national forests, with multiple-use management. NPCA has written the appropriate Forest Service division chief in Alaska inquiring into this procedure, and saying that Service hearings on designation of withdrawn lands before the commission has completed its own hearings is premature.

"It appears that the Forest Service meetings were carefully structured and scheduled to drum up local support for Forest Service interests so as to influence the outcome of commission hearings," NPCA wrote. "The congressionally mandated planning process for management of Alaskan public lands affords the people of this nation a unique opportunity to make rational determinations of the best use for such lands and to secure the public interest. We would appreciate any information you may have concerning this matter and, if such meetings were conducted, your assurance that the Forest Service will refrain from any such objectionable activities in the future. . . ."

Monongahela National Forest The U.S. Forest Service is due to begin the final phase of construction of a road on Cheat Mountain in the Monongahela National Forest, West Virginia, early this summer. Once completed, the road will open a previously roadless area to use for transportation and removal of timber, and for the development of private mineral interests. In

addition, the roadway will be used by mineral owners' employees in traveling to and from their jobs, and by hunters and fishermen.

Since the public first learned of the construction of the road it has been a controversial issue. In 1970 a "Multiple Use Survey," prepared for Monongahela National Forest Supervisor F. A. Dorell, recommended that the road not be built because, among other things, it would destroy the area's potential as a black-bear breeding habitat. It is estimated that as few as 600 black bears remain in the entire state, and the West Virginia Department of Natural Resources considers black bears to be a threatened species there. Representative Ken Heckler of West Virginia has denounced construction of the road because of the potential environmental threats from logging and mining activities to the water quality of the area's streams. Two local conservation groups have joined Congressman Heckler in opposing the road project.

The Forest Service has established guidelines which call for a NEPA environmental impact statement when a proposed action of the Forest Service is highly controversial. NPCA, along with two other national conservation organizations, has written Russell E. Train, Chairman of the Council on Environmental Quality, saying that the Forest Service knew the road project was of a controversial nature and thereby violated its own guidelines by not filing an impact statement. The letter also said that the Forest Service has ignored CEQ's guidelines calling

for an environmental impact statement if there is potential that the environment may be significantly affected. The organizations call on Mr. Train to request the Forest Service to halt construction on FSR 92 until the Forest Service submits an impact statement to CEQ.

Helicopters in parks NPCA has written Park Service Director Ronald H. Walker objecting to helicopter sight-seeing trips over at least three units of the park system—Grand Canyon Park, Mount Rushmore Memorial, and Gettysburg Military Park—on the grounds of mechanical intrusion, noise pollution, and risk of accidents. The Association asked the director whether helicopter trips of the sort are permitted in any other units of the park system; also that it be furnished information on possible airplane (as distinguished from helicopter) trips over any units of the system.

A generous bequest NPCA has been deeply gratified over a bequest of some \$52,000 from the estate of the late Mrs. Constance Brewster Bryant of Philadelphia and has made an attempt to learn more about its benefactor. But it appears that Mrs. Bryant had no surviving relatives; the trust company that executed the will had no information, and it can only be surmised that Mrs. Bryant was a person more than ordinarily concerned with the importance and urgency of the work being done by national environmental organizations like NPCA.

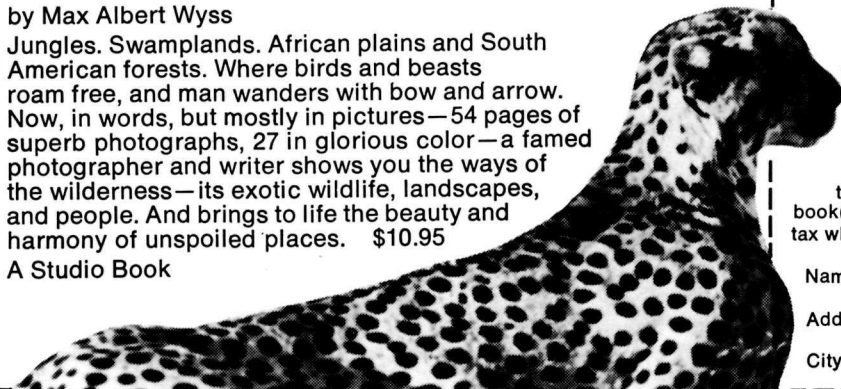
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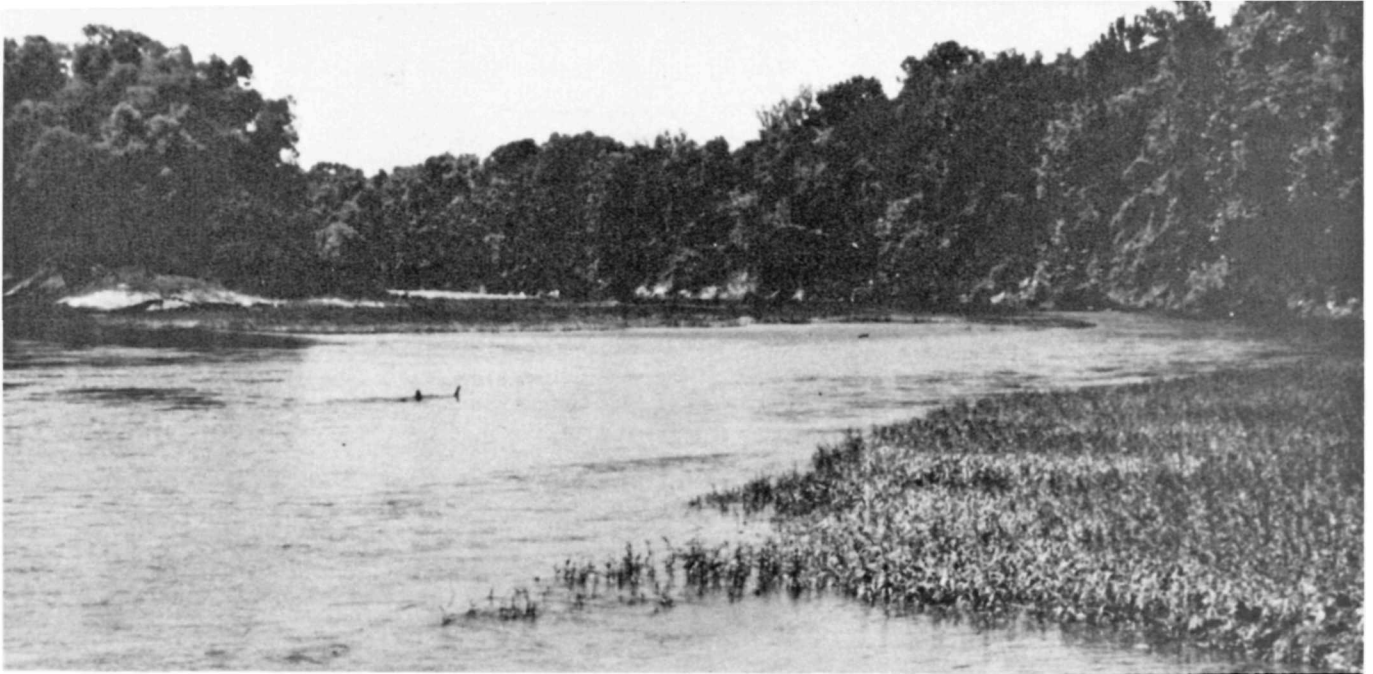
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NP



The Tennessee-Tombigbee Waterway project of the Corps of Engineers will destroy critical habitat for many of the 87 species of fishes found at this site near Columbus, Mississippi, among its other disastrous environmental effects.

Tennessee-Tombigbee Waterway: Disaster in Water Development

ELSEWHERE on these pages we note the publication, and availability from NPCA, of *DISASTERS IN WATER DEVELOPMENT*, a brochure that looks, in the words of its subtitle, at some of the most economically wasteful and environmentally destructive projects of the Corps of Engineers, Bureau of Reclamation, and Tennessee Valley Authority. This page presents NPCA members a detailed overview of one of the thirteen water projects examined by the brochure.

The Tennessee-Tombigbee Waterway is a \$514 million canal project designed to link the Tennessee River with the Tombigbee River, which flows from northern Mississippi into the Gulf of Mexico. Construction will require digging and impounding a 186-mile channel in the Tombigbee, a 45-mile lateral canal, and a deep 39-mile canal piercing the ridge separating the Tennessee and Tombigbee basins. Justification rests primarily on projected savings to shippers using the canal.

The upper Tombigbee is the largest unimpounded and unchanneled river left in the Mobile Basin. The canal project will involve the dredging and channelizing of hundreds of miles of river and tributaries and the moving of 258 million cubic yards of earth. A report prepared by the regional office of the Environmental Protection agency has pointed out that the project will "irreversibly" damage a scenic and natural area in northeast Mississippi: "The channelization, the dams and impoundments, the introduction of Tennessee River water into the Tombigbee River system . . . and the construction operations necessary for completing the waterway will have a profound and lasting effect on water quality values and the ecology of the entire area through which the waterway passes."

In addition to the risks involved in mixing two different ecosystems, project construction would take place in one of the unspoiled areas of Mississippi that has not received adequate scientific study. Preliminary investigations indicate the area has tremendous potential for zoological and botanical research. At least five endangered species of musles will become extinct as a result of the canal project.

Promotional material supplied by supporters of the water-

way stresses the importance of the canal in facilitating shipping of strip-mined coal to Mobile for eventual export to Japan. Thus sections of northern Alabama and eastern Tennessee will be devastated by strip mining to fuel Japan when we are worried about an energy crisis at home.

The project was not evaluated from a comprehensive public viewpoint to see whether it would provide a needed transportation service not available from other modes. The Corps of Engineers conveniently overlooked the fact that the railroads already have in existence a vast system of basic facilities (roadway and structures) capacity of which is more than sufficient without expansion to handle any volume of traffic that might conceivably be moved on the proposed waterway.

In calculating benefits for the project, the Corps has violated requirements of the 1966 Transportation Act. In the last five fiscal years the Corps has managed to double the navigation benefits of the project by illegally altering the rate differential between railroad and barge traffic. This violates the Transportation Act, which provides that once a transportation rate differential between various modes of transportation is established, that differential must be carried through the entire life of the project.

Project sponsors claim that this waterway is a missing link needed to interconnect a larger system of national waterways. The truth is that the waterway will not provide the missing link for any such inland intercoastal waterway system because there are a number of other "missing links," like the Cross-Florida Barge Canal that President Nixon wisely stopped, and the Gulf Intercoastal Waterway, which the Corps itself halted on the basis of environmental damage.

The Tennessee-Tombigbee Waterway would cause major environmental damage, will not provide a needed transportation service, and cannot be economically justified. The project should be deauthorized and steps taken to protect and preserve the natural resources of the area.

NPCA members wanting to express their views on this project can write Harry A. Griffith, Chief Engineer, Mobile District, Corps of Engineers, Box 2288, Mobile, Alabama 36628. □

news notes

India's tigers India has begun a large-scale campaign to save her tigers from extinction. The \$6 million Project Tiger is a six-year project supported by the World Wildlife Fund that calls for the creation of special sanctuaries in 50 forests and national parks, ranging from 100 to 5,000 square miles in area. In less than 50 years, India's tiger population has dwindled from 40,000 to 2,000; but officials expect the remaining tiger population to double within six years of the program's inception.

Big Cypress purchase The Interior Department plans on a seldom-used budgetary device to begin purchasing land for Big Cypress National Fresh Water Reserve in South Florida if Congress enacts legislation to authorize such an area. ("Reserve" is the title originally advanced by the Administration. Several other names and modes of protection have been advanced.)

Existing law permits the Secretary of the Interior to obligate up to \$30 million per year against future appropriations from the Land and Water Conservation Fund. Such action would make it possible to start purchase of land for inclusion in the proposed 540,000-acre reserve north of Everglades National Park during the government's Fiscal Year 1973. It was previously thought that money would not be available until FY 1974 or FY 1975, if Congress authorized the purchase. It is worth noting that the state of Florida has generously offered to put up \$40 million to help the federal government meet the cost of the purchase, now estimated at \$156 million.

Cache River project A federal judge has ordered all construction halted on the Cache River project in Arkansas. Ruling on a suit brought by conservationists in Arkansas, Judge J. Smith Henley has said that all construction on the mammoth project will be stopped until the Army Engineers prepare a new and adequate environmental impact statement. The Cache River Project calls for channelizing 231 miles of the Cache River. The project is a \$60 million venture that basically appears to benefit a relatively few private landowners. It would destroy what is considered to be the most important remaining wintering area for mallards on the North American continent, since the White River National

Wildlife Refuge, downstream, could be virtually destroyed by silt-laden waters and abnormal flooding created by the upstream ditches of the project. Now available from NPCA is a brochure entitled "Disasters in Water Development," an account of thirteen particularly destructive dam, canal, and channelization projects planned or under construction by the Army Engineers, the Bureau of Reclamation, and the Tennessee Valley Authority. The Cache River channelization is one of the projects covered in detail in the brochure, available to members free.

Park Service book The National Park Service has published a new book on the history of the settlers who came ashore in 1585 at what is now Fort Raleigh National Historic Site, N.C., and founded the "Lost Colony" of Roanoke Island. ADVENTURERS TO A NEW WORLD, by Park Service historian Charles W. Porter III, is the latest in a series of historical handbooks on areas of the national park system. The 56-page volume contains 12 plates of the artistry of John White, explorer, artist, surveyor, and colonial governor. The book may be ordered from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402, for \$1.00.

Florida bird protection It is encouraging to be able to report that Florida has joined Illinois in making an effort to protect its nongame species of birds, endangered or otherwise. Determined state efforts in songbird protection and restoration have been practically nonexistent in the U.S. until the fairly recent past, and mostly have been confined to such unimportant pleasantries as the naming of "state birds."

The reason for this is not far to seek, and was once summed up nicely by Dr. Joe Linduska, of the U.S. Fish and Wildlife Service. "It has been said that the bluebird is declining in numbers," observed Dr. Linduska. "That is a sad state of affairs, but it would probably not be so if the bluebird weighed three pounds and held well to a pointing dog. . . ."

The Florida Game and Fresh Water Fish Commission currently is trying to remedy that historically "sad state of affairs" locally, and has asked for an appropriation of general revenue funds to supplement regular income from hunting licenses for the purpose. In discussing this changing attitude Dr. O. E. Frye, the commission's director, has frankly said that "song birds are on the short end when it comes to wildlife research, management, and protec-

tion. Birds, other than game birds, are often treated like distant relatives insofar as wildlife funds are concerned, and must settle for the crumbs of conservation programs." But already, Dr. Frye has pointed out, the commission has gotten into a program of research studies on nongame birds in Florida—particularly on the brown pelican and the sandhill crane, both endangered species under NPCA criteria—and is monitoring pesticides and diseases that affect game and nongame birds alike. The commission's program is most commendable, and we would like to express the hope that it also will prove contagious.

East African tours Zoos can hardly be indifferent to the threatened destruction of wildlife habitats that are the chief source of their exhibits. In recognition of the threat, the New York Zoological Society recently agreed to join the Government of Kenya in financing a water supply system for the great Amboseli Game Reserve. All NPCA East Africa field trips, including the extended, largely airborne version announced in our last issue, visit this reserve.

In Amboseli, wildlife interests have clashed with those of Masai tribesmen. Although a Masai District Council manages the reserve under a government grant, part of it is banned to their cattle, mainstay of their economy. The tribesmen resent land-sequestering for the sole benefit of leopard, rhino, and zebra, particularly in the dry season when the surrounding plains

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are too arid for grazing. They have made seasonal forays into the banned area in search of pasture for their herds. To solve this problem, a pipeline will carry water from the swamps of eastern Amboseli to the plains, enabling production of herbage the year around.

NPCA tours also visit a range management project, run by Africans, that is experimenting with coexistence of Masai cattle and wild animals. Both this and the Amboseli water plan demonstrate the possibility of reconciling the needs of man and wildlife, at the same time preserving a priceless East African resource.

Natural landmark additions Growth of the Park Service's National Natural Landmark system has continued with the addition of a number of Pacific sites that illustrate various aspects of past volcanic activity there. The sites were chosen on the basis of studies by the Service's now-retired principal geologist, Dr. Robert H. Rose. Two of the sites—in Guam and American Samoa—are the first areas from those territories to be recognized in the Landmark Registry, one of the Service's cooperative programs designed to encourage private and public owners to protect outstanding examples of American natural history. Designated areas must be in essentially unspoiled condition to qualify.

The new units are Iao Valley, Koolau Range Pali, Mauna Kea, and North Shore Cliffs on Maui, Oahu, Molokai, and the Island of Hawaii, in Hawaii State; also Facpi Point, Fouha Point, Mount Lamlam, and Punta de Dos Amantes, all in Guam; and Aunuu Island, Cape Taputapu, Fogamaa Crater, Leala Shoreline, Matafao Peak, Rainmaker Mountain, and Vaiava Strait, in the islands of American Samoa.

The continental United States also furnished the Service's natural landmark system with a dozen further units, comprised of outstanding areas of forest and wetland. These were:

Ferncliff Park, in Fayette County, Pennsylvania, a scenic 160-acre late successional forest in the Allegheny Mountains;

Ferncliff Wildlife and Wildflower Preserve, 65 acres near Wakefield, Pennsylvania, containing an apparently virgin stand of eastern forest;

Florence Jones Reineman Wildlife Sanctuary, 3,100 acres of regenerating forest near Carlisle, Pennsylvania, noted for its concentrations of migrating hawks;

Hemlocks Natural Area, in Pennsylvania's Tuscarora State Forest, a 1½-

mile strip of virgin eastern hemlock; Heron Pond and Wildcat Bluff Nature Preserve, in Johnson County, Illinois, 1,123 acres in the state's largest bald cypress and tupelo swamp-land, a remnant of a once-vast cypress swamp in the southern part of the state;

Horseshoe Lake Nature Preserve, near Cairo, Illinois, containing notable stands of bald cypress and tupelo and heavy concentrations of waterfowl;

Hot Creek Springs and Marsh, in Nye County, Nevada, a 15-acre site that protects the relict White River springfish;

McConnell's Mill State Park, in Lawrence County, Pennsylvania, 930 acres of outstanding Pleistocene glacial landforms;

Mississippi Palisades, in Carroll County, Illinois, a 675-acre portion of Mississippi Palisades State Park containing not less than 569 species of native plants;

Ruby Marsh, in Elko and White Pine counties, Nevada, whose 20,000 acres furnish nesting sites for many migratory birds, including the trumpeter swan and greater sandhill crane;

Volo Bog Nature Preserve, in Lake County, Illinois, 47 acres of classical northern quaking bog with an unusual flora for the state; and

Wauconda Bog Nature Reserve, also in Lake County, 67 acres of mature bog that is undergoing rapid natural change and which is said to support the most southerly example of bog vegetation in Illinois.

conservation docket

PUBLIC HEARINGS

On July 16 and 17 the Senate Interior Committee will hold public field hearings on S 210, to establish the Boston National Historical Park, and on S 1929, to establish the Nantucket Sound Islands Trust.

Legislation touching on the national park system introduced into the Congress since the June appearance of the Conservation Docket has included:

Chattahoochee Recreation Area: HR 7561 and S 1738, to establish the Chattahoochee River National Recreation Area in Georgia. To House and Senate Interior and Insular Affairs Committee.

Olmstead Historic Site: HR 7593, to establish the Frederick Law Olmstead Home and Office in Massachusetts as a national historic site. To House In-

terior and Insular Affairs Committee.
El Malpais Monument: HR 7607, to establish the El Malpais-Grants National Monument in New Mexico. To House Interior and Insular Affairs Committee.

Cuyahoga Valley: HR 7666 and 7076, to establish the Cuyahoga Valley National Recreation Area and Historical Park. To House Interior and Insular Affairs Committee.

Boston Park: HR 7586, to establish the Boston National Historical Park in Massachusetts. To House Interior and Insular Affairs Committee.

Chickasaw Recreation Area: HR 1679, to establish the Chickasaw National Recreation Area in Oklahoma. To House Interior and Insular Affairs Committee.

Klondike Park: S 1622 and HR 7121, to establish the Klondike Gold Rush National Historical Park in Alaska and Washington State. To respective Interior and Insular Affairs committees.

Federal Lands: S 1638, to authorize the Interior Secretary to make certain federal lands available to state and local governments for park and recreation purposes. To Senate Interior and Insular Affairs Committee.

Disabled Eagle Passport: HR 6961, to amend the Land and Water Conserva-

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

tion Act of 1965 to create the Disabled Eagle Passport Program, under which disabled persons would be admitted free to certain admission-fee areas in national parks and recreation areas. To House Interior and Insular Affairs Committee.

Legislation concerning fish and wildlife matters has included:

Animal Protection: HR 7578, to amend the federal law relating to the care

and treatment of animals to broaden the categories of persons regulated under such law; to assure that birds in pet stores and zoos are protected, and to increase protection for animals in transit. To House Committee on Agriculture.

Steel-jaw Traps: S 1742, to prohibit the use of leg-hold steel-jaw traps or other inhumane snaring devices on animals in the U.S. To the Commerce Committee.

Humane Trapping: S 1637, to discourage the use of painful devices in the trapping of animals and birds. To the Senate Commerce Committee.

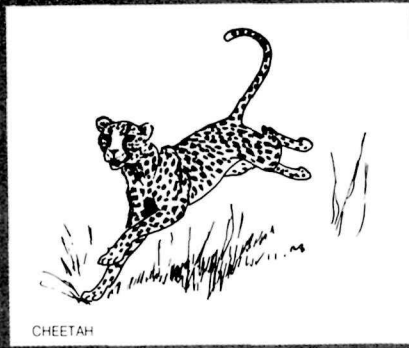
Everglades Kite: HR 7164, to authorize the Interior Secretary to develop areas suitable to provide for the continued existence of the Everglades kite. To House Merchant Marine and Fisheries Committee.

Egmont Key: HR 7057 and HR 6911, to establish in Florida the Egmont Key National Wildlife Refuge. To House Interior and Insular Affairs Committee.

Legislation concerning forestry matters has included:

Beaverhead Wilderness: S 1721, to designate certain lands in the Gallatin and Beaverhead national forests as wilderness. To Senate Interior and Insular Affairs Committee.

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Lopez Canyon Wilderness: HR 7514, to designate certain lands in San Luis Obispo County, California, as the Lopez Canyon Wilderness, and to establish the Lopez Canyon Scenic Area. To House Interior and Insular Affairs Committee.

Legislation pertaining to miscellaneous environmental matters has included:

Citizen Suits: HR 7592, to amend NEPA to provide for citizen actions in the U.S. District courts against persons responsible for creating certain environmental hazards. To House Merchant Marine and Fisheries.

Deepwater Ports: S 1751 and HR 7501, to amend the Outer Continental Shelf Lands Act and to authorize the Interior Secretary to regulate the con-

struction and operation of deepwater port facilities. To the committees on Interior and Insular Affairs, Public Works, and Commerce, by unanimous consent.

Flood Plain Policy: HR 7454, to establish a national floodplain policy, and to authorize the Interior Secretary, in cooperation with federal agencies and the states, to encourage the dedication of the nation's floodplains as natural floodways to protect, conserve, and restore their natural functions and resources. To House Committee on Interior and Insular Affairs.

Alaskan Pipeline: HR 6871, to provide for a study of the availability of a route for a trans-Canadian oil pipeline to transmit petroleum from the North Slope of Alaska to the Continental

U.S. To House Interior and Insular Affairs Committee.

Environmental Corps: HR 7336, to establish the Environmental Quality Corps. To House Education and Labor Committee.

NEPA Amendment: S 1668, to amend NEPA in order to insure the balancing of environmental considerations with economic and social considerations in complying with the provisions of the act. To Senate Interior and Insular Affairs Committee.

Energy Policy: S 1565, to permit Congress to play its proper role in the formulation of policy relating to foreign commerce, the public lands, and the energy needs of the country. To Senate Interior and Insular Affairs Committee.

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Continued from page 2

to service as an adequately representative agency and become effective in operation and enforcement is a question. Doubts could be resolved by giving the Ocean Authority supervening powers, and this may have to be done if agreement is to be reached at the Conference.

MUCH PROGRESS has been made, independently of the Conference on the Law of the Sea, toward the control of vessel-source pollution by means of the newly signed anti-dumping convention. Assuming the adoption and enforcement of adequate safeguards on vessel construction, the hazards of pollution by navigation may eventually be brought under control. Not so quickly, however, land based pollution.

The main sources of oceanic pollution, some of which is deadly serious, are the rivers and the winds. We have suggested earlier, and repeat, that a desk should be established within the Authority which would address itself to these problems. Worldwide goals should be established for the control of pollution from the rivers; the industrial and agricultural countries alike are at fault; all stand in peril of the consequences of their own irresponsibility. Whether the United Nations Environment Programme, established by the Stockholm Conference, will have the resources to help the nations adequately in these matters is uncertain; cooperation between UNEP and the Authority will be essential.

THE DECISIONS of the United Nations agencies aiding economic development, including the proposed Authority itself and the United Nations Development Programme will be crucial in these matters. The developing countries should be helped toward nonpolluting technologies from the beginning. They might be able to skip over the archaic technologies. Nonpolluting industries may well turn out to be less expensive to finance and operate.

The hard pesticides are a large part of the atmospheric pollution of the seas. A transition to soft pesticides and integrated pest control must be organized by FAO and WHO, catalyzed by UNEP. Because of its vital interest in the protection of the marine environment, the Authority should establish a desk to lend assistance.

SERIOUS CONTROVERSIES have arisen over the major fisheries. The United States favors the so-called

species approach; but the term in itself settles little. Will Peru and Ecuador lay claim as coastal nations to the tuna resources of the South Pacific, as against the distant-water fishing fleets of the maritime countries? Will Japan and Russia continue their harvest of Pacific salmon at sea as against the defensive claims of the United States in whose rivers the fish are spawned? Will the self-protective efforts of Iceland result in protracted legal and economic warfare with the major powers?

An international agency is needed, with power to foster coordination among the fishery commissions already in existence and to prescribe and enforce additional rules. Among the governing concepts for such rules would be sustained yield and equitable distribution. The obligations apply to coastal and maritime powers alike.

The original United States proposal suggested a zone between the territorial sea and the 200-meter isobath called the Trusteeship Zone where development would be carried on in trust for the world community. Emerging instead, we have a diversity of concepts, such as an exclusive or preferential economic zone, a so-called patrimonial sea, and even the idea of territorial seas extending 200 miles from shore. Great opportunities for creative conceptual synthesis arise from this confusion.

WITH THE EXTENSION of coastal state prerogatives, the questions of coastal navigation and transit through straits acquire increasing importance. It seems likely that the maritime and military powers will insist on free transit, not merely the right of innocent passage, through straits. The question arises whether all the critical straits and canals, Suez and Panama included, should not be internationalized. If a concordance among the holders of permanent seats on the Security Council may be emerging, the possibility could be real.

Not enough attention has been given, in our judgment, to the preservation of the oceanic ecosystems. They are basic to the survival of life on the planet. There is much reason to believe that the seabeds are not sterile and that very delicate balances of nature exist at great depths which could be disturbed by dredging, drilling, construction, and the like, with unforeseeable consequences. The new Authority, as must be the case with all future world agencies, must address itself within its own field to the protection of the myriad forms of life on the planet, and first of all, in this case, the life of the seas.

—Anthony Wayne Smith



Ever since the National Parks and Conservation Association came into existence fifty-four years ago it has been working for the expansion of the national park system and the protection of its units. Today the attention of environmentalists has turned north toward the state of Alaska, where the Secretary of the Interior will soon be making important recommendations on potential national park, wildlife refuge, scenic river, and forest areas. In regard to possible park system units in Alaska, NPCA already has published its

recommendations as an assistance to the Secretary in his deliberations.

The necessary studies that must precede well-considered recommendations are costly, and at this time of year NPCA asks all its members and friends to back its wide-ranging programs with contributions over and above membership dues. It is hoped that the response will be as generous as individual circumstances will permit. All donations are deductible for federal income tax purposes.

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